

APPENDIX N – Transportation and Circulation Technical Data

Trip Generation Worksheets

**Township 9
Trip Generation**

Trip Generation Land Use Category	Amount	Source	Trips Generated						Distribution				
			Weekday	AM Peak Hour			PM Peak Hour			AM Peak		PM Peak	
				In	Out	Total	In	Out	Total	In	Out	In	Out
Scenario A: Residential													
Retail (Shopping Center)	116.2 KSF	ITE (820)	7,487	104	67	171	332	359	691	61%	39%	48%	52%
Restaurant (High-Turnover Sit Down)	30.0 KSF	ITE (932)	3,815	180	166	346	200	128	328	52%	48%	61%	39%
Residential Condominium/Townhouse ¹	463.0 Units	ITE (230)	2,362	30	146	176	141	70	211	17%	83%	67%	33%
Highrise Condominium/Townhouse ²	1418 Units	ITE (232) ¹	5,570	84	356	440	309	189	498	19%	81%	62%	38%
Live/Work ⁵	16 Units	Dowling	120	4	8	12	5	5	10	30%	70%	48%	52%
Highrise Apartment ³	355 Units	ITE (222)	1,594	27	80	107	77	49	126	25%	75%	61%	39%
Apartment ⁴	729 Units	ITE (220)	4,532	72	289	361	272	147	419	20%	80%	65%	35%
Total Project Trips			25,480	501	1,112	1,613	1,336	947	2,283				
Transit Adjustments													
Retail (-1.8%)			-135	-2	-1	-3	-6	-6	-12				
Restaurant (-1.8%)			-69	-3	-3	-6	-4	-2	-6				
Residential (Daily -3.1%, a.m. -3.7%, p.m. -3.6%)													
Residential Condominium/Townhouse			-73	-1	-5	-7	-5	-3	-8				
Highrise Condominium/Townhouse			-173	-3	-13	-16	-11	-7	-18				
Live/Work			-4	0	0	0	0	0	0				
Highrise Apartment			-49	-1	-3	-4	-3	-2	-5				
Apartment			-140	-3	-11	-13	-10	-5	-15				
Total Transit Adjustments			-643	-13	-36	-49	-39	-25	-64				
Internal Trips			-2,234	-30	-30	-61	-105	-105	-210				
New External Trips			22,603	458	1,046	1,503	1,192	817	2,009				
Transit Trips													
Retail (2.2%)			249	6	5	11	12	11	22				
Residential (Daily 4.3%, a.m. 4.8%, p.m. 4.9%)			610	11	43	53	39	23	62				
Total Transit Trips			859	17	48	64	51	34	84				
Scenario B: Office													
Retail (Shopping Center)	116.2 KSF	ITE (820)	7,487	104	67	171	332	359	691	61%	39%	48%	52%
Restaurant (High-Turnover Sit Down)	30.0 KSF	ITE (932)	3,815	180	166	346	200	128	328	52%	48%	61%	39%
Residential Condominium/Townhouse ¹	462.0 Units	ITE (230)	2,357	30	146	176	141	70	211	17%	83%	67%	33%
Highrise Condominium/Townhouse ²	1038 Units	ITE (232) ¹	4,137	63	267	330	228	140	368	19%	81%	62%	38%
Live/Work ⁵	16 Units	Dowling	120	4	8	12	5	5	10	30%	70%	48%	52%
Highrise Apartment ³	103 Units	ITE (222)	571	8	23	31	27	18	45	25%	75%	61%	39%
Apartment ⁴	731 Units	ITE (220)	4,544	72	290	362	273	147	420	20%	80%	65%	35%
Office	839.6 KSF	ITE (710)	6,866	906	123	1,029	173	846	1,019	88%	12%	17%	83%
Total Project Trips			29,897	1,367	1,090	2,457	1,379	1,713	3,092				
Transit Adjustments													
Retail (-1.8%)			-135	-2	-1	-3	-6	-6	-12				
Restaurant (-1.8%)			-69	-3	-3	-6	-4	-2	-6				
Residential (Daily -3.1%, a.m. -3.7%, p.m. -3.6%)													
Residential Condominium/Townhouse			-73	-1	-5	-7	-5	-3	-8				
Highrise Condominium/Townhouse			-128	-2	-10	-12	-8	-5	-13				
Live/Work			-4	0	0	0	0	0	0				
Highrise Apartment			-18	0	-1	-1	-1	-1	-2				
Apartment			-141	-3	-11	-13	-10	-5	-15				
Office (-5.6%)			-384	-51	-7	-58	-10	-48	-57				
Total Transit Adjustments			-568	-11	-31	-42	-34	-22	-56				
Internal Trips			-3,189	-44	-44	-88	-145	-145	-290				
New External Trips			26,140	1,312	1,015	2,327	1,200	1,546	2,746				
Transit Trips													
Retail (2.2%)			249	6	5	11	12	11	22				
Office (6.8%)			467	62	8	70	12	57	69				
Residential (Daily 4.3%, a.m. 4.8%, p.m. 4.9%)			504	9	36	44	33	19	52				
Total Transit Trips			1,220	77	49	125	57	87	143				

¹ Residential Condominium/Townhouse (ITE 230) trip generation rates are used for Zone 7,8,11,12,15, and 16.

² Highrise Condominium/Townhouse (ITE 232) trip generation rates are used for Zone 1,3,4,5,6,10,13,14, and 17.

³ Highrise Apartment (ITE 222) trip generation rates are used for Zone 6,13,14, and 17.

⁴ Apartment (ITE 230) trip generation rates are used for Zone 1,3,4,5,7,8,10,11,12,15, and 16.

⁵ Live/Work trip generation rates are derived from field survey conducted by Dowling Associates at similar live/work developments in Oakland and Emeryville, California.

Township 9
Adjustments to ITE Trip Generation Rates for High Transit Ridership

Walk Access to Transit	Work Trips^a	Non-Work Trips^b	Total		
Sacramento Downtown	7.4%	1.8%			
Sacramento Suburban	1.4%	0.3%			
Increase Above Suburban Conditions	6.0%	1.5%			
Adjustment for Retail¹	0.4%	1.4%	1.8%		
Adjustment for Office²	5.4%	0.2%	5.6%		
Adjustments for Residential^c	Home-Work	Home-Non-Work	Non Home-Based		
AM Peak Hour	2.9%	0.8%	0.0%	3.7%	
PM Peak Hour	2.8%	0.8%	0.0%	3.6%	
Daily	2.1%	1.0%	0.0%	3.1%	

Transit Trips

	Work Trips	Non-Work Trips			
Retail¹	0.5%	1.7%	2.2%		
Office²	6.7%	0.2%	6.8%		
Residential^c	Home-Work	Home-Non-Work	Non Home-Based		
AM Peak Hour	3.6%	0.9%	0.3%	4.8%	
PM Peak Hour	3.5%	0.9%	0.5%	4.9%	
Daily	2.6%	1.2%	0.5%	4.3%	

¹ Assumes 7 percent of retail trips are work trips.

² Assumes 90 percent of office trips are work trips

Source: *Pre-Census Travel Behavior Report: Analysis of the 2000 SACOG Household Travel Survey*, DKS, 2001. Table references from the source are provided as follows:

^a Table A26

^a Table A27

^c The amount of transit use for each trip purpose is based on the following data from Table A33:

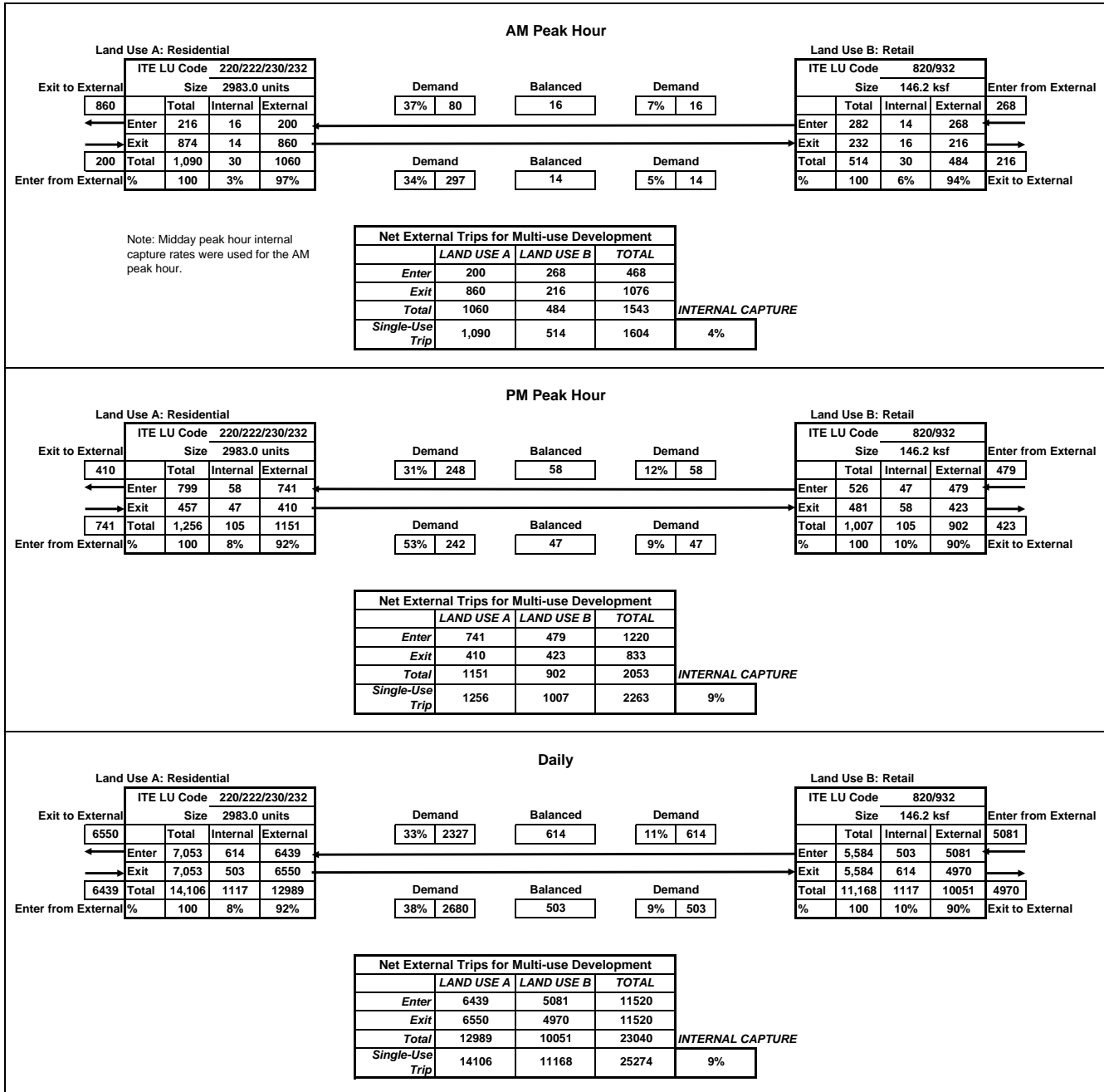
Travel Hours	Home-Work	Home-Non-Work	Non Home-Based	Total
AM Peak Hour	73,190	78,124	25,868	177,182
PM Peak Hour	60,563	67,068	47,784	175,415
Daily	473,704	861,535	557,764	1,893,003

**MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY
Scenario A: Residential**

Analyst: Dowling

Name of Development: Township 9

Date: 11/10/2006



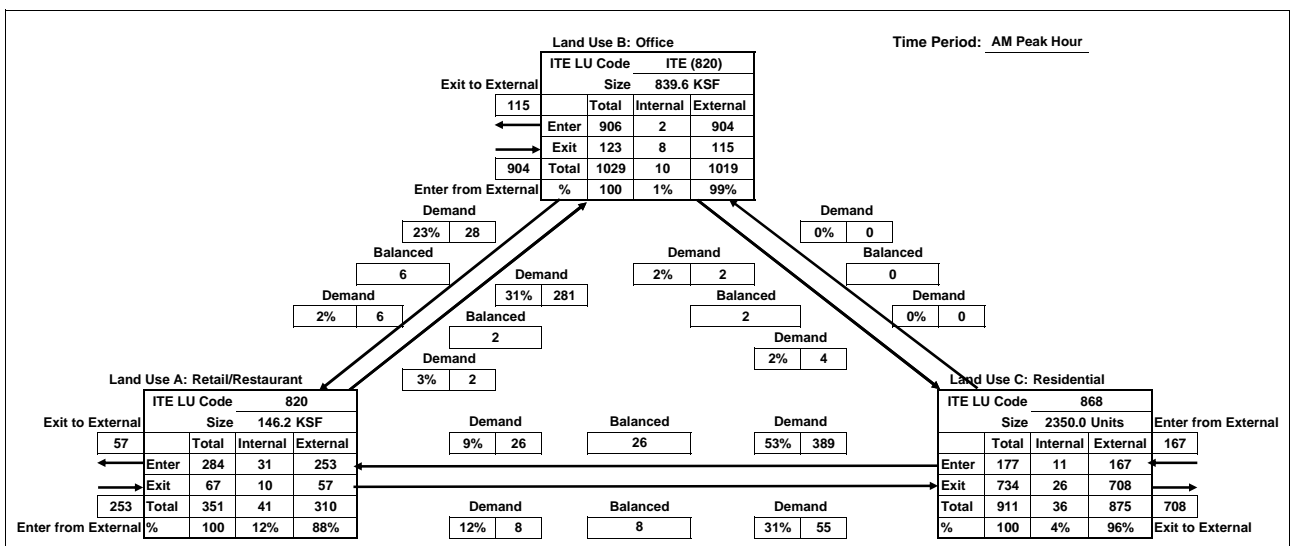
Source: Trip Generation Handbook, 2nd Edition (ITE 2004).

Analyst: Dowling

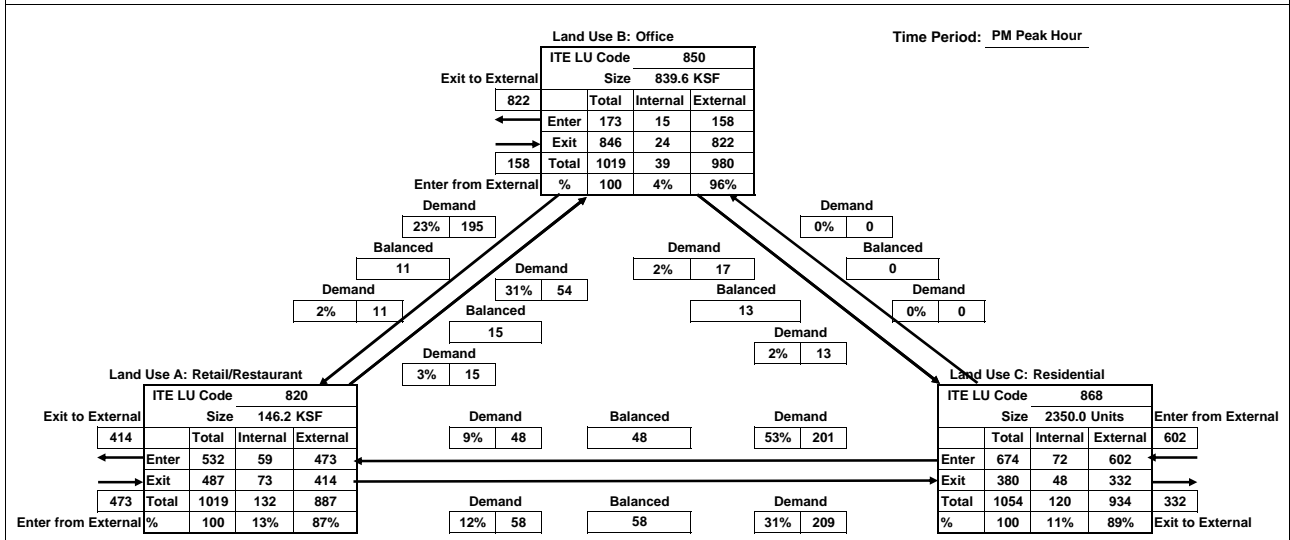
**MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY
Scenario B: Office**

Name of Development: Township 9

Date: 11/10/2006



Net External Trips for Multi-use Development					
	LAND USE A	LAND USE B	LAND USE C	TOTAL	
Enter	253	904	167	1323	
Exit	57	115	708	880	
Total	310	1019	875	2204	
Single-Use Trip	351	1029	911	2291	INTERNAL CAPTURE 4%



Net External Trips for Multi-use Development					
	LAND USE A	LAND USE B	LAND USE C	TOTAL	
Enter	473	158	602	1234	
Exit	414	822	332	1568	
Total	887	980	934	2802	
Single-Use Trip	1019	1019	1054	3092	INTERNAL CAPTURE 9%

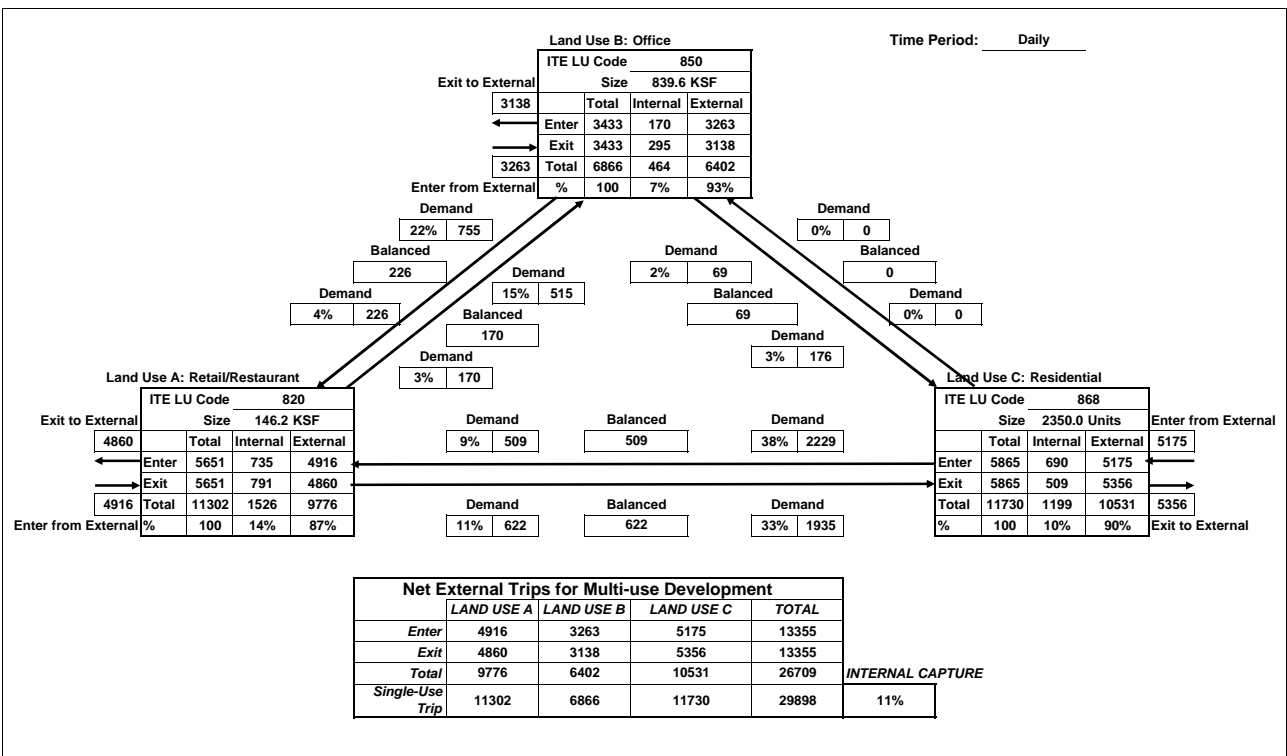
Analyst: Dowling

Date: 11/10/2006

**MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY
Scenario B: Office**

Name of Development: Township 9

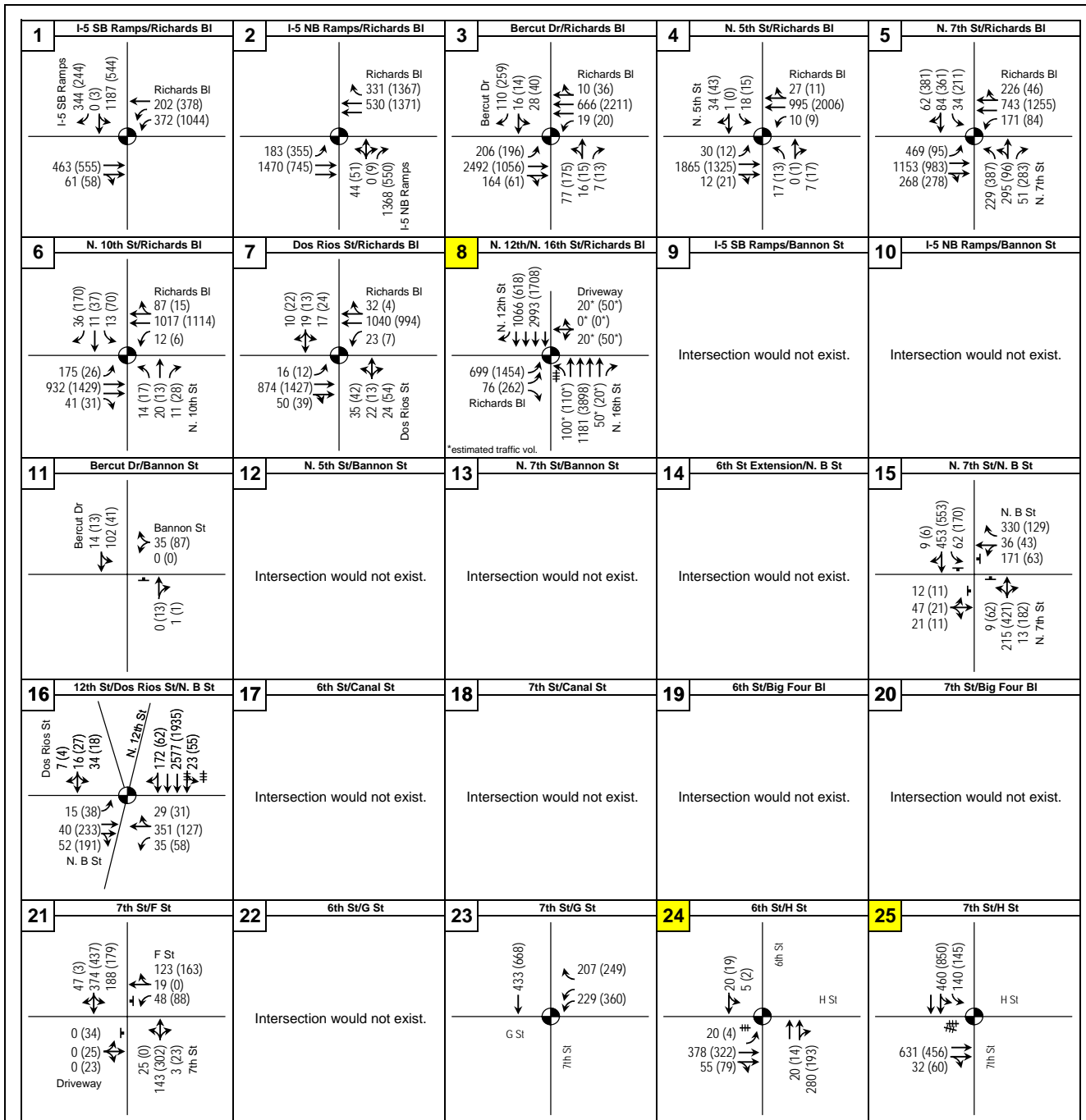
Time Period: Daily



Township 9 Project
Trip Generation for Traffic Analysis Zones

Land Use Area	Retail (ksf)	Restaurant (ksf)	Condo/Townhse Units	Highrise Condo/Townhse	Live/Work Units	Highrise Apt Units	Apartment Units	Office (ksf)	Number of Trips (Adjusted)						
									AM Peak Hour			PM Peak Hour			
									In	Out	Total	In	Out	Total	
Scenario A: Residential															
Retail	Total									97	115	212	296	310	607
Restaurant		Total								168	284	452	178	111	289
Condo/Townhse			Total							27	108	134	126	60	186
Highrise Condo				Total						75	262	337	276	163	438
Live/Work					Total					4	6	9	4	4	9
Highrise Apt						Total				24	59	83	69	42	111
Apartment							Total			64	213	277	243	126	369
Office								Total		0	0	0	0	0	0
TAZ 1	8.04	3		303			202			57	151	208	164	102	266
TAZ 3	10.38	3		170			114			44	103	147	115	78	193
TAZ 4	7.20	3		99			65			34	73	107	77	53	130
TAZ 5	4.35	3		229			153			46	120	166	124	76	200
TAZ 6	5.57			155		103				20	51	71	64	45	109
TAZ 7	5.84		120		3					12	35	47	48	32	80
TAZ 8	3.23		80		3					8	23	31	31	20	51
TAZ 10	8.01			83			56			16	40	56	55	41	96
TAZ 11	7.20				2		45			16	42	58	58	39	97
TAZ 12	9.55	3	112		2					32	65	97	73	52	125
TAZ 13	14.41	3		126		84				41	80	121	95	74	169
TAZ 14	14.67	3		119		79				41	78	119	94	73	167
TAZ 15	9.17	3	31		3		39			30	57	87	63	47	110
TAZ 16	4.64	3	31		3		55			28	57	85	57	38	95
TAZ 17	3.94	3		134		89				33	72	105	71	48	119
Total	116.19	30	463	1418	16	355	729	1		458	1,047	1,505	1,189	818	2,007
Scenario B: Office															
Retail	Total									90	63	154	242	252	494
Restaurant		Total								157	156	313	139	84	223
Condo/Townhse			Total							36	137	173	140	80	221
Highrise Condo				Total						75	251	326	227	161	387
Live/Work					Total					5	8	12	5	6	11
Highrise Apt						Total				10	22	31	27	21	48
Apartment							Total			86	272	358	272	169	440
Office								Total		853	108	960	148	774	922
TAZ 1	8.04	3		303			202			68	168	236	172	119	291
TAZ 3	10.38	3		170			114			50	105	155	115	84	199
TAZ 4	7.20	3		98			66			36	68	104	75	54	129
TAZ 5	4.35	3		229			153			54	130	184	130	89	219
TAZ 6	5.57			155		103				25	62	87	72	57	129
TAZ 7	5.84		120		3					15	40	55	50	35	85
TAZ 8	3.23		80		3					10	27	37	32	22	54
TAZ 10	8.01			83			56			19	45	64	56	43	99
TAZ 11	7.20				2		46			18	48	66	59	42	101
TAZ 12	9.55	3	112		2					32	55	87	68	49	117
TAZ 13	14.41	3						278.64		310	59	369	93	296	389
TAZ 14	14.67	3						263.87		295	57	352	91	283	374
TAZ 15	9.17	3	31		3		39			31	46	77	58	44	102
TAZ 16	4.64	3	31		3		55			29	49	78	54	38	92
TAZ 17	3.94	3						297.12		321	56	377	75	291	366
Total	116.194	30	462	1038	16	103	731	839.628		1,313	1,015	2,328	1,200	1,546	2,746

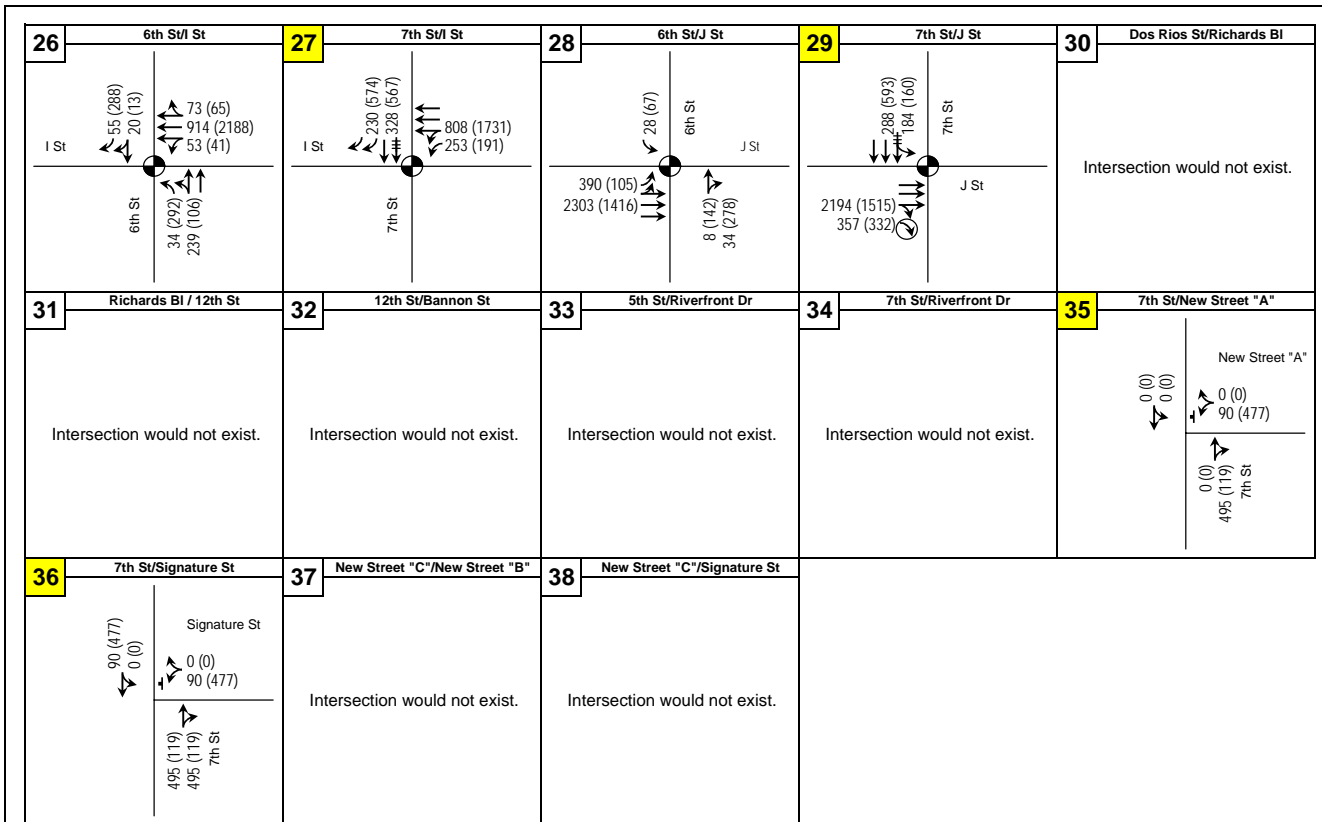
Traffic Volume Figures



KEY
 31 (27) = AM (PM) peak hour traffic volume
 = Signalized intersection
 = Intersection approach lane
 = Lane provided during AM peak, only

Note: Highlighting indicates lane or traffic control change from existing conditions



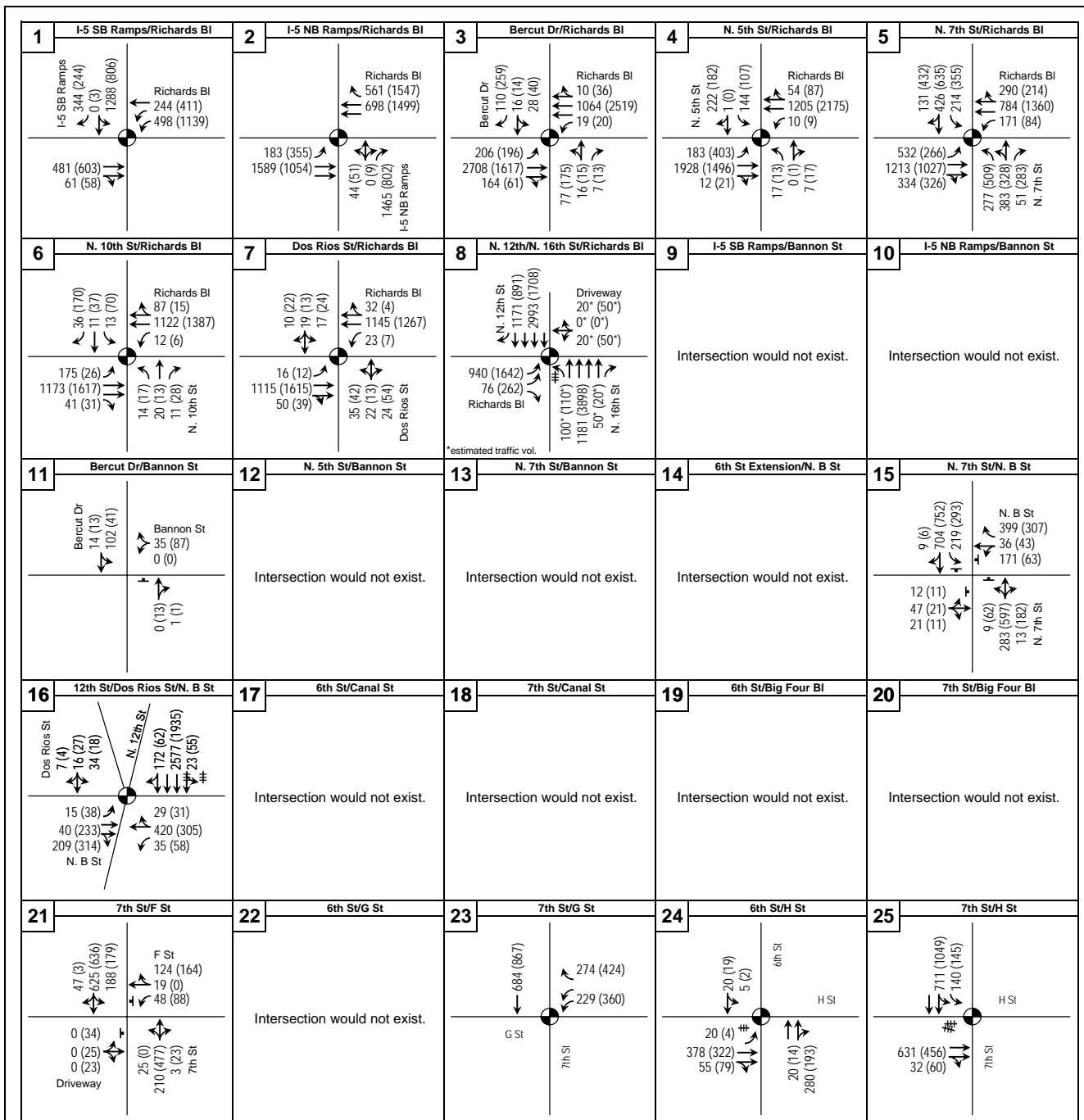


KEY

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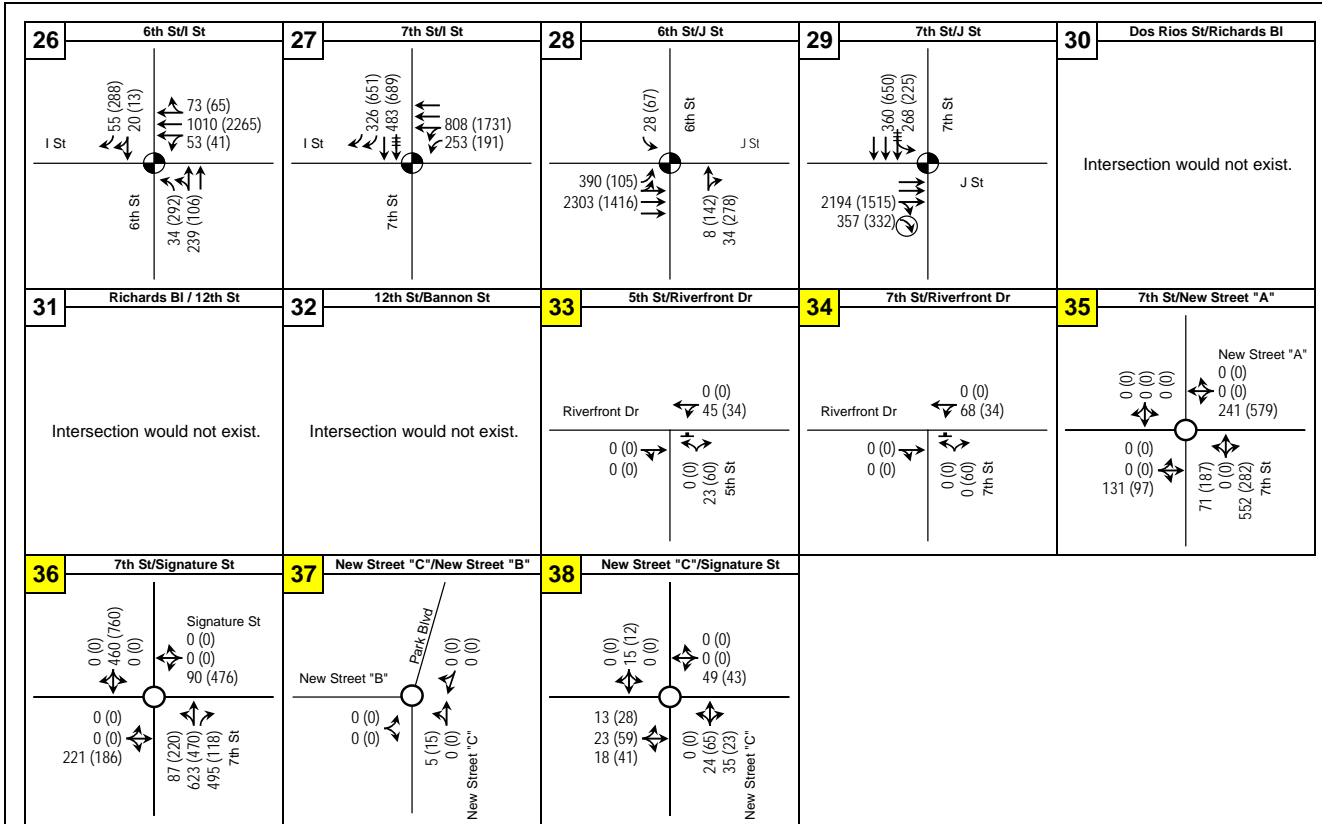
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Note: Highlighting indicates lane or traffic control change from baseline no project conditions

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Township 9 Traffic Study



Figure A.1
BASELINE PLUS RESIDENTIAL OPTION
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS

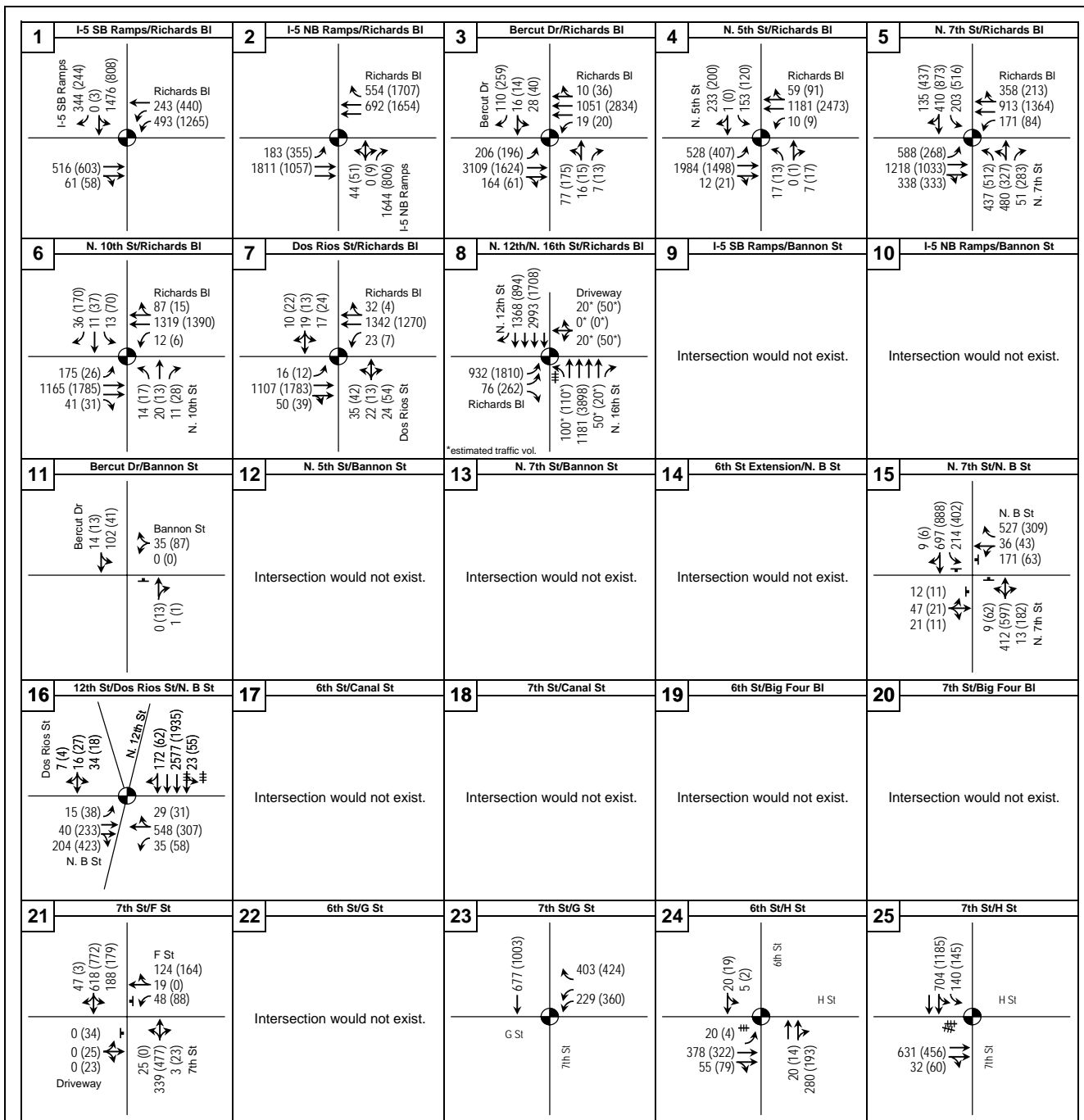


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Figure A.1
BASELINE PLUS RESIDENTIAL OPTION
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



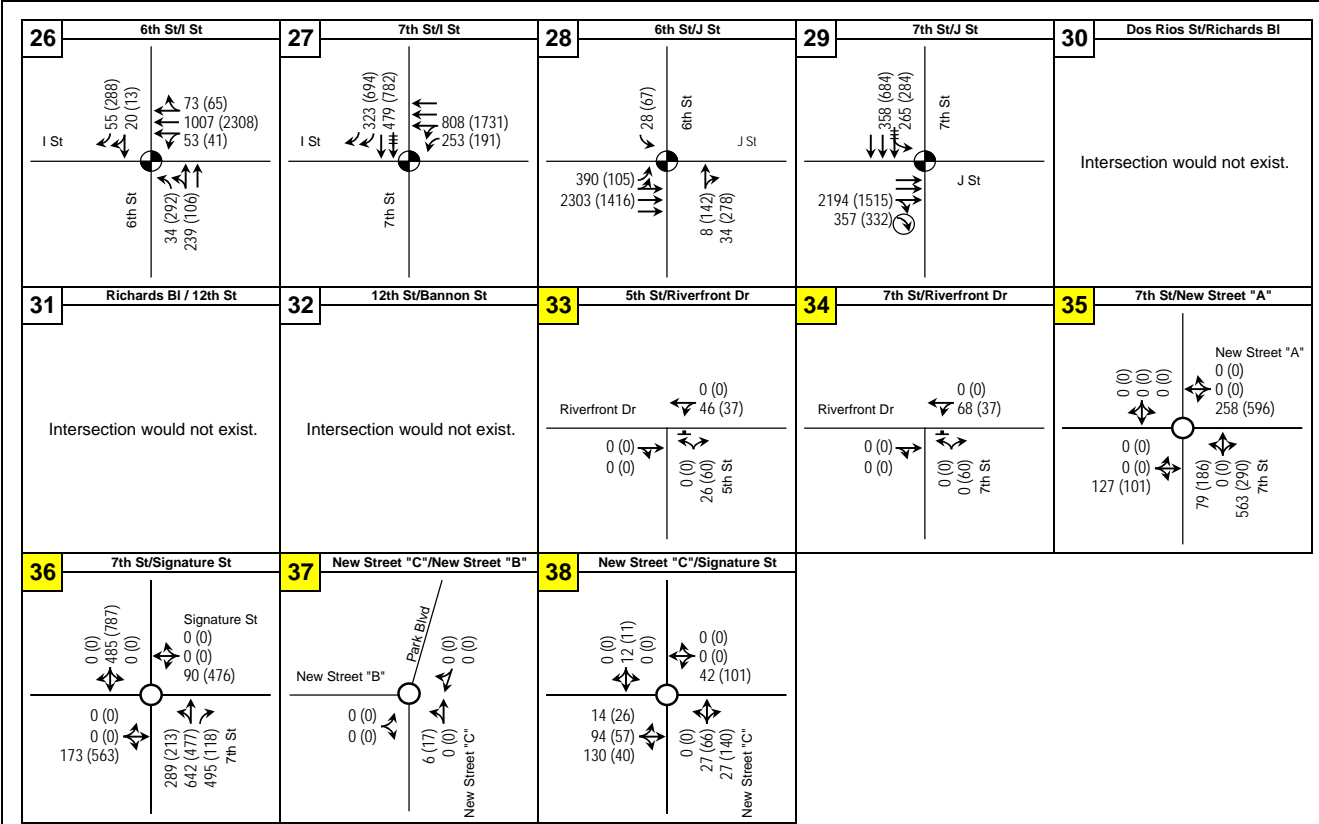
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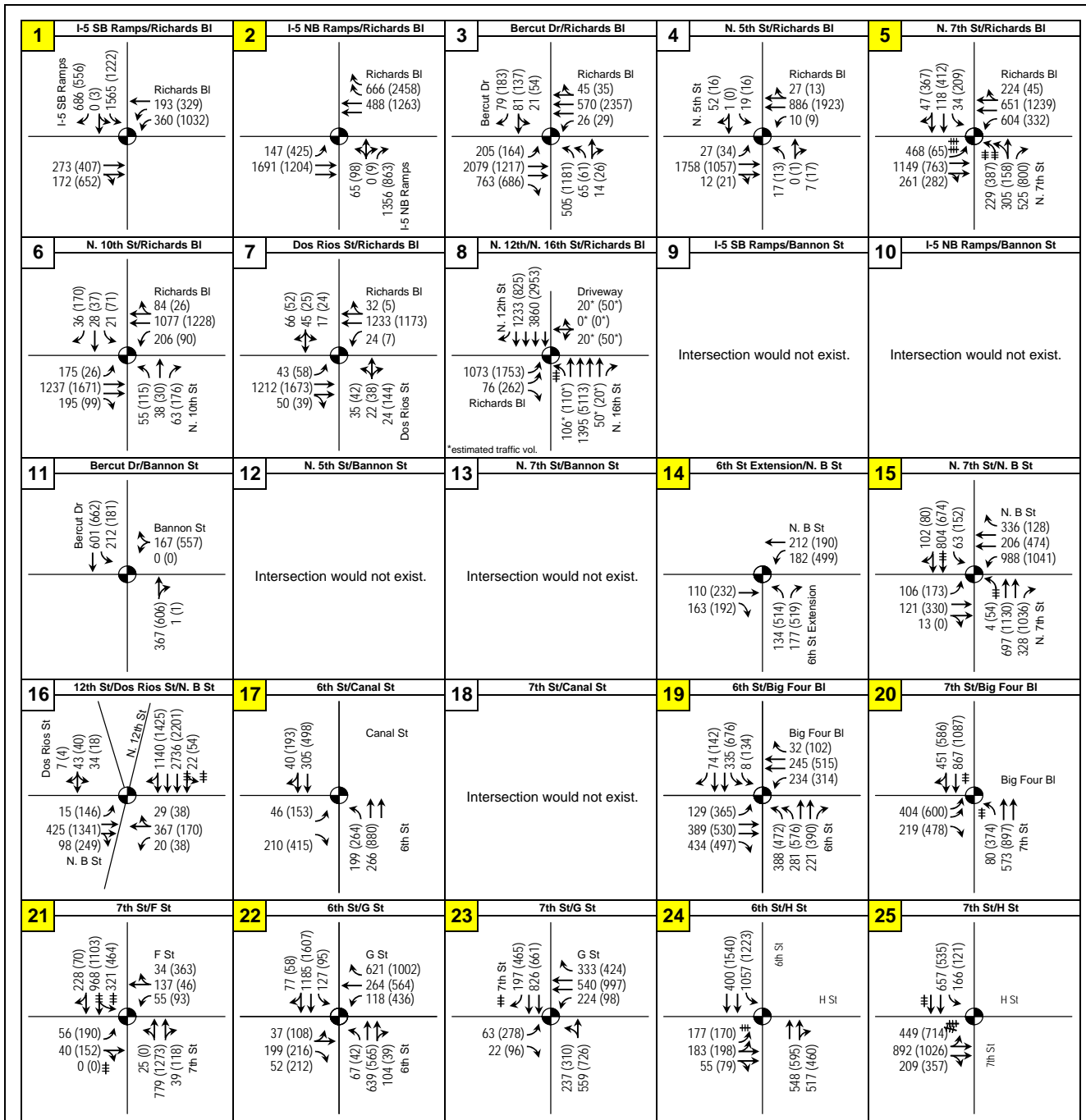
Figure A.1
BASELINE PLUS OFFICE OPTION
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



- KEY**
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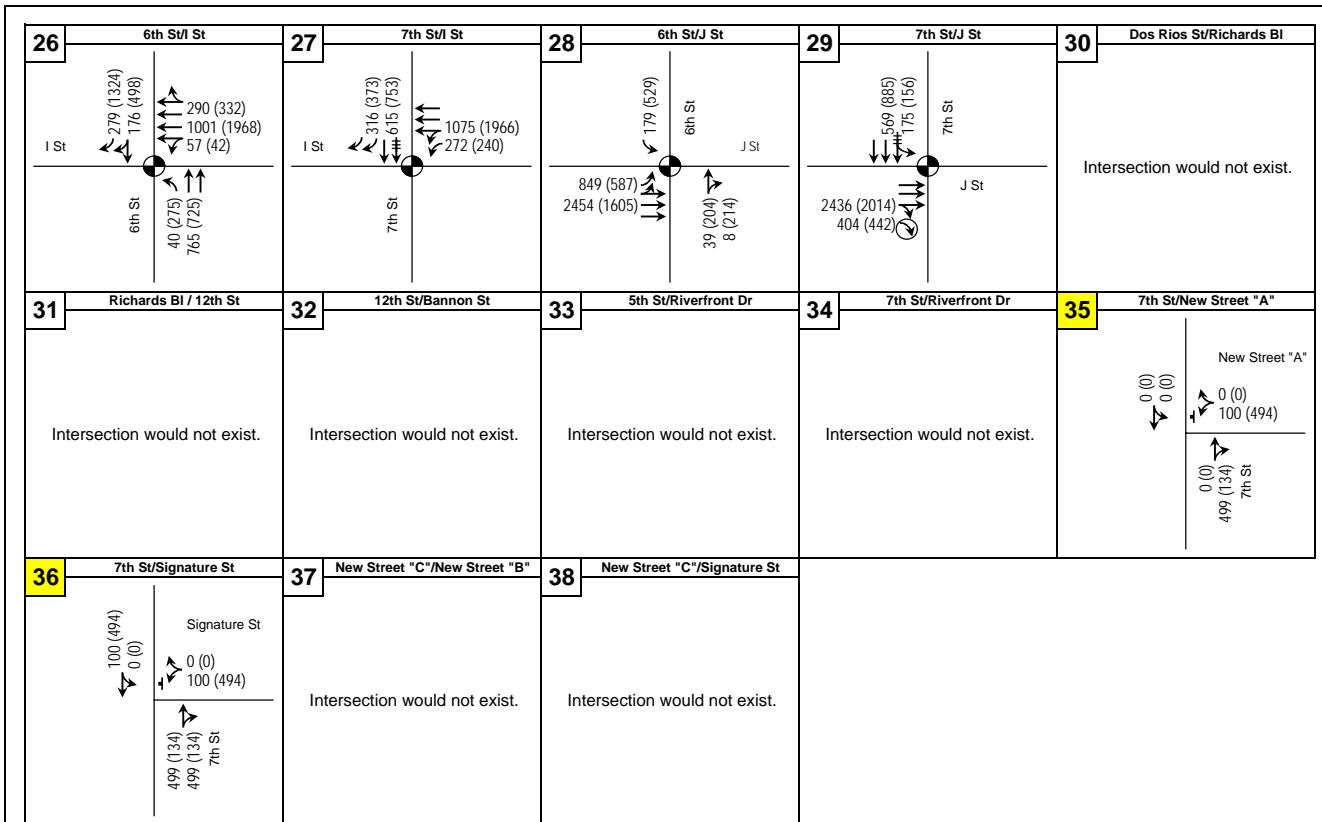
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Figure A.1
NEAR-TERM (2013) NO PROJECT
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS

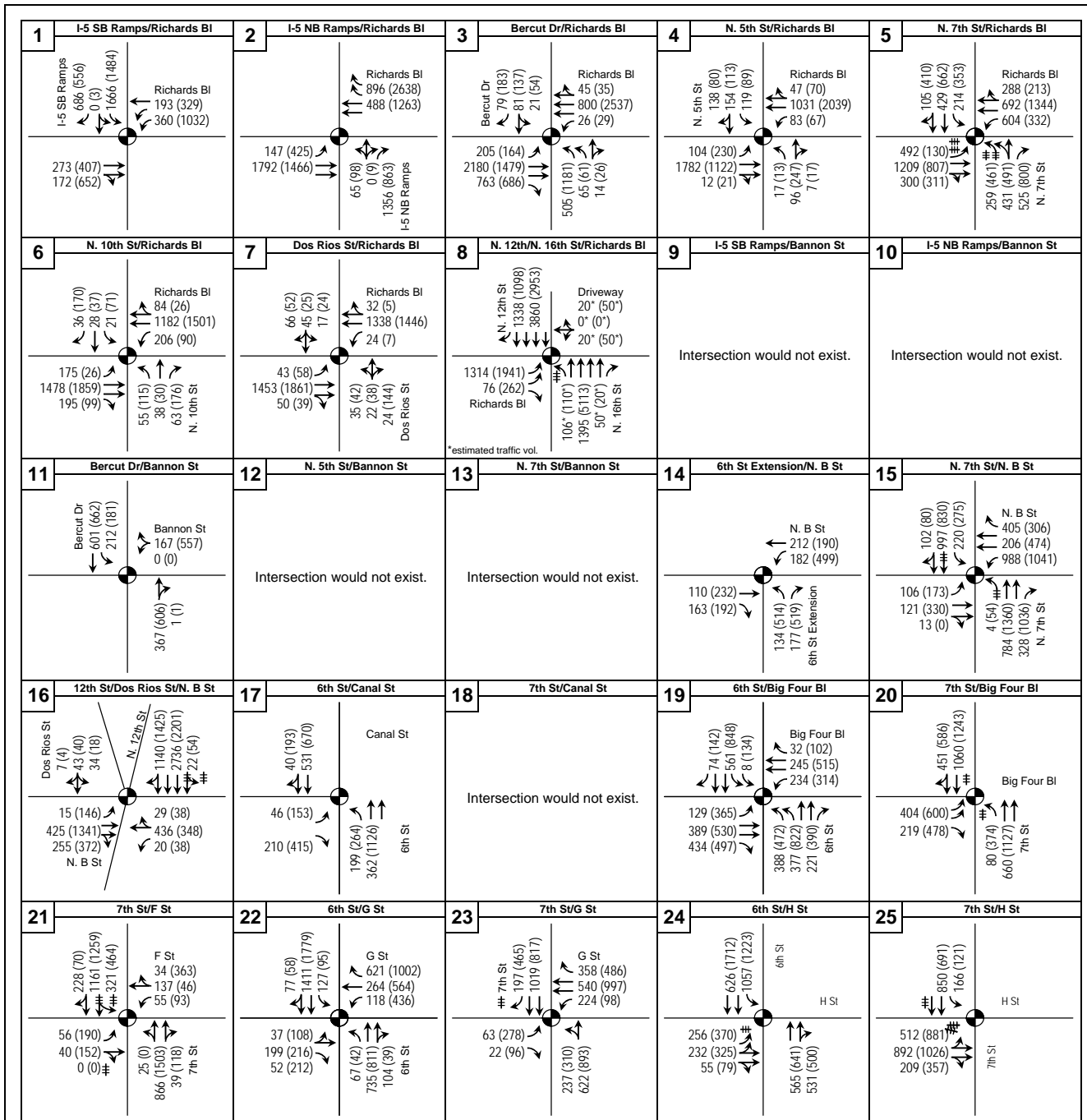


KEY

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Note: Highlighting indicates lane or traffic control change from Baseline no project conditions.





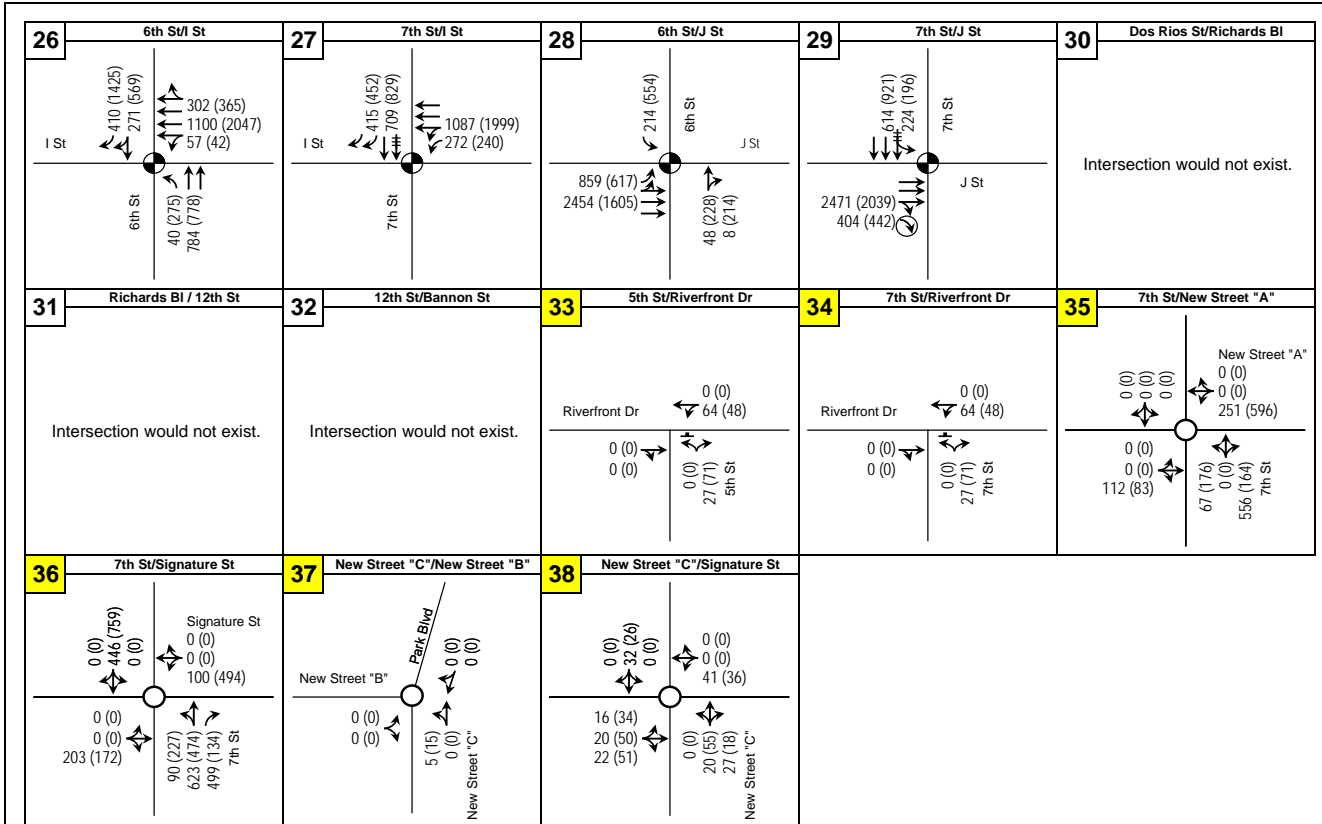
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 ↖ = Intersection approach lane
 ⊙ = Lane provided during AM peak, only

Note: Highlighting indicates lane or traffic control change from Near-Term (2013) No Project conditions

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Figure A.1
NEAR-TERM (2013) PLUS RESIDENTIAL
OPTION TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



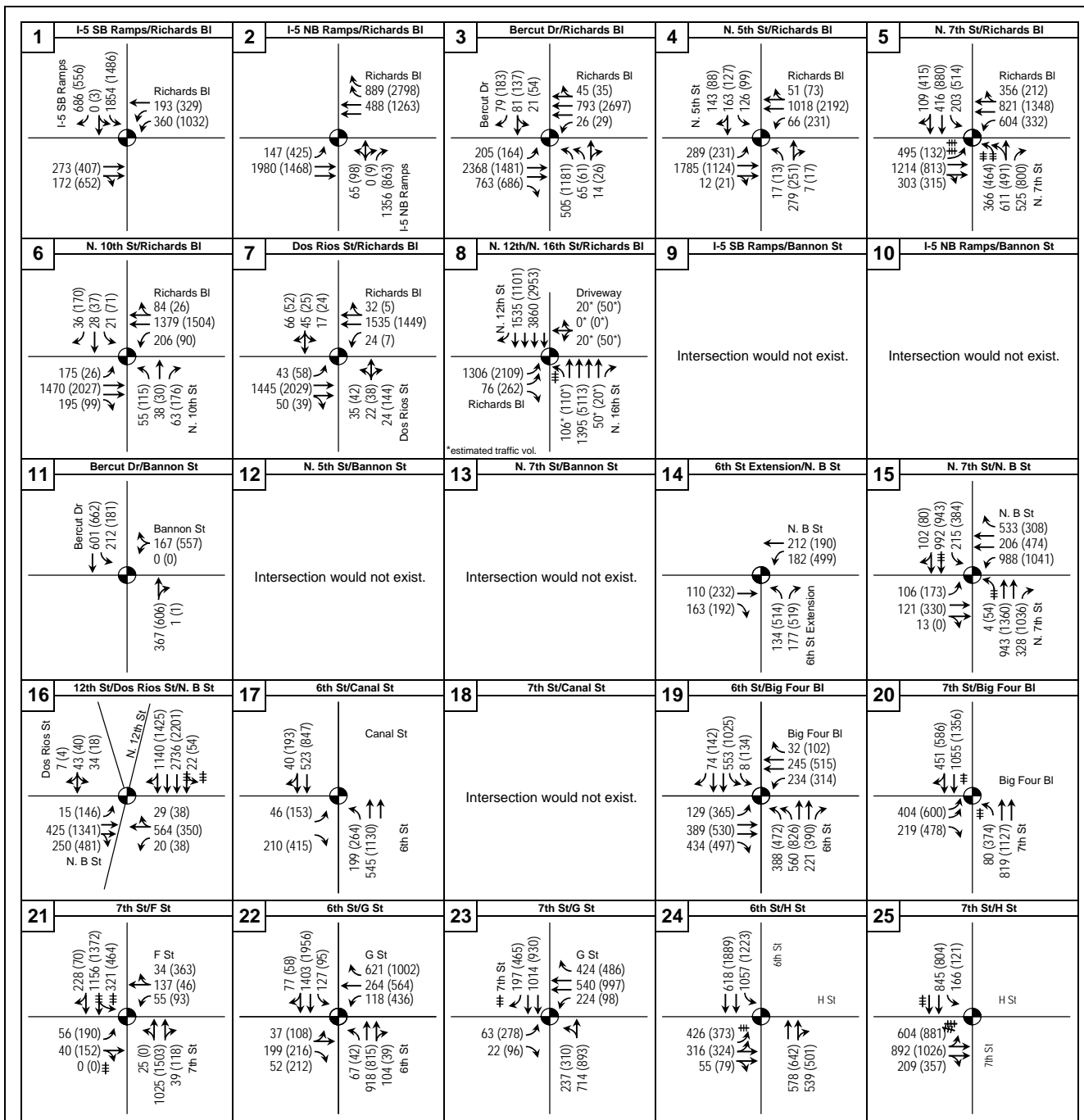
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Note: Highlighting indicates lane or traffic control change from Near-Term (2013) No Project conditions.

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Figure A.1
NEAR-TERM (2013) PLUS RESIDENTIAL
OPTION TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



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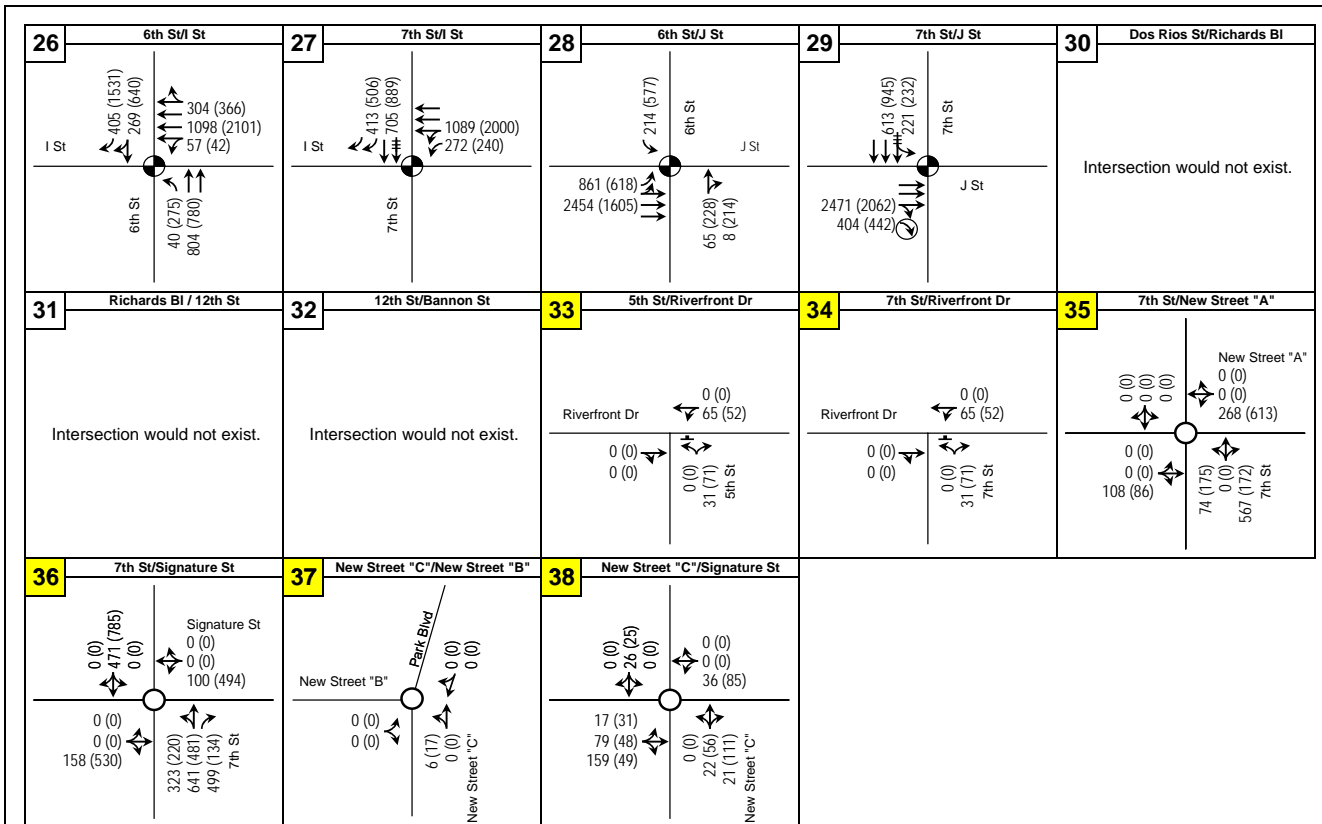
Note: Highlighting indicates lane or traffic control change from Near-Term (2013) No Project conditions

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Figure A.1
NEAR-TERM (2013) PLUS OFFICE OPTION
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



KEY

- 31 (27) = AM (PM) peak hour traffic volume
- ⊙ = Signalized intersection
- = Roundabout intersection
- ↔ = Intersection approach lane
- ↔ (with circle) = Lane provided during AM peak, only

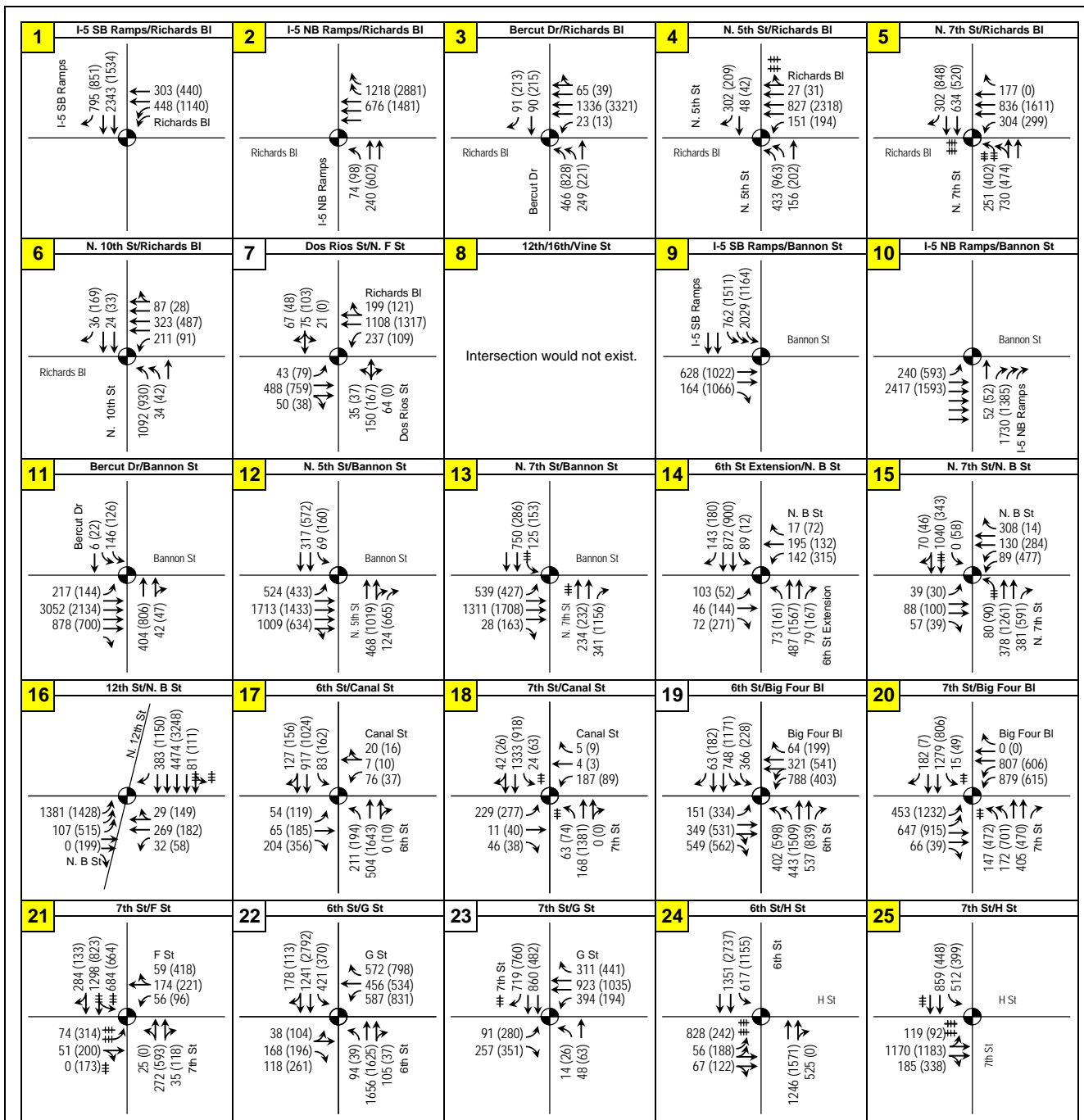
Note: Highlighting indicates lane or traffic control change from Near-Term (2013) No Project conditions.

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Figure A.1
NEAR-TERM (2013) PLUS OFFICE OPTION
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



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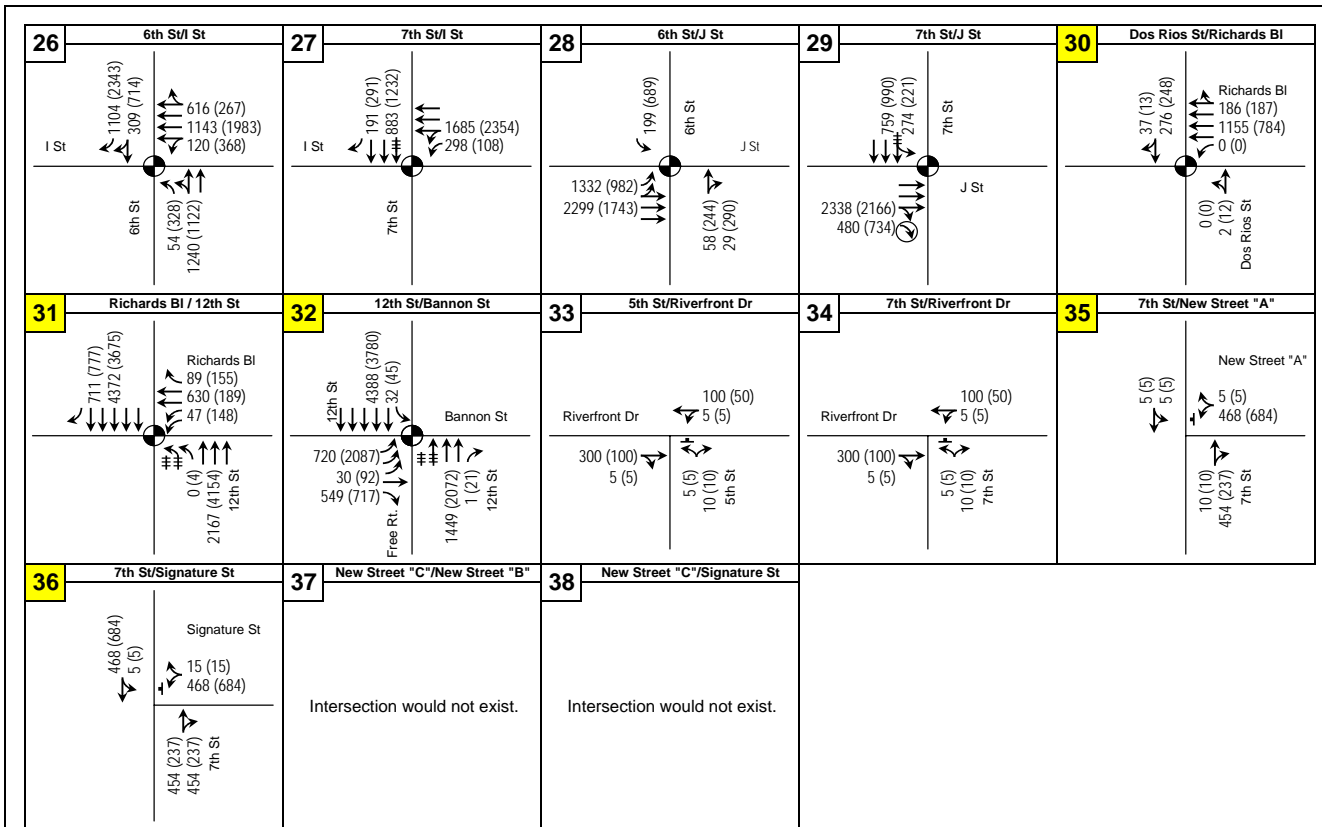
Note: Highlighting indicates lane or traffic control change from Near-Term (2013) No Project conditions

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Figure A.1
LONG-TERM (2030) NO PROJECT
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



KEY

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- = Signalized intersection
- ↔ = Intersection approach lane
- ↻ = Lane provided during AM peak, only

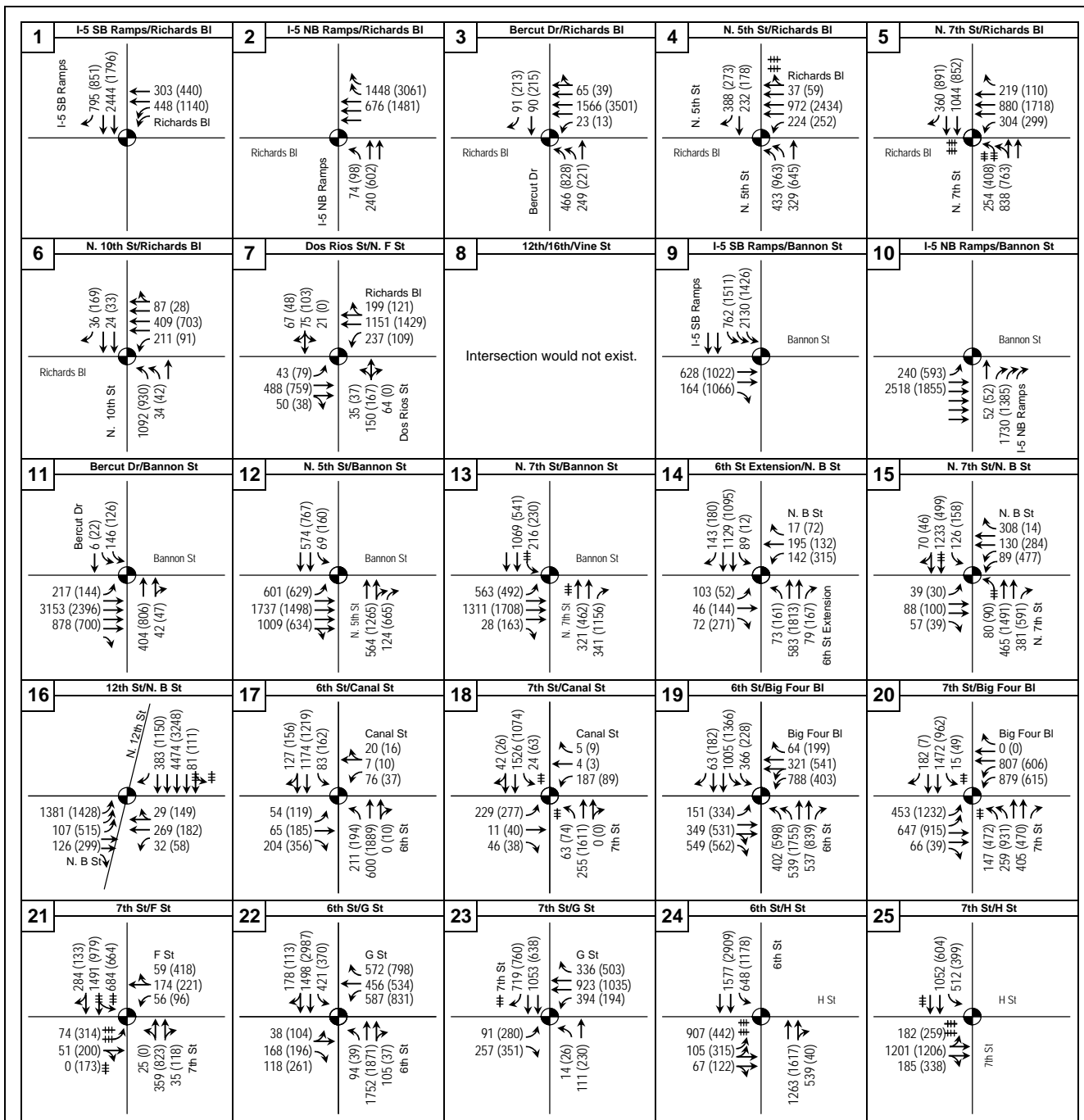
Note: Highlighting indicates lane or traffic control change from Near-Term (2013) No Project conditions.

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Figure A.1
LONG-TERM (2030) NO PROJECT
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



KEY

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- = Roundabout intersection
- ↔ = Intersection approach lane
- ⊙ = Lane provided during AM peak, only

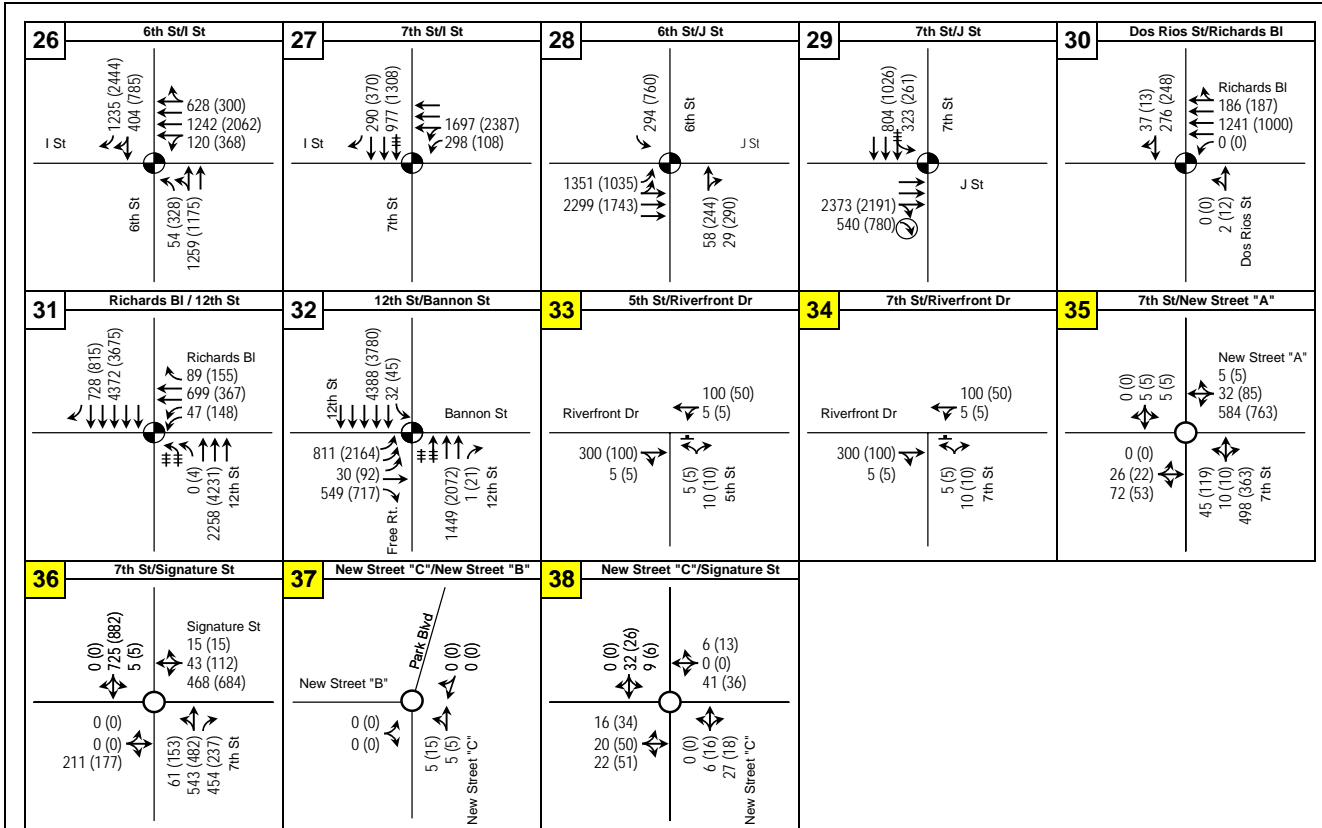
Note: Highlighting indicates lane or traffic control change from Long-Term (2030) No Project conditions

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Figure A.1
LONG-TERM (2030) PLUS RESIDENTIAL
OPTION TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



KEY

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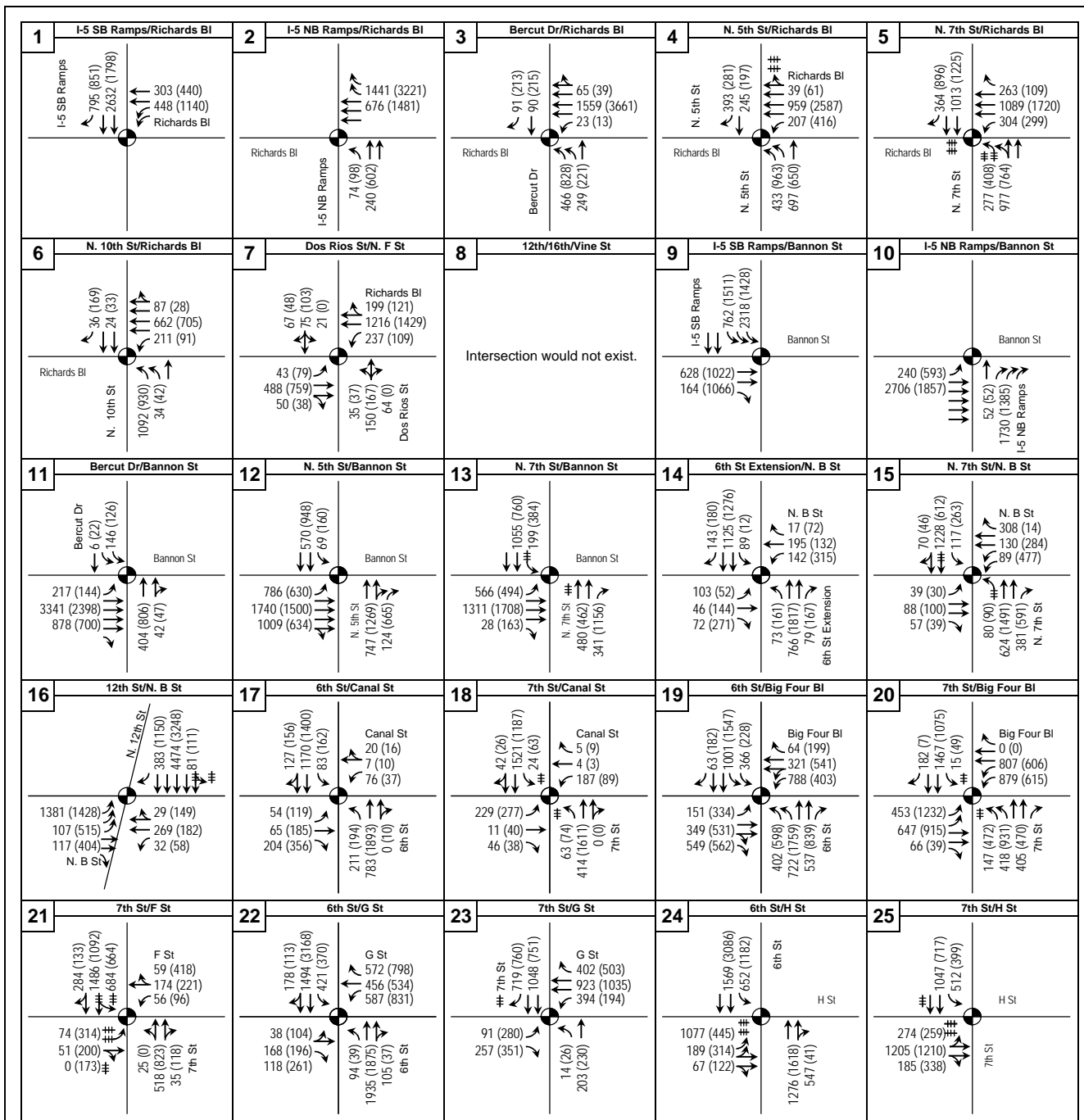
Note: Highlighting indicates lane or traffic control change from Long-Term (2030) No Project conditions.

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Figure A.1
LONG-TERM (2030) PLUS RESIDENTIAL
OPTION TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



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- ↔ = Intersection approach lane
- ⊖ = Lane provided during AM peak, only

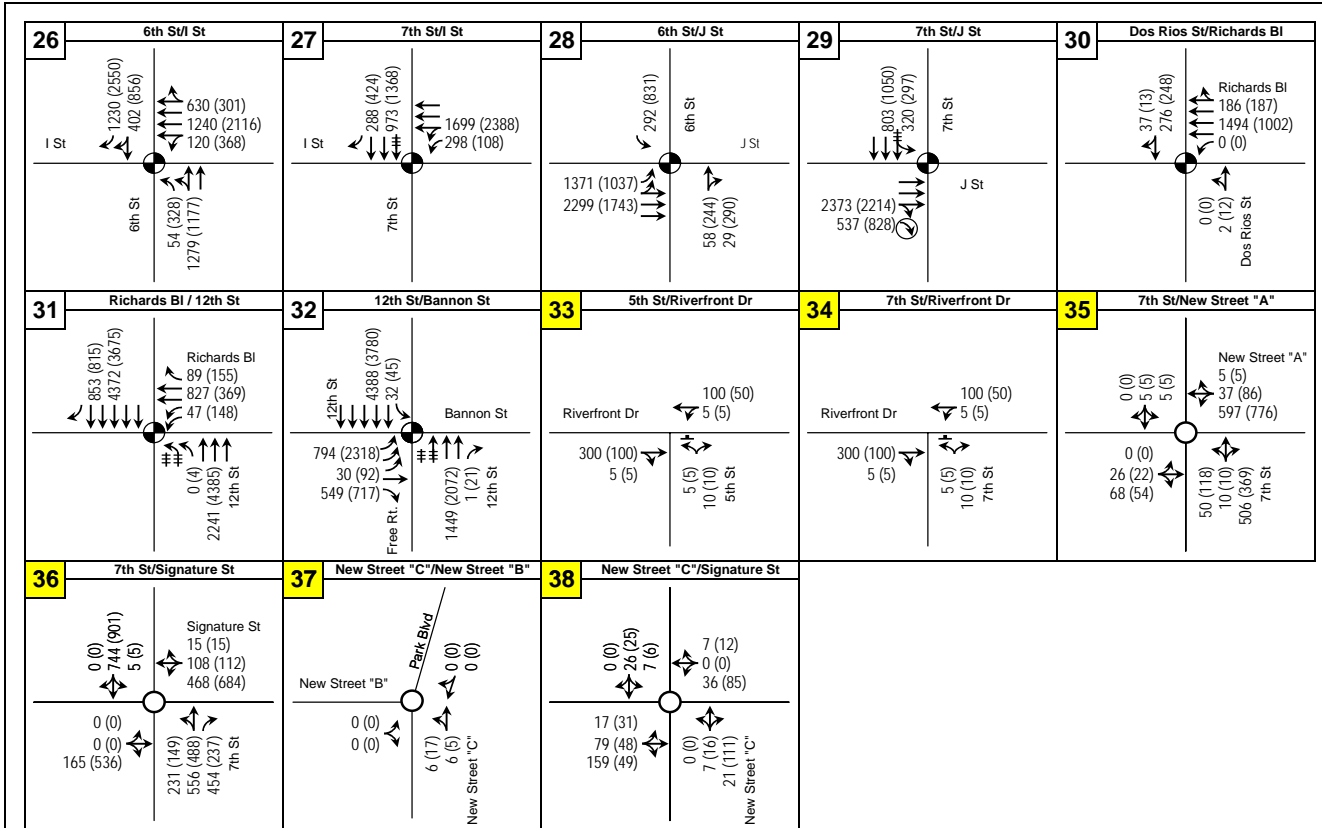
Note: Highlighting indicates lane or traffic control change from Long-Term (2030) No Project conditions

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Township 9 Traffic Study



Figure A.1
LONG-TERM (2030) PLUS OFFICE OPTION
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



KEY

- 31 (27) = AM (PM) peak hour traffic volume
- = Signalized intersection
- = Roundabout intersection
- ↔ = Intersection approach lane
- ↻ = Lane provided during AM peak, only

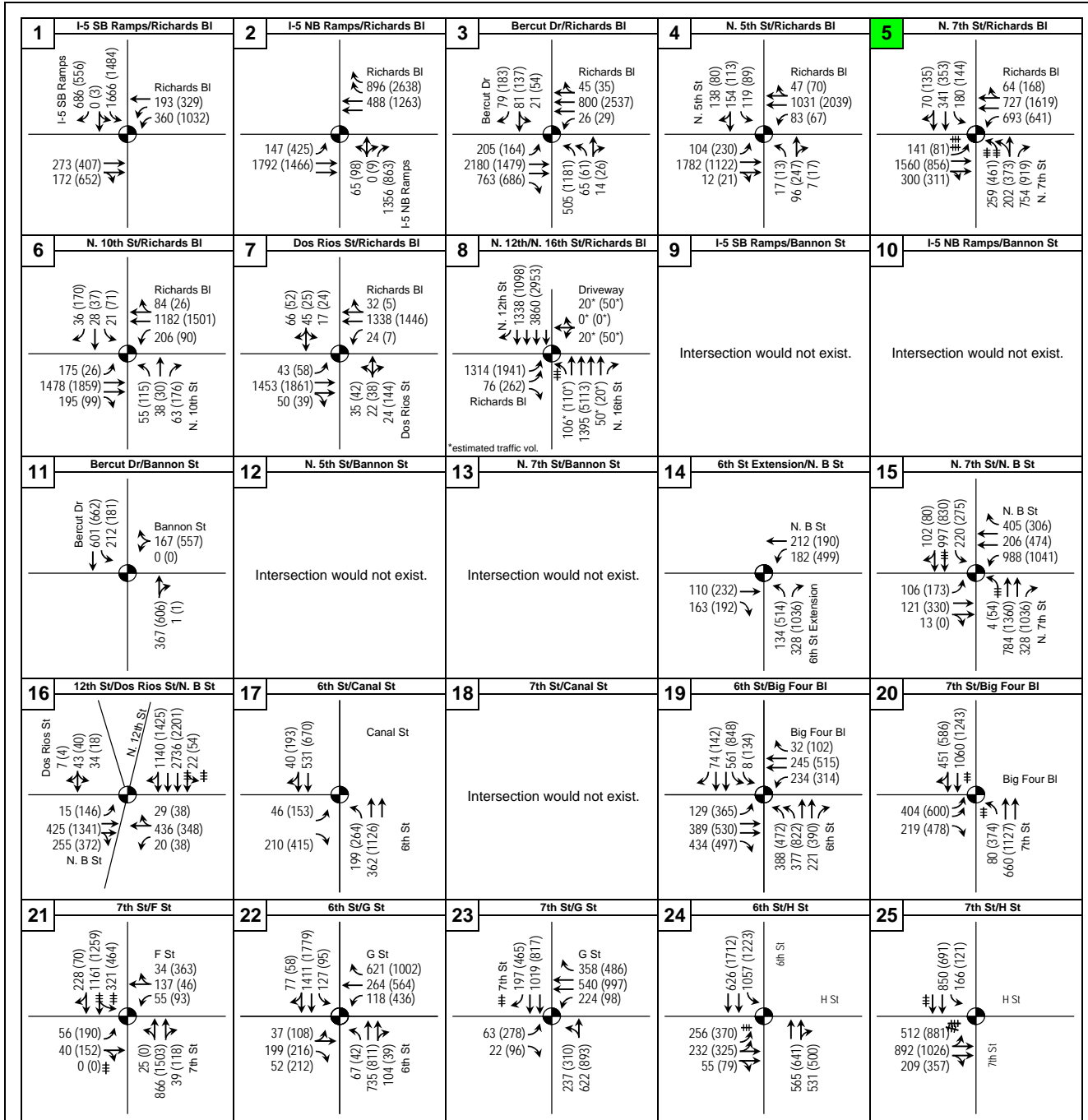
Note: Highlighting indicates lane or traffic control change from Long-Term (2030) No Project conditions.

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Township 9 Traffic Study



Figure A.1
LONG-TERM (2030) PLUS OFFICE OPTION
TRAFFIC VOLUMES,
LANES, AND TRAFFIC CONTROLS



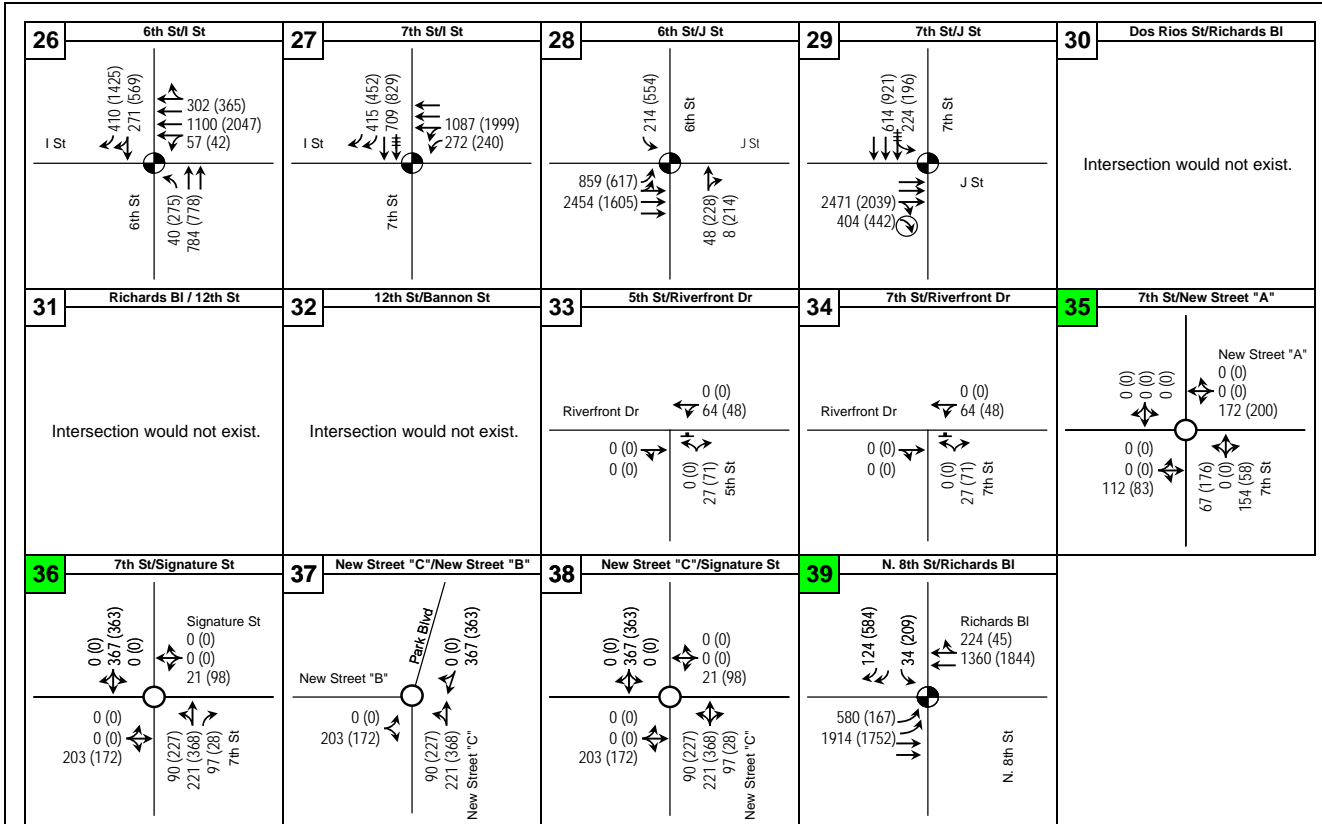
KEY
 31 (27) = AM (PM) peak hour traffic volume
 ● = Signalized intersection
 ○ = Roundabout intersection
 ↖ = Intersection approach lane
 ⊙ = Lane provided during AM peak, only

Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street

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 Township 9 Traffic Study



Figure A.1
NEAR-TERM (2013) PLUS RESIDENTIAL
OPTION WITH 8TH ST TRAFFIC VOLS,
LANES, AND TRAFFIC CONTROLS



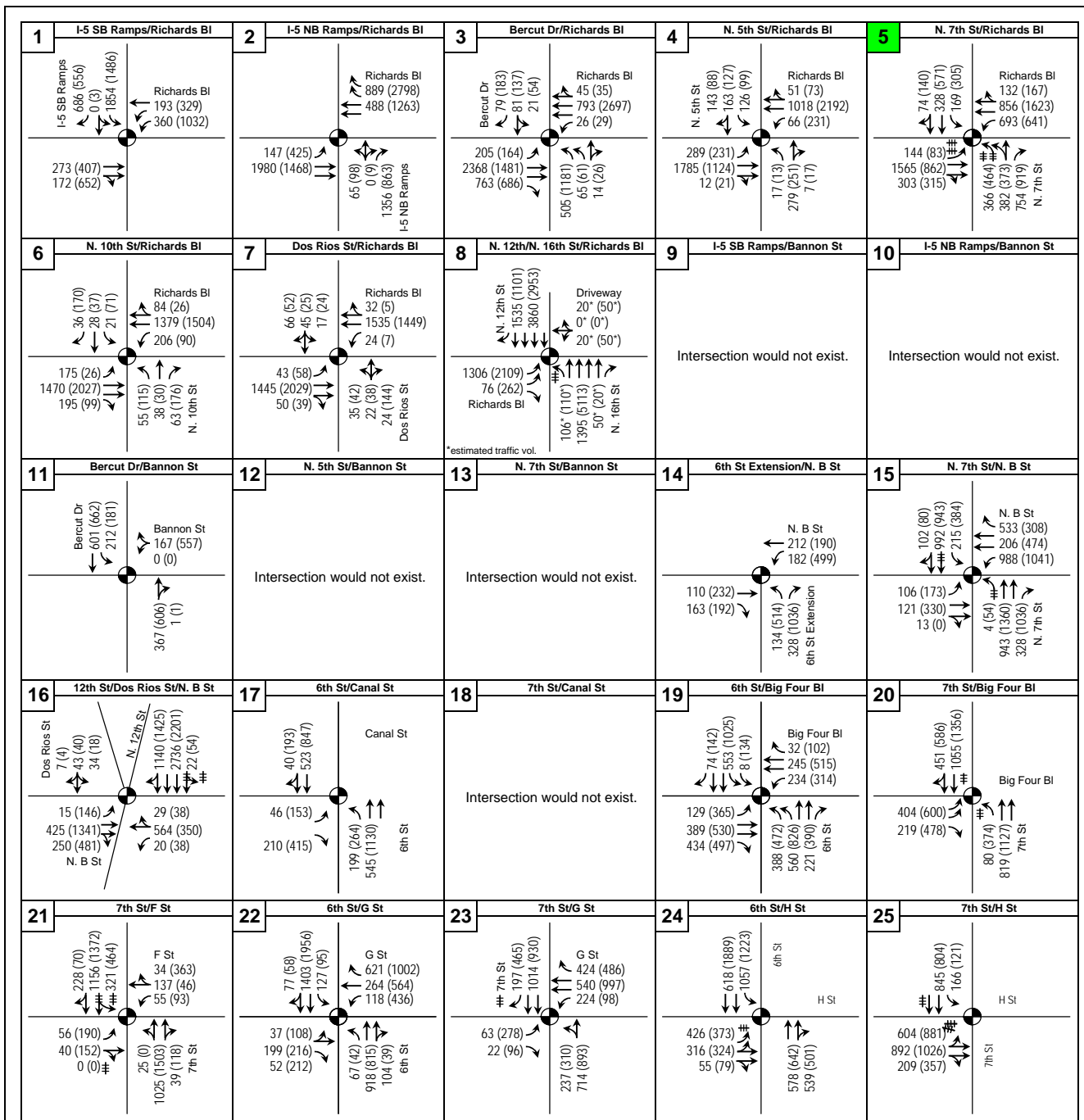
KEY
 31 (27) = AM (PM) peak hour traffic volume
 ● = Signalized intersection
 ○ = Roundabout intersection
 ↖ = Intersection approach lane
 ⊙ = Lane provided during AM peak, only

Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street.

Dowling Associates, Inc.
Township 9 Traffic Study



Figure A.1
NEAR-TERM (2013) PLUS RESIDENTIAL
OPTION WITH 8TH ST TRAFFIC VOLS,
LANES, AND TRAFFIC CONTROLS



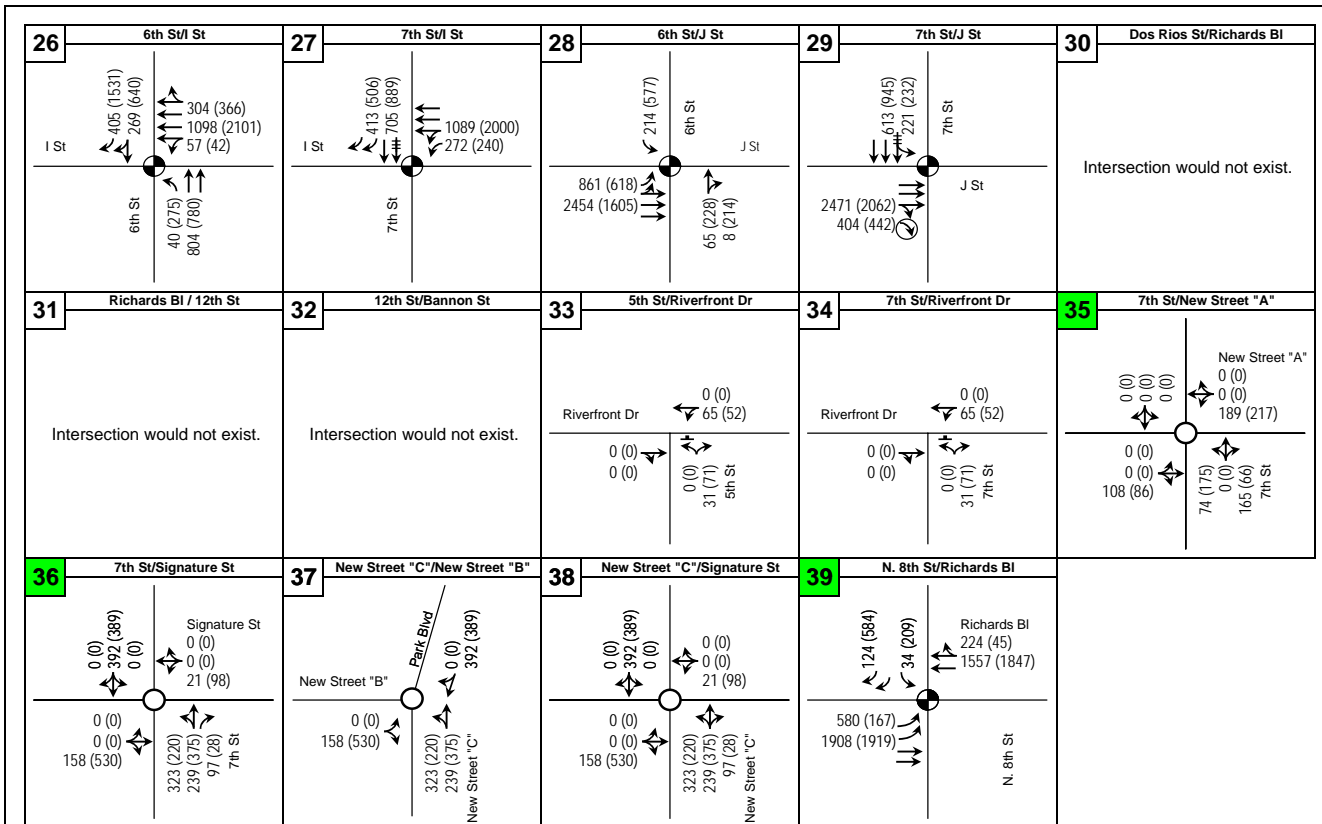
- KEY**
 31 (27) = AM (PM) peak hour traffic volume
 ● = Signalized intersection
 ○ = Roundabout intersection
 ↖ = Intersection approach lane
 ⊙ = Lane provided during AM peak, only

Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street

Dowling Associates, Inc.
 Township 9 Traffic Study



Figure A.1
NEAR-TERM (2013) PLUS OFFICE OPTION
WITH 8TH ST TRAFFIC VOLS, LANES, AND
TRAFFIC CONTROLS



KEY

- 31 (27) = AM (PM) peak hour traffic volume
- ⊙ = Signalized intersection
- = Roundabout intersection
- ↔ = Intersection approach lane
- ↔ (with circle) = Lane provided during AM peak, only

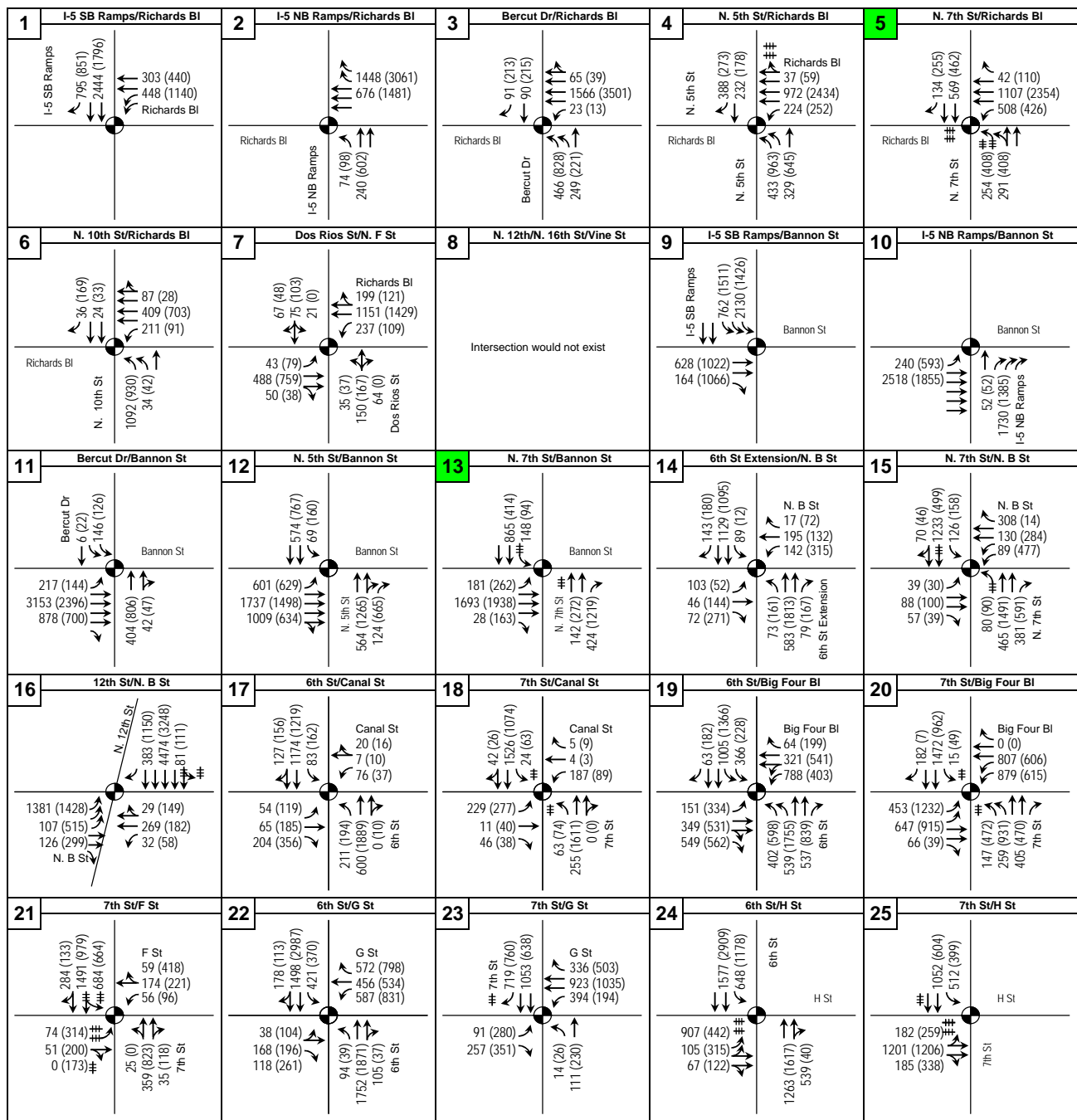
Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street.

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Township 9 Traffic Study



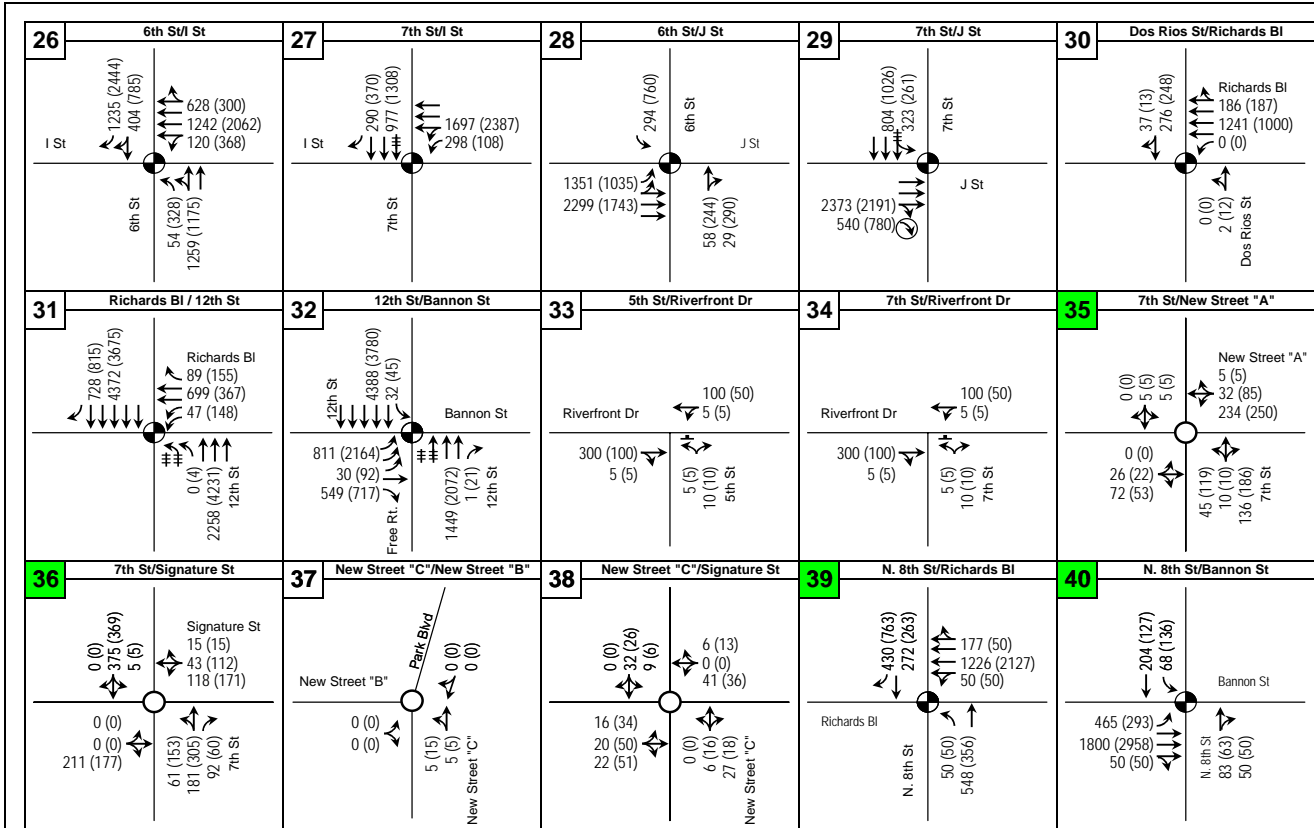
**Figure A.1
NEAR-TERM (2013) PLUS OFFICE OPTION
WITH 8TH ST TRAFFIC VOLS, LANES, AND
TRAFFIC CONTROLS**



- KEY**
 31 (27) = AM (PM) peak hour traffic volume
 ● = Signalized intersection
 ○ = Roundabout intersection
 ↖ = Intersection approach lane
 ⊙ = Lane provided during AM peak, only

Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street





KEY

- 31 (27) = AM (PM) peak hour traffic volume
- = Signalized intersection
- = Roundabout intersection
- ↔ = Intersection approach lane
- ↻ = Lane provided during AM peak, only

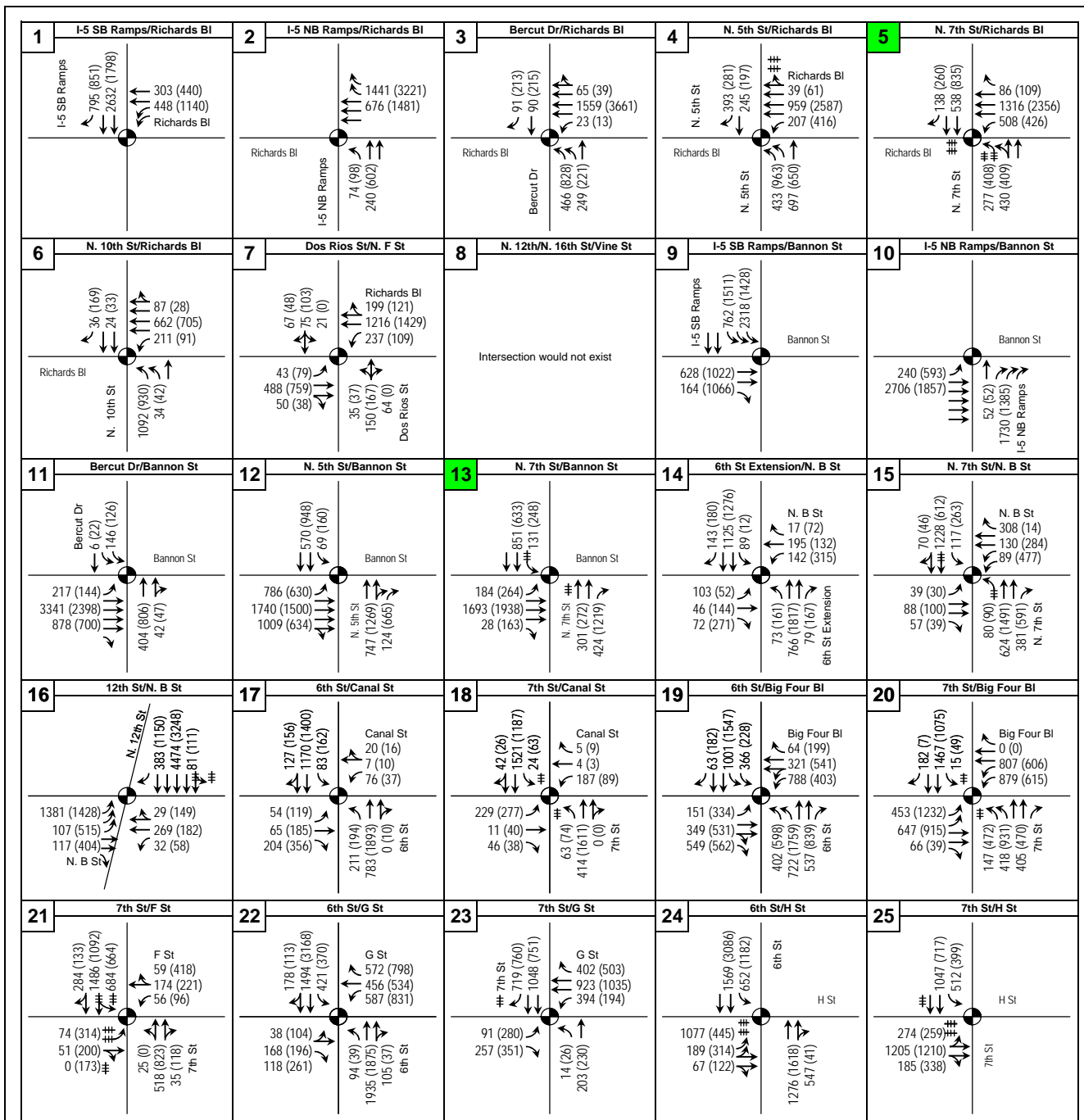
Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street.

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Township 9 Traffic Study



Figure A.1
LONG-TERM (2030) PLUS RESIDENTIAL
OPTION WITH 8TH ST TRAFFIC VOLS,
LANES, AND TRAFFIC CONTROLS



KEY

- 31 (27) = AM (PM) peak hour traffic volume
- = Signalized intersection
- = Roundabout intersection
- ↔ = Intersection approach lane
- ⊙ = Lane provided during AM peak, only

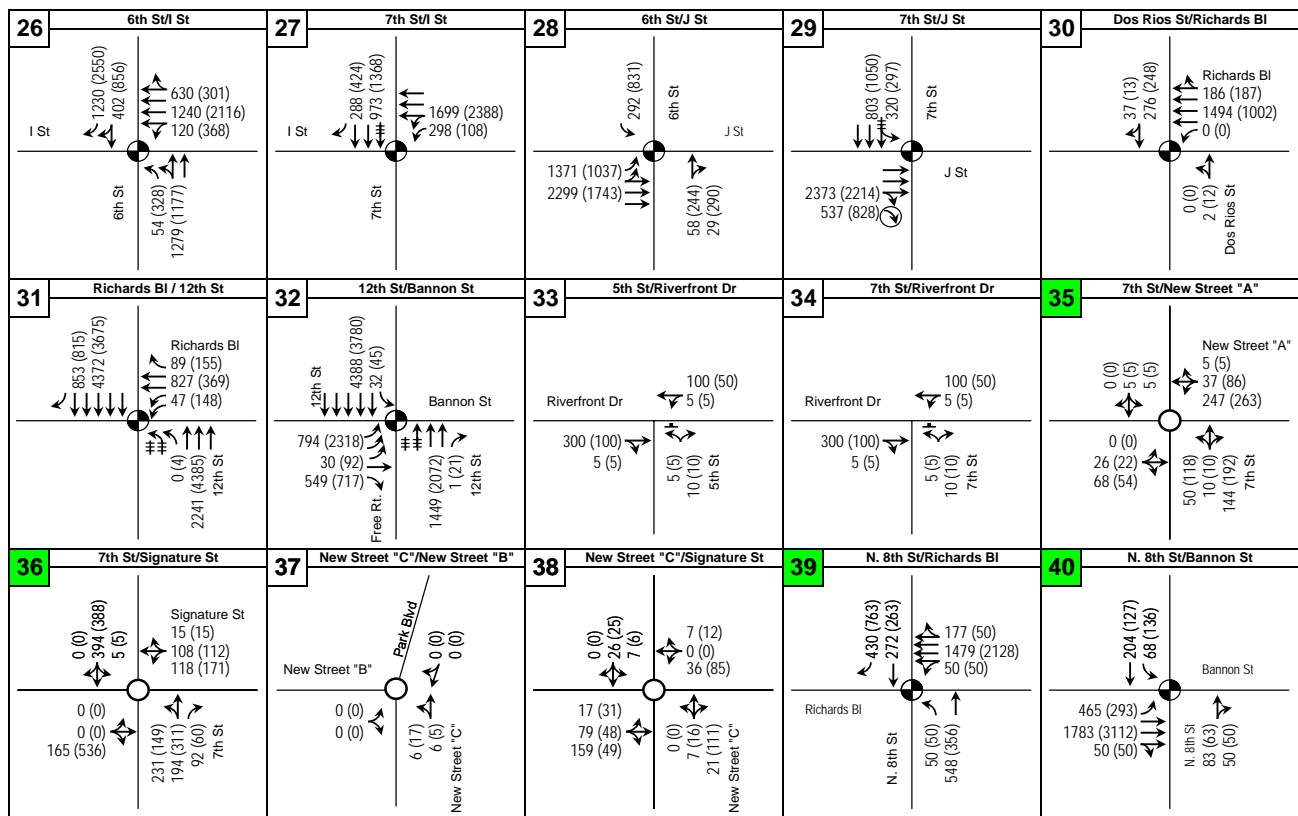
Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street

Dowling Associates, Inc.

Township 9 Traffic Study



Figure A.1
LONG-TERM (2030) PLUS OFFICE OPTION
WITH 8TH ST TRAFFIC VOLS, LANES, AND
TRAFFIC CONTROLS



KEY

- 31 (27) = AM (PM) peak hour traffic volume
- = Signalized intersection
- = Roundabout intersection
- ↔ = Intersection approach lane
- ↻ = Lane provided during AM peak, only

Note: Highlighting indicates traffic volumes that would change as a result of adding 8th Street.

Dowling Associates, Inc.

Township 9 Traffic Study



Figure A.1
LONG-TERM (2030) PLUS OFFICE OPTION
WITH 8TH ST TRAFFIC VOLS, LANES, AND
TRAFFIC CONTROLS

Queue Analysis Summary Tables

Township 9 Traffic Study - Queuing Analysis

Existing No Project Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100								300	
	AM Queue (ft)		#142		7	3						#559	55	
	PM Queue (ft)		#229		8	2						#262	52	
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m59	m8			113	45		107	168				
	PM Queue (ft)	m#224	m4			230	#497		71	31				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150			150					100			100	
	AM Queue (ft)	75	287		21	83			57	7		31	29	
	PM Queue (ft)	80	102		19	243			123	11		41	46	
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	36	257		18	132		19			19	19		
	PM Queue (ft)	22	129		18	#455		18	15		19			
5 N 7th St / Richards Blvd	Storage Length (ft)	200			200			200		100	150			
	AM Queue (ft)	40	422		173	143		60	60	20	15	21		
	PM Queue (ft)	21	203		91	393		154	156	31	22	40		
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150		75	
	AM Queue (ft)	135	130	18	22	195		17	22	6	17	15	20	
	PM Queue (ft)	35	123	15	14	266		19	16	10	53	32	40	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	12	98		16	113			35			26		
	PM Queue (ft)	11	101		7	170			36			29		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		36		37	81						47	#384	
	PM Queue (ft)		143		m57	m82						48	178	
23 7th St & G St	Storage Length (ft)				344									
	AM Queue (ft)											129		
	PM Queue (ft)											141		
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)				35	57			2					
	PM Queue (ft)		116		23	46			6					
25 7th St & H St	Storage Length (ft)													
	AM Queue (ft)		67								38	75		
	PM Queue (ft)		39								27	91		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					120		m27	67			21	11	
	PM Queue (ft)					422		#195	121			#221	#222	
27 7th St & I St	Storage Length (ft)												100	
	AM Queue (ft)				32	69						10		
	PM Queue (ft)				27	255						108	139	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	156	275						19		m21			
	PM Queue (ft)	m60	167						127		m22			
29 7th St & J St	Storage Length (ft)			100										
	AM Queue (ft)		45									89		
	PM Queue (ft)		30									121		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Baseline No Project Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 1-5 SB Ramps / Richards Blvd	Storage Length (ft)				100									300
	AM Queue (ft)		#191		m8	m3						#1072		91
	PM Queue (ft)		#242		m41	m5						#470		50
2 1-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m43	m9			122	46		#548	#583				
	PM Queue (ft)	m#196	m6			#407	#826		86	109				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150			150					100				100
	AM Queue (ft)	67	#1174		30	97			96	12		53		43
	PM Queue (ft)	148	190		21	545			189	15		63		63
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	47	604		23	233		27			28		26	
	PM Queue (ft)	25	326		22	#797		23	19		25			
5 N 7th St / Richards Blvd	Storage Length (ft)	200			200			200		200	150			
	AM Queue (ft)	#806	#971		239	546		288	#492	44	65		191	
	PM Queue (ft)	152	#808		138	#851		336	338	83	277		#1352	
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150			75
	AM Queue (ft)	186	213	19	28	375		26	32	16	24	22	27	
	PM Queue (ft)	47	385	17	18	288		29	24	24	83	50	56	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	16	197		19	241			36				25	
	PM Queue (ft)	12	#443		9	219			53				28	
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300				300
	AM Queue (ft)	#381			39		40		#183	58	m14			
	PM Queue (ft)	#920			137		107		m#111	#990	m4			
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		30		39	#375						#398		63
	PM Queue (ft)		108		m56	m132						190		57
23 7th St & G St	Storage Length (ft)						1							
	AM Queue (ft)											160		
	PM Queue (ft)											#342		
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		3		35	57			3					
	PM Queue (ft)		164		23	46			m4					
25 7th St & H St	Storage Length (ft)													
	AM Queue (ft)		123								41	98		
	PM Queue (ft)		110								m12	m126		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					137		m26	m65			20	7	
	PM Queue (ft)					485		m#179	m121			#227	#229	
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				32	80						11		
	PM Queue (ft)				53	282						153	227	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	156	311						44		m20			
	PM Queue (ft)	m55	201						#213		m23			
29 7th St & J St	Storage Length (ft)			200										
	AM Queue (ft)		65									99		
	PM Queue (ft)		41									182		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Baseline with Project (Scenario A) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100								300
	AM Queue (ft)		#201		m8	m3						#1169	103
	PM Queue (ft)		#268		m38	m5						#736	50
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300			
	AM Queue (ft)	m40	m9			165	57		#605	#638			
	PM Queue (ft)	m#136	m7			#471	#1003		121	218			
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150			150					100			100
	AM Queue (ft)	67	#1328		30	163			96	13		53	43
	PM Queue (ft)	148	372		24	#745			189	15		63	63
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150						150		
	AM Queue (ft)	174	650		23	421		28			143	60	
	PM Queue (ft)	#443	398		22	#1197		23	19		109		
5 N 7th St / Richards Blvd	Storage Length (ft)	200			200			200		200	150		
	AM Queue (ft)	#939	#1231		239	#791		348	#708	52	281	#973	
	PM Queue (ft)	351	#908		138	#1335		#729	#743	194	#548	#2044	
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150		75
	AM Queue (ft)	186	292	20	28	428		26	32	16	24	22	27
	PM Queue (ft)	47	477	17	18	400		29	24	24	83	50	56
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150								
	AM Queue (ft)	17	272		23	276			36			25	
	PM Queue (ft)	13	#537		9	309			54			29	
8 N 12th St / Richards Blvd	Storage Length (ft)				90			200		300			300
	AM Queue (ft)	#557			40		40		#183	57	m15		
	PM Queue (ft)	#1051			151		107		m#111	#990	m4		
16 12th St & North B St	Storage Length (ft)				125								
	AM Queue (ft)		41		40	#480						#398	63
	PM Queue (ft)		117		m66	m291						190	57
23 7th St & G St	Storage Length (ft)												
	AM Queue (ft)						2					#354	
	PM Queue (ft)				20							#485	
24 6th St & H St	Storage Length (ft)												
	AM Queue (ft)		3		35	57			3				
	PM Queue (ft)		164		23	46			m3				
25 7th St & H St	Storage Length (ft)												
	AM Queue (ft)		123								m20	m138	
	PM Queue (ft)		110								m8	m137	
26 6th St & I St	Storage Length (ft)												
	AM Queue (ft)					154		m26	m65			20	7
	PM Queue (ft)					516		m#179	m121			#229	#230
27 7th St & I St	Storage Length (ft)												100
	AM Queue (ft)				37	80						10	
	PM Queue (ft)				67	282						200	#308
28 6th St & J St	Storage Length (ft)												
	AM Queue (ft)	156	311						44		m18		
	PM Queue (ft)	m55	201						#213		m23		
29 7th St & J St	Storage Length (ft)			200									
	AM Queue (ft)		65									123	
	PM Queue (ft)		48									212	

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queueing Analysis

Baseline with Project (Scenario B) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100									300
	AM Queue (ft)		#221		m8	m3						#1349		120
	PM Queue (ft)		#383		m13	m2						#1039		109
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m36	m10			164	57		#704	#741				
	PM Queue (ft)	m141	m17			m343	m#1678		#232	242				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150			150					100				100
	AM Queue (ft)	67	#1614		30	160			96	14		53		43
	PM Queue (ft)	m#140	549		21	#810			184	16		62		130
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150						150			
	AM Queue (ft)	#624	#786		23	450		28			150	61		
	PM Queue (ft)	#873	481		m7	m552		34	26		#290	138		
5 N 7th St / Richards Blvd	Storage Length (ft)	200			200			200		200	150			
	AM Queue (ft)	#1059	#1241		239	#1003		#686	#965	58	267	#948		
	PM Queue (ft)	m309	m#886		138	#1337		#725	#752	196	#899	#2553		
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150			75
	AM Queue (ft)	186	288	20	28	541		26	32	16	24	22		27
	PM Queue (ft)	47	578	18	18	401		29	24	24	83	50		56
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	17	270		23	#396			36			25		
	PM Queue (ft)	13	#620		9	310			55			29		
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300				300
	AM Queue (ft)	#551			39		40		#183	57	m15			
	PM Queue (ft)	#1167			162		107		m#111	#990	m4			
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		41		41	#670						#398		63
	PM Queue (ft)		165		m#88	m293						190		57
23 7th St & G St	Storage Length (ft)						2							
	AM Queue (ft)											#348		
	PM Queue (ft)				29							#582		
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		3		35	57			3					
	PM Queue (ft)		164		23	46			m3					
25 7th St & H St	Storage Length (ft)													
	AM Queue (ft)		123								m20	m137		
	PM Queue (ft)		109								m8	m158		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					154		m26	m65			20	7	
	PM Queue (ft)					534		m#179	m121			#230	#231	
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				36	80						10		
	PM Queue (ft)				74	282						240	#332	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	156	311						44		m18			
	PM Queue (ft)	m55	201						#213		m23			
29 7th St & J St	Storage Length (ft)			200										
	AM Queue (ft)		65									122		
	PM Queue (ft)		49	17								237		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Year 2013 Near Term No Project Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100						300		300	
	AM Queue (ft)		158		m151	m152					#1009	#1010		
	PM Queue (ft)		#551		m#437	m114					#734	#736		
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m71	m87			137			#883	#892				
	PM Queue (ft)	m#371	m115			m251	m125		#498	365				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150		150	150			200						100
	AM Queue (ft)	m55	m627	m142	#58	58		200	74				#181	49
	PM Queue (ft)	m#174	m370	m122	m20	#864		#681	m53				#322	#230
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m25	3		m11	m4		33			35	37		
	PM Queue (ft)	m41	m5		m8	m246		27	22		31			
5 N 7th St / Richards Blvd	Storage Length (ft)	200			200			200			200			
	AM Queue (ft)	#576	#746		#858	284		243	#456	277	62	#119		
	PM Queue (ft)	#141	#107		#463	536		#353	#365	#807	#278	#467		
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150			75
	AM Queue (ft)	m121	m302	m9	209	214		75	55	38	36	44	29	
	PM Queue (ft)	m20	m519	m13	123	97		139	46	59	91	54	67	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m8	462		20	325			78				101	
	PM Queue (ft)	m14	183		9	275			212				80	
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300				300
	AM Queue (ft)	#839			68		58		#261	153	28			
	PM Queue (ft)	#1104			156		107		m#80	m#1305	m5			
11 Bercut Dr / Bannon St	Storage Length (ft)										90			
	AM Queue (ft)								153		m125	m94		
	PM Queue (ft)				#209				#355		m112	m237		
14 6th St Extension & North B St	Storage Length (ft)			150	150									
	AM Queue (ft)		70	34	m184	52		144		82				
	PM Queue (ft)		198	53	m#388	m26		#534		39				
15 N 7th St & North B St	Storage Length (ft)	150			150		150			150	150			
	AM Queue (ft)	91	64		#509	183	100	m10	175		#110	#392		
	PM Queue (ft)	#266	#242		#510	m#497	m35	m72	357	#851	#241	250		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		320		47	#656						#1064		134
	PM Queue (ft)		m#767		m31	m129						#1031		70
17 6th St & Canal St	Storage Length (ft)	150						150						
	AM Queue (ft)	54		58				181	12			40		
	PM Queue (ft)	m119		69				m137	m12			m184		
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150	150		150	100			150
	AM Queue (ft)	138	148	130	m#294	m68	m5	#222	96	48	m5	103	3	
	PM Queue (ft)	#495	197	#316	m#215	m109	m9	#300	211	97	77	253	70	

Township 9 Traffic Study - Queuing Analysis

Year 2013 Near Term No Project Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
20 7th St & Big Four Blvd	Storage Length (ft)			150				150						
	AM Queue (ft)	58		1				m20	m0			m39		
	PM Queue (ft)	229		275				m110	m105			m#624		
21 7th St & F St	Storage Length (ft)													
	AM Queue (ft)	#109	51		#94	159			#484			#705		
	PM Queue (ft)	#308	150		#131	141			#839			m#716		
22 6th St & G St	Storage Length (ft)			150	165			100			150			
	AM Queue (ft)		#286	33	m114	m224	#379	m#52	m234		#167	#493		
	PM Queue (ft)		#418	126	m#448	m270	m#952	m19	m165		110	#863		
23 7th St & G St	Storage Length (ft)	60			100			75						150
	AM Queue (ft)	m43		m5	#247	174	79	m211	m266			m258	m15	
	PM Queue (ft)	m#229		m30	97	#453	#323	m#209	m308			m225	m66	
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		m83		35	57			#593		m#1041			
	PM Queue (ft)		m52		23	46			m#275		m#812			
25 7th St & H St	Storage Length (ft)										175			
	AM Queue (ft)		m109								m35	117		
	PM Queue (ft)		m241								m85	m183		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					43		m11	m127			#166	87	
	PM Queue (ft)					#577		m#248	m#364			#1082	#1011	
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				60	111						m33	m10	
	PM Queue (ft)				97	378						m276	m138	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	m#877	#507						25		m77			
	PM Queue (ft)	m#359	#168						148		m#208			
29 7th St & J St	Storage Length (ft)													
	AM Queue (ft)		m338									209		
	PM Queue (ft)		m#135									90		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queueing Analysis

Year 2013 Near Term with Project (Scenario A) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100						300		300	
	AM Queue (ft)		163		m149	m151					#1087	#1087		
	PM Queue (ft)		#551		m#436	m114					#967	#972		
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m68	m84			112	6		#886	#905				
	PM Queue (ft)	m#250	m76			m231	m632		#498	430				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150		150	150			200						100
	AM Queue (ft)	m49	m612	m114	m24	110		197	75			#186	49	
	PM Queue (ft)	m#150	478	m116	m19	#969		#680	m54			#322	#230	
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150						150			
	AM Queue (ft)	m78	m4		m82	m140		35	115		143	289		
	PM Queue (ft)	m#376	m1		m#63	m344		28	#326		#190	199		
5 N 7th St / Richards Blvd	Storage Length (ft)	200			200			200			200			
	AM Queue (ft)	m#795	#845		#941	191		268	#668	406	#371	#422		
	PM Queue (ft)	m#272	m#446		#462	#741		#635	#845	#727	#544	#771		
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150			75
	AM Queue (ft)	m108	m484	m19	238	435		75	55	38	36	44	29	
	PM Queue (ft)	m0	m550	m15	m119	194		139	46	85	91	54	92	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m2	34		21	347				81		105		
	PM Queue (ft)	m19	263		10	381				219		80		
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300				300
	AM Queue (ft)	#1044			71		63		#261	170	29			
	PM Queue (ft)	#1234			166		107		m#80	m#1288	m5			
11 Bercut Dr / Bannon St	Storage Length (ft)										90			
	AM Queue (ft)									153	m122	m88		
	PM Queue (ft)				#196				#367		m109	m251		
14 6th St Extension & North B St	Storage Length (ft)			150	150									
	AM Queue (ft)		70	34	m176	m55		144		84				
	PM Queue (ft)		198	53	m#377	m19		#549		15				
15 N 7th St & North B St	Storage Length (ft)	150			150		150	150		150	150			
	AM Queue (ft)	88	64		#520	187	119	m6	277	126	#350	#521		
	PM Queue (ft)	#263	#243		#510	m#495	m78	m#73	#577	#831	#438	298		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		#410		#50	#758						#1112		134
	PM Queue (ft)		m#850		m43	m285						#1031		70
17 6th St & Canal St	Storage Length (ft)	150						150						
	AM Queue (ft)	54		58				80	20			107		
	PM Queue (ft)	m119		69				m143	m41			m327		
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150	150		150	100			150
	AM Queue (ft)	138	148	169	m#252	m60	m4	#222	128	48	m4	220	14	
	PM Queue (ft)	#495	197	#380	m#191	m95	m7	#300	317	113	68	360	84	

Township 9 Traffic Study - Queueing Analysis

Year 2013 Near Term with Project (Scenario A) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
20 7th St & Big Four Blvd	Storage Length (ft)			150				150						
	AM Queue (ft)	58		2				m43	m11			m40		
	PM Queue (ft)	135		85				m85	m107			m#751		
21 7th St & F St	Storage Length (ft)													
	AM Queue (ft)	#109	51		#94	159			#549			#843		
	PM Queue (ft)	#308	150		#131	141			#1005			m#745		
22 6th St & G St	Storage Length (ft)			150	165			100			150			
	AM Queue (ft)		m#282	m22	m114	m239	m#349	m46	m246		137	#641		
	PM Queue (ft)		m#235	m70	m#439	m205	m#984	m22	m236		110	#987		
23 7th St & G St	Storage Length (ft)	60			100			75						150
	AM Queue (ft)	m56		m5	#266	182	122	m#210	m299			m364	m56	
	PM Queue (ft)	m#219		m18	113	#456	#497	m206	m#440			m#348	m170	
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		m127		35	57			m#575		m#925			
	PM Queue (ft)		m#182		23	46			m#330		m#738			
25 7th St & H St	Storage Length (ft)										175			
	AM Queue (ft)		m143								m83	m222		
	PM Queue (ft)		m221								m41	m204		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					44		m12	m131			#291	107	
	PM Queue (ft)					#623		m#244	m#398			m#1222	m#1138	
27 7th St & I St	Storage Length (ft)												100	
	AM Queue (ft)				70	118						m29	m11	
	PM Queue (ft)				103	389						m241	m138	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	m#895	#535						29		m73			
	PM Queue (ft)	m#409	#245						158		m#164			
29 7th St & J St	Storage Length (ft)													
	AM Queue (ft)		m347									237		
	PM Queue (ft)		m#107									121		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Year 2013 Near Term with Project (Scenario B) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100						300		300	
	AM Queue (ft)		168		m193	m205					#1215	#1215		
	PM Queue (ft)		#561		m#468	m124					#963	#966		
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m65	m76			170	11		#982	#986				
	PM Queue (ft)	m#292	m74			m210	m179		#510	433				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150		150	150			200						100
	AM Queue (ft)	m34	m455	m37	m17	154		202	74				#194	50
	PM Queue (ft)	m#151	m436	m100	m12	m#872		#694	m54				#334	#242
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m191	m118		m55	m334		31	284		#208	288		
	PM Queue (ft)	m#318	m36		m150	m423		28	#316		#202	220		
5 N 7th St / Richards Blvd	Storage Length (ft)	200			200			200			200			
	AM Queue (ft)	m#763	#860		#982	431		#383	#951	391	#361	#425		
	PM Queue (ft)	m#254	m#550		#589	#866		#587	#789	#1048	#768	#932		
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150			75
	AM Queue (ft)	m109	m455	m16	212	292		75	55	38	36	44	29	
	PM Queue (ft)	m16	m426	m11	m#136	212		139	46	97	91	54	92	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m3	199		20	424			82				110	
	PM Queue (ft)	m5	79		9	348			230				85	
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300				300
	AM Queue (ft)	#1059			73		61		#261	161	28			
	PM Queue (ft)	#1349			174		107		m#80	m#1305	m5			
11 Bercut Dr / Bannon St	Storage Length (ft)										90			
	AM Queue (ft)								153		m118	m75		
	PM Queue (ft)				#209				#355		m106	m231		
14 6th St Extension & North B St	Storage Length (ft)			150	150									
	AM Queue (ft)		70	34	m155	m12		127		35				
	PM Queue (ft)		198	53	m#388	m19		#539		24				
15 N 7th St & North B St	Storage Length (ft)	150			150		150	150		150	150			
	AM Queue (ft)	90	64		#521	185	#241	m7	#399		#356	#518		
	PM Queue (ft)	#296	#248		#535	m#496	m64	m#81	#603	#864	#545	325		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		359		43	#943							#1195	134
	PM Queue (ft)		m#931		m42	m281							#1031	70
17 6th St & Canal St	Storage Length (ft)	150						150						
	AM Queue (ft)	54		58				98	19				168	
	PM Queue (ft)	m118		69				m153	m13				m385	
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150	150		150	100			150
	AM Queue (ft)	138	148	168	m#253	m61	m4	#222	192	48	m5	162	1	
	PM Queue (ft)	#495	197	#327	m#169	m92	m7	#300	308	102	m67	#492	m84	

Township 9 Traffic Study - Queuing Analysis

Year 2013 Near Term with Project (Scenario B) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
20 7th St & Big Four Blvd	Storage Length (ft)			150				150						
	AM Queue (ft)	58		2				m20	m0			m41		
	PM Queue (ft)	246		#317				m104	m142			m#768		
21 7th St & F St	Storage Length (ft)													
	AM Queue (ft)	#109	51		#94	159			#642			#863		
	PM Queue (ft)	#320	152		#131	141			#1005			m#782		
22 6th St & G St	Storage Length (ft)			150	165			100			150			
	AM Queue (ft)		m#268	m11	m90	m231	m#388	m38	m275		#167	#661		
	PM Queue (ft)		m#283	m47	m#496	m310	m#1039	m0	m247		#147	#1139		
23 7th St & G St	Storage Length (ft)	60			100			75						150
	AM Queue (ft)	m52		m4	#273	176	#200	m#204	m311			m357	m51	
	PM Queue (ft)	m168		m20	94	#482	#507	m#211	m358			m#364	m150	
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		m#297		35	57			m#592		m#884			
	PM Queue (ft)		m#185		23	46			m#254		m#351			
25 7th St & H St	Storage Length (ft)										175			
	AM Queue (ft)		m117								m49	m292		
	PM Queue (ft)		m247								m74	m241		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					64		m10	m128			m#348	m114	
	PM Queue (ft)					#659		m#229	m#380			m#1330	m#1241	
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				69	118						m31	m11	
	PM Queue (ft)				111	422						m231	m141	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	m#898	#535						35		m76			
	PM Queue (ft)	m#452	#284						151		m#130			
29 7th St & J St	Storage Length (ft)													
	AM Queue (ft)		m348									234		
	PM Queue (ft)		m99									178		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Year 2030 Long Term No Project Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100								300
	AM Queue (ft)				163	114						659	363
	PM Queue (ft)				#108	98						470	#714
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)						150	300					
	AM Queue (ft)					74	7	21	103				
	PM Queue (ft)					m78	m#590	m35	143				
3 Bercut Dr / Richards Blvd	Storage Length (ft)				150			200					150
	AM Queue (ft)				m8	81		132	m88			105	68
	PM Queue (ft)				m2	#716		m#395	m34			#265	#286
4 N 5th St / Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				m124	156		180	32			48	230
	PM Queue (ft)				m82	#505		m#426	m45			50	199
5 N 7th St / Richards Blvd	Storage Length (ft)				200			200					200
	AM Queue (ft)				143	106	m1	172	278			262	
	PM Queue (ft)				138	227		#323	276			#247	
6 N 10th St/Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				164	63		341	21			21	31
	PM Queue (ft)				61	69		318	22			23	120
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150								
	AM Queue (ft)	44	140		142	#360			105			79	
	PM Queue (ft)	#83	182		89	#425			132			86	
9 I-5 SB Ramps / Bannon St	Storage Length (ft)			100							150		
	AM Queue (ft)		235	63							225	m104	
	PM Queue (ft)		376								m143	m434	
10 I-5 NB Ramps / Bannon St	Storage Length (ft)	150								300			
	AM Queue (ft)	53	366						31	478			
	PM Queue (ft)	116	277						27	281			
11 Bercut Dr / Bannon St	Storage Length (ft)	150									150		
	AM Queue (ft)	m40	336	m10					198		#108	m5	
	PM Queue (ft)	m49	237	39					#238		m53	m18	
12 N 5th St / Bannon St	Storage Length (ft)	150		50						150	150		
	AM Queue (ft)	97	79						146	13	62	66	
	PM Queue (ft)	m136	#261						#240	#479	170	96	
13 N 7th St / Bannon St	Storage Length (ft)	150								150	150		
	AM Queue (ft)	m126	73	m1					105	1	m97	71	
	PM Queue (ft)	m125	m182	m0					m84	450	m146	m36	
14 6th St Extension & North B St	Storage Length (ft)	150		150	150			150			150	150	150
	AM Queue (ft)	110	51	34	144	183	m16	92	72	2	m78	272	m25
	PM Queue (ft)	54	118	56	#338	117	44	m136	195	m1	m17	m246	m11
15 N 7th St & North B St	Storage Length (ft)	150		150	150		150	150		150			
	AM Queue (ft)	63	47	24	52	61	69	m75	57			134	
	PM Queue (ft)		38	16	#257	112	15	m84	376	4	#97	124	
16 12th St & North B St	Storage Length (ft)	150			150								150
	AM Queue (ft)	#711	m61		53	164						m#699	m101
	PM Queue (ft)	#718	#313	95	84	124						m563	
17 6th St & Canal St	Storage Length (ft)	150		150	150			150			150		
	AM Queue (ft)	66	74	61	m85	m5		200	161		98	87	
	PM Queue (ft)	m88	m128	m39	m52	m21		186	561		m#169	265	
18 7th St & Canal St	Storage Length (ft)	150		150	150		150	150			150		
	AM Queue (ft)	#237	m14	16	179	11	9	m67	m4		m32	86	
	PM Queue (ft)	m#291	m10	m7	89	9	13	91	399		m68	m234	

Township 9 Traffic Study - Queuing Analysis

Year 2030 Long Term No Project Conditions

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150		150	100		150	
	AM Queue (ft)	144	217	127	m#101	m75	m0	#247	166	104	#236	300	m36
	PM Queue (ft)	#501	#572	150	m#232	m232	m88	#454	#953	#918	#208	#775	145
20 7th St & Big Four Blvd	Storage Length (ft)	150		150	150		150		150	150		150	
	AM Queue (ft)	m169	m#299	m12	#501	#450		#106	64	64	m14	#605	29
	PM Queue (ft)	m#719	m456	m21	#444	#470		m178	m234	m108	#121	#579	16
21 7th St & F St	Storage Length (ft)												
	AM Queue (ft)	#202	90		#151	#405			#256			#1398	
	PM Queue (ft)	#630	435		#189	#1045			#598			m#1034	
22 6th St & G St	Storage Length (ft)			150	165		100			150			
	AM Queue (ft)		m#277	m14	m#756	m172	m102	m47	m#538		#596	#626	
	PM Queue (ft)		m#400	m164	m#976	m180	m#492	m20	m123		#566	#1686	
23 7th St & G St	Storage Length (ft)	60			100		60					150	
	AM Queue (ft)	m39		m29	m#388	294	m38	m8	m17			310	#527
	PM Queue (ft)	m77		m72	m173	#480	111	m20	m47			170	#504
24 6th St & H St	Storage Length (ft)												
	AM Queue (ft)		m105		35	57			m#862		m#377		
	PM Queue (ft)		m77		23	46			m#416		m334		
25 7th St & H St	Storage Length (ft)									175			
	AM Queue (ft)		m235							m381	m216		
	PM Queue (ft)		m126							213	117		
26 6th St & I St	Storage Length (ft)												
	AM Queue (ft)						#222		m16	m#365		#1096	#646
	PM Queue (ft)						#767		m224	m#494		m#1709	m#1590
27 7th St & I St	Storage Length (ft)											100	
	AM Queue (ft)				120	324						m197	m80
	PM Queue (ft)				53	511						m287	m214
28 6th St & J St	Storage Length (ft)												
	AM Queue (ft)	m95	m95						83		m73		
	PM Queue (ft)	m#312	m#288						#259		m#306		
29 7th St & J St	Storage Length (ft)			100									
	AM Queue (ft)		256	m126								272	
	PM Queue (ft)		m78	m75								143	
30 Dos Rios & Richards Blvd	Storage Length (ft)												
	AM Queue (ft)					86			4			52	
	PM Queue (ft)					64			9			92	
31 Richards Blvd & 12th St	Storage Length (ft)				150							300	
	AM Queue (ft)				64	323	61		222			652	283
	PM Queue (ft)				162	97	130	m1	m#1533			612	223
32 12th St & Bannon St	Storage Length (ft)								150	150			
	AM Queue (ft)	214	42	#692									
	PM Queue (ft)	#773	87	#875									

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queueing Analysis

Year 2030 Long Term with Project (Scenario A) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100								300
	AM Queue (ft)				#184	115						723	352
	PM Queue (ft)				#111	103						#642	#714
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)						150	300					
	AM Queue (ft)					73	45	32	104				
	PM Queue (ft)					m70	m#634	m32	135				
3 Bercut Dr / Richards Blvd	Storage Length (ft)				150			200					150
	AM Queue (ft)				m7	80		200	m75			105	77
	PM Queue (ft)				m2	m#722		m#413	m59			#266	#287
4 N 5th St / Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				m183	m188		183	38			165	297
	PM Queue (ft)				m82	m#555		m307	m223			165	#303
5 N 7th St / Richards Blvd	Storage Length (ft)				200			200					200
	AM Queue (ft)				169	137	10	m183	#431			#491	
	PM Queue (ft)				172	333	m13	#465	#432			#434	
6 N 10th St/Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				164	79		341	21			21	31
	PM Queue (ft)				63	98		319	22			22	140
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150								
	AM Queue (ft)	44	140		144	#389			99			77	
	PM Queue (ft)	#85	186		89	#491			130			84	
9 I-5 SB Ramps / Bannon St	Storage Length (ft)			100							150		
	AM Queue (ft)		236	64							m253	m103	
	PM Queue (ft)		376								m187	m426	
10 I-5 NB Ramps / Bannon St	Storage Length (ft)	150								300			
	AM Queue (ft)	55	369						31	478			
	PM Queue (ft)	107	291						28	290			
11 Bercut Dr / Bannon St	Storage Length (ft)	150									150		
	AM Queue (ft)	m38	400	m7					198		#85	m5	
	PM Queue (ft)	m43	295	22					#242		m53	m18	
12 N 5th St / Bannon St	Storage Length (ft)	150		50						150	150		
	AM Queue (ft)	166	160						82	6	86	145	
	PM Queue (ft)	m#637	#454						#641	m#487	172	155	
13 N 7th St / Bannon St	Storage Length (ft)	150								150	150		
	AM Queue (ft)	m219	124	m1					80	2	m83	m47	
	PM Queue (ft)	m133	m191	m0					m136	m800	m175	m48	
14 6th St Extension & North B St	Storage Length (ft)	150		150	150			150		150	150		150
	AM Queue (ft)	110	51	34	m143	m186	m14	95	61	2	m75	312	m26
	PM Queue (ft)	56	124	59	#383	139	45	m110	m#710	m0	m14	m261	m16
15 N 7th St & North B St	Storage Length (ft)	150		150	150		150	150		150	150		
	AM Queue (ft)	#53	45	37	53	62	71	m#108	106	m1	118	111	
	PM Queue (ft)	39	43	12	#293	117	16	m68	#612	m13	#253	44	
16 12th St & North B St	Storage Length (ft)	150		150	150								150
	AM Queue (ft)	#714	m62	m42	53	164						m#699	m101
	PM Queue (ft)	#718	#313	143	84	124						m566	
17 6th St & Canal St	Storage Length (ft)	150		150	150			150			150		
	AM Queue (ft)	66	74	61	m83	m3		154	198		m102	128	
	PM Queue (ft)	m88	m128	m45	m52	m20		#218	#768		m#173	m222	
18 7th St & Canal St	Storage Length (ft)	150		150	150		150	150			150		
	AM Queue (ft)	#258	m16	25	184	11	10	m68	m47		m12	73	
	PM Queue (ft)	m#297	m21	m9	93	9	13	91	465		m#78	m304	

Township 9 Traffic Study - Queuing Analysis

Year 2030 Long Term with Project (Scenario A) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150	150		150	100		150
	AM Queue (ft)	144	217	135	m#102	m76	m0	#247	204	104	#228	#484	m23
	PM Queue (ft)	#525	#597	198	m245	m249	m61	#479	#1161	#925	#215	#913	142
20 7th St & Big Four Blvd	Storage Length (ft)	150		150	150			150		150	150		150
	AM Queue (ft)	m169	m246	m12	#536	#450		#106	93	64	m13	#744	m34
	PM Queue (ft)	m#741	m427	m14	#444	#495		m188	m259	m136	#121	#673	16
21 7th St & F St	Storage Length (ft)												
	AM Queue (ft)	#202	90		#151	#405			#360			#1598	
	PM Queue (ft)	#642	#478		#189	#1081			#805			m#1204	
22 6th St & G St	Storage Length (ft)			150	165			100			150		
	AM Queue (ft)		m#297	m18	m#756	m198	m139	m45	m#551		#596	#800	
	PM Queue (ft)		m#304	m126	m#1058	m174	m#197	m17	m#524		#578	#1875	
23 7th St & G St	Storage Length (ft)	60			100			75					150
	AM Queue (ft)	m38		m43	m#395	311	m45	m8	m48			402	#527
	PM Queue (ft)	m54		m87	m183	#480	100	m17	m150			230	#504
24 6th St & H St	Storage Length (ft)												
	AM Queue (ft)		m126		35	57			m#802		m#354		
	PM Queue (ft)		m#246		23	46			m#233		m188		
25 7th St & H St	Storage Length (ft)										175		
	AM Queue (ft)		m232								m303	m311	
	PM Queue (ft)		m123								#365	172	
26 6th St & I St	Storage Length (ft)												
	AM Queue (ft)					m#250		m15	m#375			#1228	#847
	PM Queue (ft)					#811		m217	m#563			m#1696	m#1578
27 7th St & I St	Storage Length (ft)												100
	AM Queue (ft)				87	#309						m152	m79
	PM Queue (ft)				55	546						m284	m285
28 6th St & J St	Storage Length (ft)												
	AM Queue (ft)	m143	m139						80		m78		
	PM Queue (ft)	m#372	m#283						#259		m#302		
29 7th St & J St	Storage Length (ft)			100									
	AM Queue (ft)		m251	m116								m262	
	PM Queue (ft)		m80	m82								174	
30 Dos Rios & Richards Blvd	Storage Length (ft)												
	AM Queue (ft)					94			4			53	
	PM Queue (ft)					84			9			92	
31 Richards Blvd & 12th St	Storage Length (ft)				150								300
	AM Queue (ft)				64	363	63		255			652	305
	PM Queue (ft)				160	178	127	m1	m#1569			625	468
32 12th St & Bannon St	Storage Length (ft)									150	150		
	AM Queue (ft)	244	42	#692									
	PM Queue (ft)	#808	86	#864									

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Year 2030 Long Term with Project (Scenario B) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1 1-5 SB Ramps / Richards Blvd	Storage Length (ft)				100								300
	AM Queue (ft)				#212	121						#1038	341
	PM Queue (ft)				#110	113						#646	#714
2 1-5 NB Ramps / Richards Blvd	Storage Length (ft)						150	300					
	AM Queue (ft)					63	36	21	97				
	PM Queue (ft)					m71	m#856	m32	135				
3 Bercut Dr / Richards Blvd	Storage Length (ft)				150			200					150
	AM Queue (ft)				m8	85		184	m90			105	74
	PM Queue (ft)				m2	m#728		m#438	m99			#271	#292
4 N 5th St / Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				m176	m192		m154	m126			171	296
	PM Queue (ft)				m121	m#577		m#342	m281			182	#318
5 N 7th St / Richards Blvd	Storage Length (ft)				200			200					200
	AM Queue (ft)				196	218	46	m221	#520			#503	
	PM Queue (ft)				173	381	m17	m#450	#439			#668	
6 N 10th St/Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				164	126		341	21			21	31
	PM Queue (ft)				63	98		319	22			22	140
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150								
	AM Queue (ft)	44	140		144	#421			94			77	
	PM Queue (ft)	#85	186		89	#491			130			84	
9 1-5 SB Ramps / Bannon St	Storage Length (ft)			100							150		
	AM Queue (ft)			68							m258	m88	
	PM Queue (ft)			376							m187	m425	
10 1-5 NB Ramps / Bannon St	Storage Length (ft)	150								300			
	AM Queue (ft)	m50	#417						33	503			
	PM Queue (ft)	106	264						28	290			
11 Bercut Dr / Bannon St	Storage Length (ft)	150									150		
	AM Queue (ft)	m37	525	m0					198		#108	m5	
	PM Queue (ft)	m42	292	21					#242		m52	m17	
12 N 5th St / Bannon St	Storage Length (ft)	150		50						150	150		
	AM Queue (ft)	#704	147						#348	3	73	122	
	PM Queue (ft)	m#637	#455						#643	m#509	173	167	
13 N 7th St / Bannon St	Storage Length (ft)	150								150	150		
	AM Queue (ft)	m163	m97	m1					115		m49	m17	
	PM Queue (ft)	m178	m284	m0					m107	m340	m232	m37	
14 6th St Extension & North B St	Storage Length (ft)	150		150	150			150			150	150	150
	AM Queue (ft)	110	51	34	m143	m185	m14	96	157	1	m78	m315	m22
	PM Queue (ft)	56	124	116	#385	139	46	m125	m#711	m0	m12	m343	m26
15 N 7th St & North B St	Storage Length (ft)	150		150	150		150	150		150	150		
	AM Queue (ft)	#63	45	19	53	62	71	m#106	186	m26	117	114	
	PM Queue (ft)	42	37	13	#305	119	16	m68	#638	m15	#372	113	
16 12th St & North B St	Storage Length (ft)	150		150	150								150
	AM Queue (ft)	#710	m61	m37	53	164						m#699	m101
	PM Queue (ft)	#718	#313	#336	84	124						m576	
17 6th St & Canal St	Storage Length (ft)	150		150	150			150			150		
	AM Queue (ft)	66	74	61	m80	m3		m120	194		m44	92	
	PM Queue (ft)	m88	m128	m60	m49	m16		#218	#772		m#143	m254	
18 7th St & Canal St	Storage Length (ft)	150		150	150		150	150					150
	AM Queue (ft)	#258	24	38	184	11	10	m71	54		m28	87	
	PM Queue (ft)	m#282	m13	m9	93	9	13	92	465		m#82	m342	

Township 9 Traffic Study - Queuing Analysis

Year 2030 Long Term with Project (Scenario B) Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150	150		150	100		150
	AM Queue (ft)	144	217	135	m#101	m76	m0	#247	281	113	#227	#482	m23
	PM Queue (ft)	#537	#609	219	m176	m179	m61	#491	#1139	#902	#227	#1080	144
20 7th St & Big Four Blvd	Storage Length (ft)	150		150	150			150		150	150		150
	AM Queue (ft)	m169	m#273	m12	#524	#450		#106	146	64	m13	#741	m31
	PM Queue (ft)	m#744	m468	m22	#456	#495		m206	m181	m35	#121	#770	16
21 7th St & F St	Storage Length (ft)												
	AM Queue (ft)	#202	90		#151	#405			#492			#1643	
	PM Queue (ft)	#654	#490		#189	#1081			#717			m#1245	
22 6th St & G St	Storage Length (ft)			150	165			100			150		
	AM Queue (ft)		m#285	m18	m#797	m174	m92	m41	m#579		#608	#784	
	PM Queue (ft)		m#400	m164	m#984	m167	m#509	m18	m#123		#566	#1937	
23 7th St & G St	Storage Length (ft)	60			100			75					150
	AM Queue (ft)	m38		m41	m#382	294	m50	m8	m75			400	#527
	PM Queue (ft)	m101		m14	m185	#480	114	m19	m165			276	#496
24 6th St & H St	Storage Length (ft)												
	AM Queue (ft)		m182		35	57			m#662		m#368		
	PM Queue (ft)		m#237		23	46			m#418		m277		
25 7th St & H St	Storage Length (ft)										175		
	AM Queue (ft)		m254								m#347	m#336	
	PM Queue (ft)		m131								#367	176	
26 6th St & I St	Storage Length (ft)												
	AM Queue (ft)					m#255		m15	m#399			m#1263	m#836
	PM Queue (ft)					#831		m220	m#517			m#1708	m#1550
27 7th St & I St	Storage Length (ft)												100
	AM Queue (ft)				87	#310						m73	m22
	PM Queue (ft)				59	577						m204	m#267
28 6th St & J St	Storage Length (ft)												
	AM Queue (ft)	m133	m132						80		m78		
	PM Queue (ft)	m#334	m#284						#259		m#327		
29 7th St & J St	Storage Length (ft)			100									
	AM Queue (ft)		m258	m121								m279	
	PM Queue (ft)		m86	m95								180	
30 Dos Rios & Richards Blvd	Storage Length (ft)												
	AM Queue (ft)					m89			4			54	
	PM Queue (ft)					84			9			92	
31 Richards Blvd & 12th St	Storage Length (ft)				150								300
	AM Queue (ft)				64	#477	63		249			652	465
	PM Queue (ft)				160	179	127	m1	m#1617			625	470
32 12th St & Bannan St	Storage Length (ft)									150	150		
	AM Queue (ft)	238	42	#692									
	PM Queue (ft)	#879	85	#841									

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Baseline with Project (Scenario A) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100						300			
	AM Queue (ft)		227		m245	m247					#717			
	PM Queue (ft)		#371		m77	m15					#345	62		
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m141	m192			182	92		#857	#895				
	PM Queue (ft)	m#295	m104			#403	#374		213	262				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150			150					100				100
	AM Queue (ft)	m40	m#1282		m22	165			116	14		63	49	
	PM Queue (ft)	m#155	523		21	#610			184	16		62	115	
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150						150			
	AM Queue (ft)	m66	m93		27	357		34			171	104		
	PM Queue (ft)	#317	347		m8	m394		35	26		168	97		
5 N 7th St / Richards Blvd	Storage Length (ft)	200		150	200			200		200	200			200
	AM Queue (ft)	#892	1024		#360	#791		349	#714	53	290	#729	47	
	PM Queue (ft)	#543	#421		m#186	#1150		#734	#749	234	#498	#1077	150	
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150			75
	AM Queue (ft)	199	270	15	m12	303		m25	m32	m13	26	23	29	
	PM Queue (ft)	m19	m#468	m5	m4	#447		19	16	16	52	31	55	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m9	220		20	238			34			24		
	PM Queue (ft)	m0	17		8	279			65			35		
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300				300
	AM Queue (ft)	#557			40		40		#182	45	m22			#537
	PM Queue (ft)	#1051			151		107		m#111	#989	m3			
15 N 7th St & North B St	Storage Length (ft)													
	AM Queue (ft)		45			122	57	11	153		129	242		
	PM Queue (ft)		45			104	76	74	#614		#307	396		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		41		47	#500						#398		63
	PM Queue (ft)		117		m61	m274						190		57
21 7th St & F St	Storage Length (ft)													
	AM Queue (ft)				33	40			114		87	156		
	PM Queue (ft)		43		50				#269		#134	#371		
23 7th St & G St	Storage Length (ft)													
	AM Queue (ft)				4		13					72		
	PM Queue (ft)				20							81		

Township 9 Traffic Study - Queuing Analysis

Baseline with Project (Scenario A) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		5		35	57			3					
	PM Queue (ft)		16		23	46			m50					
25 7th St & H St	Storage Length (ft)													
	AM Queue (ft)		63								13	106		
	PM Queue (ft)		64									62		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					154		m26	m65			13	3	
	PM Queue (ft)					226		m#180	m121			#230	#231	
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				37	80						76	32	
	PM Queue (ft)				67	282						182	#225	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	156	311						44		m18			
	PM Queue (ft)	m18	62						#213		m19			
29 7th St & J St	Storage Length (ft)													
	AM Queue (ft)		65									123		
	PM Queue (ft)		56									105		
36 Signature St & 7th St	Storage Length (ft)			150				75						
	AM Queue (ft)				74	74		115	197	36		244		
	PM Queue (ft)				318	318		m135	m17	m0		847		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Baseline with Project (Scenario B) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100						300			
	AM Queue (ft)		246		m251	m253					#851			
	PM Queue (ft)		#383		m13	m2						#402	67	
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m133	m194			303	130		#1055	#1084				
	PM Queue (ft)	m#281	m45			m314	m#416		#232	242				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150			150					100				100
	AM Queue (ft)	m37	m430		m16	106			116	16		63	49	
	PM Queue (ft)	m#140	258		20	#810			184	16		62	130	
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150						150			
	AM Queue (ft)	m237	98		27	476		35			181	70		
	PM Queue (ft)	#369	481		m0	m663		34	26		#290	138		
5 N 7th St / Richards Blvd	Storage Length (ft)	200		150	200			200		200	200			200
	AM Queue (ft)	#1047	#998		#383	#955		#644	#921	56	#305	#757	51	
	PM Queue (ft)	m#546	m#394		m#210	#1201		#743	#771	281	#761	#1484	m161	
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150			75
	AM Queue (ft)	201	265	15	m10	348		m26	m32	m15	26	23	29	
	PM Queue (ft)	m14	m#638	m7	m4	#449		19	16	16	52	31	55	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m8	199		20	#323			34			24		
	PM Queue (ft)	m0	#582		8	280			66			35		
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300				300
	AM Queue (ft)	#551			39		40		#182	45	m23			#537
	PM Queue (ft)	#1167			162		107		m#111	#989	m3			167
15 N 7th St & North B St	Storage Length (ft)													
	AM Queue (ft)		45			122	118	15	205		#165	#396		
	PM Queue (ft)		45			104	77	#97	#663		#411	489		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		41		46	#689						#398		63
	PM Queue (ft)		165		m#87	m276						190	57	57
21 7th St & F St	Storage Length (ft)													
	AM Queue (ft)				33	40			71		42	155		
	PM Queue (ft)		84		100				229		100	443		

Township 9 Traffic Study - Queuing Analysis

Baseline with Project (Scenario B) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
23 7th St & G St	Storage Length (ft)													
	AM Queue (ft)				12		39					71		
	PM Queue (ft)				34							181		
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		5		35	57			3					
	PM Queue (ft)		160		23	46			m7					
25 7th St & H St	Storage Length (ft)													
	AM Queue (ft)		63								19	134		
	PM Queue (ft)		63								m0	86		
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					153		m26	m65			13	3	
	PM Queue (ft)					239		m#180	m123			#231	#233	
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				36	80						76	32	
	PM Queue (ft)				74	282						240	#325	
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	156	311						44		m18			
	PM Queue (ft)		329						356					
29 7th St & J St	Storage Length (ft)													
	AM Queue (ft)		65									122		
	PM Queue (ft)		535									124		
36 Signature St & 7th St	Storage Length (ft)			150				75						
	AM Queue (ft)													
	PM Queue (ft)		102	100	#403	#403		m130	m28	m0		#975		

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queueing Analysis

Year 2013 Near Term with Project (Scenario A) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100						300		300	
	AM Queue (ft)		163		m147	m149					#1087	#1087		
	PM Queue (ft)		#561		m#468	m124					#960	#965		
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m68	m84			111	6		#886	#905				
	PM Queue (ft)	m#292	m74			m214	m160		#510	433				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150		150	150			200					100	
	AM Queue (ft)	m49	m612	m114	m18	107		197	75			#186	49	
	PM Queue (ft)	m#150	m477	m107	m14	m#865		#681	m53			#322	#230	
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150						150			
	AM Queue (ft)	m78	m4		m91	117		35	115		143	289		
	PM Queue (ft)	m#280	m8		m56	m#938		28	#313		#182	197		
5 N 7th St / Richards Blvd	Storage Length (ft)	200		150	200			200		200	200		200	
	AM Queue (ft)	m#295	455	m62	#396	282		131	#583	115	#350	#291	58	
	PM Queue (ft)	m#132	m223	m59	#200	#801		230	#652	193	m#503	m#380	m#366	
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150		75	
	AM Queue (ft)	m142	m611	m23	238	347		75	55	38	36	44	29	
	PM Queue (ft)	m27	m635	m31	m116	158		139	46	84	91	54	92	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m2	24		21	347				81		105		
	PM Queue (ft)	m12	170		10	369				221		82		
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300			300	
	AM Queue (ft)	#1044			71		63		#261	170	29			
	PM Queue (ft)	#1234			166		107		m#80	m#1305	m5			
11 Bercut Dr / Bannon St	Storage Length (ft)										90			
	AM Queue (ft)								153		m123	m88		
	PM Queue (ft)				#209				#355		m108	m225		
14 6th St Extension & North B St	Storage Length (ft)			150	150									
	AM Queue (ft)		70	34	m177	m55		87		15				
	PM Queue (ft)		198	53	m#389	m25		#543		24				
15 N 7th St & North B St	Storage Length (ft)	150			150		150	150		150	150			
	AM Queue (ft)	82	42		#531	166	35	m8	261	20	#350	#521		
	PM Queue (ft)	#285	#236		#535	m#494	m64	m#73	#590	#848	#403	287		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		#410		#50	#758						#1112	134	
	PM Queue (ft)		m#850		m42	m279						#1031	70	
17 6th St & Canal St	Storage Length (ft)	150						150						
	AM Queue (ft)	54		58				m158	8			126		
	PM Queue (ft)	m119		69				m141	m13			m215		
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150	150		150	100		150	
	AM Queue (ft)	#163	148	179	m#244	m57	m4	#222	128	48	m6	72	1	
	PM Queue (ft)	#495	197	#323	m#192	m101	m8	#300	307	101	m#81	341	84	

Township 9 Traffic Study - Queueing Analysis

Year 2013 Near Term with Project (Scenario A) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
20 7th St & Big Four Blvd	Storage Length (ft)			150				150						
	AM Queue (ft)	178		126				m24	m0			m0		
	PM Queue (ft)	228		288				m105	m140			m#691		
21 7th St & F St	Storage Length (ft)													
	AM Queue (ft)	#109	51		#94	159			#549			#841		
	PM Queue (ft)	#320	152		#131	141			#993			m#760		
22 6th St & G St	Storage Length (ft)			150	165			100			150			
	AM Queue (ft)		#298	34	m119	m235	m#394	m45	m226		#156	#618		
	PM Queue (ft)		m#248	m78	m#439	m250	m#1007	m19	m246		#135	#974		
23 7th St & G St	Storage Length (ft)	60			100			75						150
	AM Queue (ft)	m45		m4	#271	172	113	m#219	m280				m364	m54
	PM Queue (ft)	m#240		m25	97	#479	#505	m#187	m325				m272	m57
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		m144		35	57				m#562		m#976		
	PM Queue (ft)		m#184		23	46				m#319		m#764		
25 7th St & H St	Storage Length (ft)													
	AM Queue (ft)		m143									175		
	PM Queue (ft)		m247									m30	m182	
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					54		m12	m130			#276	96	
	PM Queue (ft)					#622		m#253	m#410			m#1213	m#1131	
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				70	118							m33	m11
	PM Queue (ft)				105	411							m215	m126
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	m#895	#517						29		m74			
	PM Queue (ft)	m#387	#245						158		m#166			
29 7th St & J St	Storage Length (ft)													
	AM Queue (ft)		m347										235	
	PM Queue (ft)		m#118										248	
36 Signature St & 7th St	Storage Length (ft)			150				75						
	AM Queue (ft)				81	81		m87	m74	m0			239	
	PM Queue (ft)				267	267		m166	m47	m0			#790	

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queueing Analysis

Year 2013 Near Term with Project (Scenario B) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100						300		300	
	AM Queue (ft)		163		m132	m136					#1240	#1240		
	PM Queue (ft)		#561		m#468	m124					#963	#966		
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)	100								300				
	AM Queue (ft)	m61	m74			112			#960	#965				
	PM Queue (ft)	m#292	m74			m210	m180		#510	433				
3 Bercut Dr / Richards Blvd	Storage Length (ft)	150		150	150			200					100	
	AM Queue (ft)	m33	m416	m32	m4	35		200	74			#194	50	
	PM Queue (ft)	m#151	m436	m100	m12	m#872		#694	m54			#334	#242	
4 N 5th St / Richards Blvd	Storage Length (ft)	150			150						150			
	AM Queue (ft)	m191	m259		m67	m222		31	284		#208	288		
	PM Queue (ft)	m#318	m36		m178	m#1019		28	#316		#202	220		
5 N 7th St / Richards Blvd	Storage Length (ft)	200		150	200			200		200	200		200	
	AM Queue (ft)	m#703	423	m26	#448	#582		182	#823	121	#370	#242	46	
	PM Queue (ft)	m#125	m214	m44	#229	#845		231	#665	201	m#725	m#529	m#329	
6 N 10th St/Richards Blvd	Storage Length (ft)	150		100	150			125			150		75	
	AM Queue (ft)	m149	m606	m44	234	511		75	55	38	36	44	29	
	PM Queue (ft)	m24	m602	m25	m#135	274		139	46	97	91	54	92	
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150									
	AM Queue (ft)	m2	31		20	424			82			110		
	PM Queue (ft)	m5	79		m2	m248			230			85		
8 N 12th St / Richards Blvd	Storage Length (ft)							200		300			300	
	AM Queue (ft)	#1059			73		61		#261	161	28			
	PM Queue (ft)	#1490			m110		128		#219	#1767	27			
11 Bercut Dr / Bannon St	Storage Length (ft)										90			
	AM Queue (ft)								153		m120	m81		
	PM Queue (ft)				#209				#355		m106	m231		
14 6th St Extension & North B St	Storage Length (ft)			150	150									
	AM Queue (ft)		70	34	m175	m56		71		7				
	PM Queue (ft)		198	53	m#388	m19		#537		26				
15 N 7th St & North B St	Storage Length (ft)	150			150		150	150		150	150			
	AM Queue (ft)	77	38		#531	168	#242	m7	#399		#356	#518		
	PM Queue (ft)	#294	#247		#535	m#496	m71	m#81	#603	#864	#545	325		
16 12th St & North B St	Storage Length (ft)				125									
	AM Queue (ft)		359		43	#943						#1195	134	
	PM Queue (ft)		m#932		m43	m285						#1031	70	
17 6th St & Canal St	Storage Length (ft)	150						150						
	AM Queue (ft)	54		58				m175	13			124		
	PM Queue (ft)	m118		69				m153	m12			m385		
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150	150		150	100		150	
	AM Queue (ft)	#163	148	168	m#240	m54	m3	#222	192	48	m6	80	1	
	PM Queue (ft)	#495	197	#327	m#174	m96	m7	#300	308	102	m67	#492	m84	

Township 9 Traffic Study - Queueing Analysis

Year 2013 Near Term with Project (Scenario B) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL
20 7th St & Big Four Blvd	Storage Length (ft)			150				150						
	AM Queue (ft)	59		2				m20	m0			m41		
	PM Queue (ft)	228		#313				m102	m166			m#768		
21 7th St & F St	Storage Length (ft)													
	AM Queue (ft)	#109	51		#94	159			#642			#863		
	PM Queue (ft)	#320	152		#131	141			#1005			m#782		
22 6th St & G St	Storage Length (ft)			150	165			100			150			
	AM Queue (ft)		#275	m18	m114	m237	m#445	m38	m262		#167	#638		
	PM Queue (ft)		m#250	m80	m#423	m170	m#986	m23	m247		#135	#1088		
23 7th St & G St	Storage Length (ft)	60			100			75						150
	AM Queue (ft)	m51		m2	#269	185	#183	m#204	m324				m354	m63
	PM Queue (ft)	m#237		m25	100	#480	#506	m#211	m332				m#354	m54
24 6th St & H St	Storage Length (ft)													
	AM Queue (ft)		m#297		35	57				m#542		m#937		
	PM Queue (ft)		m#185		23	46				m#313		m#698		
25 7th St & H St	Storage Length (ft)													
	AM Queue (ft)		m117									175		
	PM Queue (ft)		m274									m29	m133	
26 6th St & I St	Storage Length (ft)													
	AM Queue (ft)					80		m13	m134				m#262	m96
	PM Queue (ft)					#657		m#239	m#394				m#1345	m#1255
27 7th St & I St	Storage Length (ft)													100
	AM Queue (ft)				69	118							m31	m11
	PM Queue (ft)				111	422							m231	m140
28 6th St & J St	Storage Length (ft)													
	AM Queue (ft)	m#898	#507							35		m17		
	PM Queue (ft)	m#437	#284							151		m#133		
29 7th St & J St	Storage Length (ft)													
	AM Queue (ft)		m350										239	
	PM Queue (ft)		m109										285	
36 Signature St & 7th St	Storage Length (ft)			150				75						
	AM Queue (ft)				81	81		m207	m63	m0			347	
	PM Queue (ft)		88	88	#351	#351		m154	m81	m0			#859	

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queueing Analysis

Year 2030 Long Term with Project (Scenario A) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100								300
	AM Queue (ft)				#209	143						723	352
	PM Queue (ft)				#108	80						#642	#714
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)												300
	AM Queue (ft)					63	57	33	104				
	PM Queue (ft)					m79	m#921	m32	135				
3 Bercut Dr / Richards Blvd	Storage Length (ft)				150								150
	AM Queue (ft)				m7	69		140	m89			105	66
	PM Queue (ft)				m2	m262		m#379	m32			#251	#272
4 N 5th St / Richards Blvd	Storage Length (ft)				150								150
	AM Queue (ft)				m196	m161		184	87			169	313
	PM Queue (ft)				m89	m#453		m#331	m243			174	#348
5 N 7th St / Richards Blvd	Storage Length (ft)				200		300		200				
	AM Queue (ft)				181	103	10	m182	#430			#491	
	PM Queue (ft)				174	255	m12	#453	#419			m116	m0
6 N 10th St/Richards Blvd	Storage Length (ft)				150								150
	AM Queue (ft)				164	79		341	21			21	31
	PM Queue (ft)				63	98		319	22			22	140
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150								
	AM Queue (ft)	44	140		144	#389				100		77	
	PM Queue (ft)	#85	186		89	#491				130		84	
9 I-5 SB Ramps / Bannion St	Storage Length (ft)			100							150		
	AM Queue (ft)			64							m253	m103	
	PM Queue (ft)			376							m187	m426	
10 I-5 NB Ramps / Bannion St	Storage Length (ft)	150								300			
	AM Queue (ft)	55	369						31	478			
	PM Queue (ft)	107	291						28	290			
11 Bercut Dr / Bannion St	Storage Length (ft)	150									150		
	AM Queue (ft)	m38	400	m7					198		#108	m5	
	PM Queue (ft)	m43	295	22					#242		m58	m19	
12 N 5th St / Bannion St	Storage Length (ft)	150		50						150	150		
	AM Queue (ft)	121	86						118	5	66	125	
	PM Queue (ft)	m#637	#454						#641	m#496	166	145	
13 N 7th St / Bannion St	Storage Length (ft)	150								150	150		
	AM Queue (ft)	m210	119	m0					83	3	m96	m58	
	PM Queue (ft)	m133	m190	m0					m151	m756	m190	m55	
14 6th St Extension & North B St	Storage Length (ft)	150		150	150			150		150	150		150
	AM Queue (ft)	110	51	34	m144	m186	m16	97	49	1	m74	340	m22
	PM Queue (ft)	56	124	103	#382	136	45	m126	m#710	m0	m14	m227	m6
15 N 7th St & North B St	Storage Length (ft)	150		150	150		150	150		150	150		
	AM Queue (ft)	#64	35	10	53	62	71	m#105	140	m6	114	106	
	PM Queue (ft)	42	47	13	#293	117	16	m68	#612	m13	#260	45	
16 12th St & North B St	Storage Length (ft)	150		150	150								150
	AM Queue (ft)	#701	70	57	53	164						m#699	m101
	PM Queue (ft)	#718	#313	143	84	124						m566	m181
17 6th St & Canal St	Storage Length (ft)	150		150	150			150			150		
	AM Queue (ft)	66	74	61	m83	m3		197	196		m104	100	
	PM Queue (ft)	m88	m128	m45	m52	m20		#218	#768		m#173	m220	
18 7th St & Canal St	Storage Length (ft)	150		150	150		150	150			150		
	AM Queue (ft)	#258	m14	19	184	11	10	m68	m41		m28	49	
	PM Queue (ft)	m#298	m25	m9	93	9	13	91	465		m#78	m277	

Township 9 Traffic Study - Queueing Analysis

Year 2030 Long Term with Project (Scenario A) - Mitigated Conditions

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
19 6th St & Big Four Blvd	Storage Length (ft)	150			150	150	150	150	150	100		150	
	AM Queue (ft)	144	217	135	m#102	m76	m0	#247	204	104	#228	#485	m20
	PM Queue (ft)	#525	#597	198	m245	m249	m61	#479	#1161	#925	#215	#913	142
20 7th St & Big Four Blvd	Storage Length (ft)	150			150	150	150	150	150	150		150	
	AM Queue (ft)	m169	m246	m12	#536	#450		#106	93	64	m14	#745	m41
	PM Queue (ft)	m#741	m427	m14	#444	#495		m188	m264	m136	#121	#673	16
21 7th St & F St	Storage Length (ft)												
	AM Queue (ft)	#202	90		#151	#405			#360			#1598	
	PM Queue (ft)	#642	#478		#189	#1081			#805			m#1204	
22 6th St & G St	Storage Length (ft)			150	165		100			150			
	AM Queue (ft)		m#297	m15	m#756	m182	m63	m45	m#551	#596	#800		
	PM Queue (ft)		m#404	m200	m#1008	m218	m#505	m18	m#122	#566	#1811		
23 7th St & G St	Storage Length (ft)	60			100		75					150	
	AM Queue (ft)	m38		m43	m#399	317	m47	m8	m52		402	#527	
	PM Queue (ft)	m117		m74	m195	#474	127	m19	m68		230	#504	
24 6th St & H St	Storage Length (ft)												
	AM Queue (ft)		m126		35	57			m#846		m#330		
	PM Queue (ft)		m#230		23	46			m#413		m298		
25 7th St & H St	Storage Length (ft)									175			
	AM Queue (ft)		m233							m303	m311		
	PM Queue (ft)		m156							#391	260		
26 6th St & I St	Storage Length (ft)												
	AM Queue (ft)					m#209		m16	m#340		#1226	#824	
	PM Queue (ft)					#818		m222	m#520		m#1684	m#1575	
27 7th St & I St	Storage Length (ft)											100	
	AM Queue (ft)				74	#322					m242	m135	
	PM Queue (ft)				55	546					m330	m315	
28 6th St & J St	Storage Length (ft)												
	AM Queue (ft)	m143	m139						80		m70		
	PM Queue (ft)	m#336	m#310						#259		m#310		
29 7th St & J St	Storage Length (ft)			100									
	AM Queue (ft)		m251	m120							m269		
	PM Queue (ft)		m80	m81							164		
30 Dos Rios & Richards Blvd	Storage Length (ft)												
	AM Queue (ft)					104			4		53		
	PM Queue (ft)					84			9		92		
31 Richards Blvd & 12th St	Storage Length (ft)				150		200					300	
	AM Queue (ft)				64	363	63		256		652	305	
	PM Queue (ft)				160	178	127	m1	m#1569		625	468	
32 12th St & Bannon St	Storage Length (ft)								150	150			
	AM Queue (ft)	244	42	#692									
	PM Queue (ft)	#808	86	#864									
36 Signature St & 7th St	Storage Length (ft)			150	350		100					150	
	AM Queue (ft)		5	4	141	43		#69	#381	56		#696	
	PM Queue (ft)		38	37	#627	118		m#208	m179	m0		#1553	

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Township 9 Traffic Study - Queuing Analysis

Year 2030 Long Term with Project (Scenario B) - Mitigated Conditions

Intersection		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1 I-5 SB Ramps / Richards Blvd	Storage Length (ft)				100								300
	AM Queue (ft)				#209	110						#1038	341
	PM Queue (ft)				#108	91						#646	#714
2 I-5 NB Ramps / Richards Blvd	Storage Length (ft)							300					
	AM Queue (ft)					52	71	21	103				
	PM Queue (ft)					m75	m#486	m32	135				
3 Bercut Dr / Richards Blvd	Storage Length (ft)				150			200					150
	AM Queue (ft)				m8	76		101	m88			105	66
	PM Queue (ft)				m2	m#254		m#383	m34			#258	#280
4 N 5th St / Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				m176	m161		m154	m120			171	296
	PM Queue (ft)				m123	m#217		m301	m208			182	#314
5 N 7th St / Richards Blvd	Storage Length (ft)				200		300	200					
	AM Queue (ft)				215	167	47	m208	#521			#503	
	PM Queue (ft)				198	302	m11	m#418	#407			m223	m0
6 N 10th St/Richards Blvd	Storage Length (ft)				150			150					150
	AM Queue (ft)				164	126		341	21			21	31
	PM Queue (ft)				72	111		319	22			22	140
7 Dos Rios St / Richards Blvd	Storage Length (ft)	150			150								
	AM Queue (ft)	44	140		144	#421			94			77	
	PM Queue (ft)	#85	186		89	#491			130			84	
9 I-5 SB Ramps / Bannon St	Storage Length (ft)			100							150		
	AM Queue (ft)		242	68							m258	m88	
	PM Queue (ft)		376								m187	m425	
10 I-5 NB Ramps / Bannon St	Storage Length (ft)	150								300			
	AM Queue (ft)	m50	#417						33	503			
	PM Queue (ft)	107	299						28	290			
11 Bercut Dr / Bannon St	Storage Length (ft)	150									150		
	AM Queue (ft)	m37	525	m0					198		#108	m5	
	PM Queue (ft)	m42	292	21					#238		m55	m19	
12 N 5th St / Bannon St	Storage Length (ft)	150		50						150	150		
	AM Queue (ft)	#704	111						#350	4	75	127	
	PM Queue (ft)	m#637	#455						#643	m#509	173	164	
13 N 7th St / Bannon St	Storage Length (ft)	150								150	150		
	AM Queue (ft)	m161	m95	m0					202		m71	m35	
	PM Queue (ft)	m178	m283	m0					m111	m340	m112	m46	
14 6th St Extension & North B St	Storage Length (ft)	150		150	150			150		150	150		150
	AM Queue (ft)	110	51	34	m142	m183	m13	96	44	1	m78	m313	m22
	PM Queue (ft)	56	124	116	#383	131	46	m125	m#711	m0	m12	m343	m27
15 N 7th St & North B St	Storage Length (ft)	150		150	150		150	150		150	150		
	AM Queue (ft)	#56	46	18	53	62	71	m87	192	m27	70	148	
	PM Queue (ft)	47	55	25	#305	119	16	m68	#638	m15	#377	43	
16 12th St & North B St	Storage Length (ft)	150		150	150								150
	AM Queue (ft)	#711	m62	m40	53	164						m#699	m101
	PM Queue (ft)	#718	#313	#336	84	124						m576	m185
17 6th St & Canal St	Storage Length (ft)	150		150	150			150			150		
	AM Queue (ft)	66	74	61	m80	m14		m102	132		m56	171	
	PM Queue (ft)	m88	m128	m60	m49	m16		#218	#772		m#143	m254	
18 7th St & Canal St	Storage Length (ft)	150		150	150		150	150			150		
	AM Queue (ft)	#256	18	22	184	11	10	m71	118		m28	263	
	PM Queue (ft)	m#296	m25	m9	93	9	13	92	465		m#80	m337	

Township 9 Traffic Study - Queuing Analysis

Year 2030 Long Term with Project (Scenario B) - Mitigated Conditions

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
19 6th St & Big Four Blvd	Storage Length (ft)	150			150		150		150	100		150	
	AM Queue (ft)	144	217	135	m#292	m79	m1	#247	281	113	#227	#481	m26
	PM Queue (ft)	#537	#609	219	m176	m179	m61	#491	#1139	#902	#227	#1080	144
20 7th St & Big Four Blvd	Storage Length (ft)	150		150	150		150		150	150		150	
	AM Queue (ft)	m173	m#272	m6	#524	#450	#106	146	64	m13	#742	m62	
	PM Queue (ft)	m#744	m468	m22	#456	#495	m206	m181	m35	#121	#770	16	
21 7th St & F St	Storage Length (ft)												
	AM Queue (ft)	#202	90		#151	#405			#492			#1643	
	PM Queue (ft)	#654	#490		#189	#1081			#717			m#1245	
22 6th St & G St	Storage Length (ft)			150	165		100			150			
	AM Queue (ft)		m#285	m18	m#797	m174	m92	m41	m#579	#608	#784		
	PM Queue (ft)		m#404	m200	m#979	m167	m#503	m18	m#123	#566	#1937		
23 7th St & G St	Storage Length (ft)	60			100		75					150	
	AM Queue (ft)	m38		m41	m#382	294	m50	m8	m75		400	#527	
	PM Queue (ft)	m100		m76	#192	#480	157	m19	m165		276	#512	
24 6th St & H St	Storage Length (ft)												
	AM Queue (ft)		m182		35	57			m#907		m#368		
	PM Queue (ft)		m#255		23	46			m#418		m276		
25 7th St & H St	Storage Length (ft)									175			
	AM Queue (ft)		m254							m#347	m#336		
	PM Queue (ft)		m131							#367	176		
26 6th St & I St	Storage Length (ft)												
	AM Queue (ft)					m#254	m16	m#351			m#1263	m#836	
	PM Queue (ft)					#832	m220	m#517			m#1708	m#1551	
27 7th St & I St	Storage Length (ft)											100	
	AM Queue (ft)				87	#310						m65	m19
	PM Queue (ft)				59	577						m204	m#267
28 6th St & J St	Storage Length (ft)												
	AM Queue (ft)	m133	m132						80		m78		
	PM Queue (ft)	m#390	m#284						#259		m#260		
29 7th St & J St	Storage Length (ft)			100									
	AM Queue (ft)		m258	m121								m269	
	PM Queue (ft)		m86	m95								180	
30 Dos Rios & Richards Blvd	Storage Length (ft)												
	AM Queue (ft)					m89			4			54	
	PM Queue (ft)					84			9			92	
31 Richards Blvd & 12th St	Storage Length (ft)				150				200			300	
	AM Queue (ft)				64	#477	63		249			652	465
	PM Queue (ft)				160	179	127	m1	m#1617			625	470
32 12th St & Bannon St	Storage Length (ft)									150	150		
	AM Queue (ft)	238	42	#692									
	PM Queue (ft)	#879	83	#841									
36 Signature St & 7th St	Storage Length (ft)			150	350		100		160				
	AM Queue (ft)				238	140		#352	304	36		#748	
	PM Queue (ft)		#337	#337	#598	113		m#184	m113	m0		#1425	

Notes:

Shaded value indicate queues exceeding capacity.

"m" Volume for 95th percentile queue is metered by upstream signal

"#" 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Intersection Level of Service & Queue Worksheets

Existing

HCM Signalized Intersection Capacity Analysis

1: Richard Blvd & I-5 SB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	390	61	295	202	0	0	0	0	667	0	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.98		1.00	1.00						1.00	0.86
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.98		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3409		3433	1863						1770	1365
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3409		3433	1863						1770	1365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	390	61	295	202	0	0	0	0	667	0	344
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	0	241
Lane Group Flow (vph)	0	433	0	295	202	0	0	0	0	0	667	103
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9	3 12 13					4		4
Permitted Phases												4
Actuated Green, G (s)		12.5		26.0	41.5						21.0	21.0
Effective Green, g (s)		12.5		24.5	41.0						21.0	21.0
Actuated g/C Ratio		0.18		0.35	0.59						0.30	0.30
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		609		1202	1091						531	410
v/s Ratio Prot		c0.13		c0.09	0.11						c0.38	
v/s Ratio Perm												0.08
v/c Ratio		0.71		0.25	0.19						1.26	0.25
Uniform Delay, d1		27.0		16.2	6.7						24.5	18.6
Progression Factor		1.00		0.17	0.24						1.00	1.00
Incremental Delay, d2		5.6		0.2	0.2						130.0	0.7
Delay (s)		32.6		3.0	1.8						154.5	19.2
Level of Service		C		A	A						F	B
Approach Delay (s)		32.6			2.5			0.0			108.5	
Approach LOS		C			A			A			F	

Intersection Summary

HCM Average Control Delay	64.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Richard Blvd & I-5 NB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↕	↗			
Volume (vph)	183	877	0	0	453	268	44	0	687	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.79		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	1258		1527	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	1258		1527	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	877	0	0	453	268	44	0	687	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	188	0	207	65	0	0	0
Lane Group Flow (vph)	183	877	0	0	453	80	0	160	299	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	15.2	34.4			24.5	21.0		19.3	28.6			
Effective Green, g (s)	14.7	33.9			21.0	21.0		18.8	23.6			
Actuated g/C Ratio	0.21	0.48			0.30	0.30		0.27	0.34			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	372	1714			1062	377		410	507			
v/s Ratio Prot	0.10	c0.25			0.13	0.02		0.10	c0.20			
v/s Ratio Perm						0.05						
v/c Ratio	0.49	0.51			0.43	0.21		0.39	0.59			
Uniform Delay, d1	24.4	12.4			19.7	18.3		20.9	19.2			
Progression Factor	1.24	0.15			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.2	0.0			0.6	0.6		1.3	2.7			
Delay (s)	30.3	1.9			20.2	18.9		22.2	21.9			
Level of Service	C	A			C	B		C	C			
Approach Delay (s)		6.8			19.8			22.1			0.0	
Approach LOS		A			B			C			A	

Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↖		↕	↖
Volume (vph)	206	1218	164	19	526	10	77	16	7	28	16	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.96		1.00	1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00	1.00		0.99	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1753	3452		1760	5063			1789	1526		1780	1583
Flt Permitted	0.37	1.00		0.20	1.00			0.73	1.00		0.81	1.00
Satd. Flow (perm)	689	3452		362	5063			1364	1526		1484	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	1218	164	19	526	10	77	16	7	28	16	110
RTOR Reduction (vph)	0	11	0	0	2	0	0	0	6	0	0	89
Lane Group Flow (vph)	206	1371	0	19	534	0	0	93	1	0	44	21
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8				4
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	32.0	32.0		22.1	22.1			9.8	9.8		9.8	9.8
Effective Green, g (s)	31.5	32.6		22.7	22.7			9.3	9.3		9.3	9.3
Actuated g/C Ratio	0.63	0.65		0.45	0.45			0.19	0.19		0.19	0.19
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	561	2255		165	2303			254	284		277	295
v/s Ratio Prot	0.04	c0.40			0.11							
v/s Ratio Perm	0.19			0.05				c0.07	0.00		0.03	0.01
v/c Ratio	0.37	0.61		0.12	0.23			0.37	0.00		0.16	0.07
Uniform Delay, d1	4.1	5.0		7.8	8.3			17.7	16.5		17.0	16.7
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.3		0.1	0.0			0.3	0.0		0.1	0.0
Delay (s)	4.2	5.3		7.9	8.3			18.1	16.5		17.1	16.8
Level of Service	A	A		A	A			B	B		B	B
Approach Delay (s)		5.2			8.3			17.9			16.9	
Approach LOS		A			A			B			B	

Intersection Summary

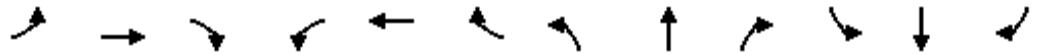
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Richard Blvd & 5th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖		↖	↗		↖	↗	
Volume (vph)	30	1096	12	10	592	27	17	0	7	18	1	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes	1.00	1.00			1.00		0.98	1.00		0.98	1.00	
Frt	1.00	1.00			0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3532			3506		1730	1528		1728	1537	
Flt Permitted	0.95	1.00			0.94		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3532			3286		1337	1528		1370	1537	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1096	12	10	592	27	17	0	7	18	1	34
RTOR Reduction (vph)	0	0	0	0	4	0	0	5	0	0	26	0
Lane Group Flow (vph)	30	1108	0	0	625	0	17	2	0	18	9	0
Confl. Peds. (#/hr)			36			36	36		36	36		36
Turn Type	Prot		Prot		Perm		Perm		Perm		Perm	
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	1.7	28.6			23.9		11.7	11.7		11.7	11.7	
Effective Green, g (s)	0.7	28.9			24.2		11.2	11.2		11.2	11.2	
Actuated g/C Ratio	0.01	0.60			0.50		0.23	0.23		0.23	0.23	
Clearance Time (s)	3.0	4.3			4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	26	2122			1653		311	356		319	358	
v/s Ratio Prot	0.02	c0.31						0.00				0.01
v/s Ratio Perm					0.19		0.01			c0.01		
v/c Ratio	1.15	0.52			3.00dl		0.05	0.00		0.06	0.02	
Uniform Delay, d1	23.7	5.6			7.3		14.3	14.2		14.3	14.2	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	227.3	0.1			0.1		0.0	0.0		0.0	0.0	
Delay (s)	251.0	5.7			7.4		14.4	14.2		14.4	14.2	
Level of Service	F	A			A		B	B		B	B	
Approach Delay (s)		12.2			7.4			14.3			14.3	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	48.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Richard Blvd & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	865	234	171	530	12	90	7	21	5	2	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3381		1770	3523		1681	1697	1583	1770	1626	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3381		1770	3523		1681	1697	1583	1770	1626	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	22	865	234	171	530	12	90	7	21	5	2	11
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	18	0	11	0
Lane Group Flow (vph)	22	1089	0	171	542	0	49	48	3	5	2	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split			Prot	Split	
Protected Phases	1	6		5	2		8	8		8	7	7
Permitted Phases												
Actuated Green, G (s)	2.2	47.1		12.7	57.6		10.8	10.8	10.8	1.9	1.9	
Effective Green, g (s)	1.2	47.1		11.7	57.6		10.3	10.3	10.3	1.4	1.4	
Actuated g/C Ratio	0.01	0.54		0.14	0.67		0.12	0.12	0.12	0.02	0.02	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	25	1841		239	2346		200	202	188	29	26	
v/s Ratio Prot	0.01	c0.32		c0.10	0.15		c0.03	0.03	0.00	c0.00	0.00	
v/s Ratio Perm												
v/c Ratio	0.88	0.59		0.72	0.23		0.24	0.24	0.01	0.17	0.08	
Uniform Delay, d1	42.6	13.2		35.8	5.7		34.6	34.5	33.6	42.0	41.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	124.9	0.3		8.2	0.0		0.2	0.2	0.0	1.0	0.5	
Delay (s)	167.5	13.6		44.0	5.7		34.8	34.8	33.6	43.0	42.4	
Level of Service	F	B		D	A		C	C	C	D	D	
Approach Delay (s)		16.6			14.9			34.6			42.6	
Approach LOS		B			B			C			D	

Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

6: Richard Blvd & 10th St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	585	41	12	589	87	14	20	4	13	11	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1489	1770	3444		1728	1863	1583	1770	1863	1443
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1489	1770	3444		1365	1863	1583	1386	1863	1443
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	585	41	12	589	87	14	20	4	13	11	36
RTOR Reduction (vph)	0	0	12	0	9	0	0	0	3	0	0	31
Lane Group Flow (vph)	175	585	29	12	667	0	14	20	1	13	11	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	11.5	37.0	37.0	0.8	26.3		8.2	8.2	8.2	8.2	8.2	8.2
Effective Green, g (s)	11.0	37.5	37.5	0.3	26.8		7.7	7.7	7.7	7.7	7.7	7.7
Actuated g/C Ratio	0.19	0.65	0.65	0.01	0.47		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	339	2308	971	9	1605		183	249	212	186	249	193
v/s Ratio Prot	c0.10	0.17		0.01	c0.19			c0.01			0.01	
v/s Ratio Perm			0.02				0.01		0.00	0.01		0.00
v/c Ratio	0.52	0.25	0.03	1.33	0.42		0.08	0.08	0.00	0.07	0.04	0.02
Uniform Delay, d1	20.9	4.2	3.5	28.6	10.2		21.8	21.8	21.6	21.8	21.7	21.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.0	0.0	429.4	0.1		0.1	0.1	0.0	0.1	0.0	0.0
Delay (s)	21.4	4.2	3.6	458.0	10.2		21.9	21.9	21.6	21.8	21.7	21.7
Level of Service	C	A	A	F	B		C	C	C	C	C	C
Approach Delay (s)		7.9			18.0			21.8			21.7	
Approach LOS		A			B			C			C	

Intersection Summary

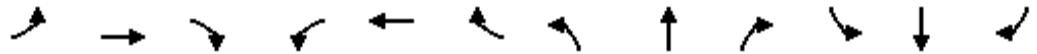
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

7: Richard Blvd & Dos Rios St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	520	50	23	612	32	35	22	12	17	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.99			0.99	
Flpb, ped/bikes	0.95	1.00		0.94	1.00			0.97			0.98	
Frt	1.00	0.99		1.00	0.99			0.98			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1680	3447		1667	3487			1708			1718	
Flt Permitted	0.39	1.00		0.43	1.00			0.87			0.92	
Satd. Flow (perm)	688	3447		747	3487			1521			1601	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	520	50	23	612	32	35	22	12	17	19	10
RTOR Reduction (vph)	0	6	0	0	3	0	0	9	0	0	8	0
Lane Group Flow (vph)	16	564	0	23	641	0	0	60	0	0	38	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	51.9	51.9		51.9	51.9			19.7			19.7	
Effective Green, g (s)	52.4	52.4		52.4	52.4			19.2			19.2	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.24			0.24	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	453	2269		492	2295			367			386	
v/s Ratio Prot		0.16			c0.18							
v/s Ratio Perm	0.02			0.03				c0.04			0.02	
v/c Ratio	0.04	0.25		0.05	0.28			0.16			0.10	
Uniform Delay, d1	4.8	5.6		4.8	5.7			23.9			23.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.3		0.2	0.3			0.1			0.0	
Delay (s)	4.9	5.8		5.0	6.0			23.9			23.5	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		5.8			6.0			23.9			23.5	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

11: Bercut Dr & Bannon St

12/21/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↗
Volume (veh/h)	102	14	0	35	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	14	0	35	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			116		144	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		144	109
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1473		849	945



















Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	116	35	1
Volume Left	0	0	0
Volume Right	14	0	1
cSH	1700	1473	945
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	8.8
Lane LOS	A		
Approach Delay (s)	0.0	0.0	8.8
Approach LOS	A		

Intersection Summary			
Average Delay			0.1
Intersection Capacity Utilization	16.2%		ICU Level of Service
Analysis Period (min)	15		A
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis

15: Water St & 7th Street

12/19/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	29	11	54	43	67	62	332	205	39	155	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	29	11	54	43	67	62	332	205	39	155	6
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total (vph)	41	97	67	599	39	161						
Volume Left (vph)	1	54	0	62	39	0						
Volume Right (vph)	11	0	67	205	0	6						
Hadj (s)	-0.12	0.31	-0.67	-0.15	0.53	0.01						
Departure Headway (s)	6.9	7.0	6.0	5.3	6.4	5.9						
Degree Utilization, x	0.08	0.19	0.11	0.88	0.07	0.26						
Capacity (veh/h)	485	484	562	670	539	588						
Control Delay (s)	10.5	10.5	8.6	35.2	8.7	9.8						
Approach Delay (s)	10.5	9.7		35.2	9.6							
Approach LOS	B	A		E	A							
Intersection Summary												
Delay			24.9									
HCM Level of Service			C									
Intersection Capacity Utilization			63.8%	ICU Level of Service	B							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

16: Water St & 12th Street

12/19/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SWL2	SWL	SWR
Lane Configurations	↑↑		↖	↑			↕			↗↘↙↚	
Volume (vph)	62	33	35	72	29	7	16	34	23	2422	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	0.95		1.00	1.00			1.00			0.91	
Frbp, ped/bikes	1.00		1.00	0.97			0.96			0.99	
Flpb, ped/bikes	1.00		0.96	1.00			1.00			0.90	
Frt	0.95		1.00	0.96			0.92			0.99	
Flt Protected	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	3355		1703	1736			1634			5733	
Flt Permitted	1.00		0.69	1.00			0.99			0.96	
Satd. Flow (perm)	3355		1241	1736			1634			5733	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	62	33	35	72	29	7	16	34	23	2422	171
RTOR Reduction (vph)	27	0	0	0	0	0	30	0	0	0	0
Lane Group Flow (vph)	68	0	35	101	0	0	27	0	0	2616	0
Confl. Peds. (#/hr)			36		36			36	36		36
Turn Type			Perm		Perm			custom			
Protected Phases	4			4			1			2 3	
Permitted Phases			4		1				2		
Actuated Green, G (s)	19.0		19.0	19.0			12.9			49.1	
Effective Green, g (s)	19.0		19.0	19.0			12.9			52.1	
Actuated g/C Ratio	0.19		0.19	0.19			0.13			0.52	
Clearance Time (s)	4.0		4.0	4.0			4.0				
Vehicle Extension (s)	5.0		5.0	5.0			5.0				
Lane Grp Cap (vph)	637		236	330			211			2987	
v/s Ratio Prot	0.02			c0.06							
v/s Ratio Perm			0.03				0.02			0.46	
v/c Ratio	0.11		0.15	0.31			0.13			0.88	
Uniform Delay, d1	33.5		33.8	34.8			38.6			21.1	
Progression Factor	1.00		0.88	0.87			1.00			1.00	
Incremental Delay, d2	0.2		0.6	1.1			0.6			4.0	
Delay (s)	33.6		30.2	31.5			39.2			25.1	
Level of Service	C		C	C			D			C	
Approach Delay (s)	33.6			31.2			39.2			25.1	
Approach LOS	C			C			D			C	

Intersection Summary

HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

21: F Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (veh/h)	0	0	0	48	19	60	25	59	3	164	301	47
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	48	19	60	25	59	3	164	301	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh											2	
Upstream signal (ft)								439				
pX, platoon unblocked												
vC, conflicting volume	832	764	324	763	786	60	348			62		
vC1, stage 1 conf vol	652	652		110	110							
vC2, stage 2 conf vol	180	112		652	676							
vCu, unblocked vol	832	764	324	763	786	60	348			62		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	87	95	94	98			89		
cM capacity (veh/h)	374	394	717	372	368	1005	1211			1541		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	0	48	79	87	512
Volume Left	0	48	0	25	164
Volume Right	0	0	60	3	47
cSH	1700	372	709	1211	1541
Volume to Capacity	0.00	0.13	0.11	0.02	0.11
Queue Length 95th (ft)	0	11	9	2	9
Control Delay (s)	0.0	16.1	10.7	2.4	3.1
Lane LOS	A	C	B	A	A
Approach Delay (s)	0.0	12.8		2.4	3.1
Approach LOS	A	B			

Intersection Summary				
Average Delay			4.7	
Intersection Capacity Utilization		45.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis

23: G Street & 7th Street

12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶↶	↷				↶
Volume (vph)	229	123	0	0	0	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	123	0	0	0	360
RTOR Reduction (vph)	133	71	0	0	0	0
Lane Group Flow (vph)	96	52	0	0	0	360
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.03	c0.03				c0.19
v/s Ratio Perm						
v/c Ratio	0.07	0.08				0.46
Uniform Delay, d1	8.7	8.7				10.4
Progression Factor	1.00	2.10				1.00
Incremental Delay, d2	0.1	0.2				1.9
Delay (s)	8.7	18.5				12.4
Level of Service	A	B				B
Approach Delay (s)	12.1		0.0			12.4
Approach LOS	B		A			B
Intersection Summary						
HCM Average Control Delay			12.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.27			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			43.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

24: H Street & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔↔						↔↔			↔	
Volume (vph)	20	376	55	0	0	0	0	20	280	5	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						0.95			1.00	
Frbp, ped/bikes		0.99						0.93			1.00	
Flpb, ped/bikes		1.00						1.00			0.99	
Frt		0.98						0.86			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		4940						2822			1828	
Flt Permitted		1.00						1.00			0.94	
Satd. Flow (perm)		4940						2822			1740	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	376	55	0	0	0	0	20	280	5	20	0
RTOR Reduction (vph)	0	26	0	0	0	0	0	190	0	0	0	0
Lane Group Flow (vph)	0	425	0	0	0	0	0	110	0	0	25	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type										Perm		
Protected Phases		1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		26.5						16.5			16.5	
Effective Green, g (s)		26.0						16.0			16.0	
Actuated g/C Ratio		0.52						0.32			0.32	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2569						903			557	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.09									0.01	
v/c Ratio		1.00dr						0.12			0.04	
Uniform Delay, d1		6.3						12.0			11.7	
Progression Factor		0.38						0.56			1.00	
Incremental Delay, d2		0.1						0.3			0.2	
Delay (s)		2.5						7.0			11.9	
Level of Service		A						A			B	
Approach Delay (s)		2.5			0.0			7.0			11.9	
Approach LOS		A			A			A			B	

Intersection Summary

HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

25: H Street & 7th Street

12/19/2006

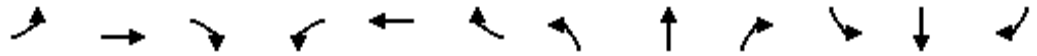


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↙↑		
Volume (vph)	0	629	32	0	0	0	0	0	0	140	387	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.91								0.91	0.91		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.95	1.00		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		5033								1528	3378		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		5033								1528	3378		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	629	32	0	0	0	0	0	0	140	387	0	
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	73	5	0	
Lane Group Flow (vph)	0	650	0	0	0	0	0	0	0	53	396	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		21.5								21.5	21.5		
Effective Green, g (s)		21.0								21.0	21.0		
Actuated g/C Ratio		0.42								0.42	0.42		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		2114								642	1419		
v/s Ratio Prot		0.13											
v/s Ratio Perm										0.03	0.12		
v/c Ratio		0.31								0.08	0.28		
Uniform Delay, d1		9.7								8.7	9.5		
Progression Factor		1.05								2.78	1.11		
Incremental Delay, d2		0.4								0.2	0.5		
Delay (s)		10.5								24.5	11.1		
Level of Service		B								C	B		
Approach Delay (s)		10.5			0.0			0.0			14.3		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM Average Control Delay			12.2		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.29										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			43.1%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

26: I St & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	53	795	73	34	239	0	0	20	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Frt					0.99		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4943		1610	3388			1640	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4943		1610	3388			1640	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	53	795	73	34	239	0	0	20	55
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	16	31
Lane Group Flow (vph)	0	0	0	0	901	0	31	242	0	0	23	5
Confl. Peds. (#/hr)				72		72						
Turn Type				Perm		custom					custom	
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					16.5		15.5	15.5			7.5	7.5
Effective Green, g (s)					16.0		15.0	15.0			7.0	7.0
Actuated g/C Ratio					0.32		0.30	0.30			0.14	0.14
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1582		483	1016			230	211
v/s Ratio Prot							0.02	c0.07			c0.01	0.00
v/s Ratio Perm					0.18							
v/c Ratio					0.57		0.06	0.24			0.10	0.02
Uniform Delay, d1					14.1		12.5	13.2			18.7	18.6
Progression Factor					0.73		1.26	1.25			0.80	0.94
Incremental Delay, d2					1.5		0.2	0.5			0.8	0.2
Delay (s)					11.8		16.0	17.0			15.9	17.7
Level of Service					B		B	B			B	B
Approach Delay (s)		0.0			11.8			16.9			16.8	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

27: I St & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	253	701	0	0	0	0	0	266	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4786						3539	2787
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4786						3539	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	253	701	0	0	0	0	0	266	218
RTOR Reduction (vph)	0	0	0	123	7	0	0	0	0	0	0	135
Lane Group Flow (vph)	0	0	0	105	719	0	0	0	0	0	266	83
Confl. Peds. (#/hr)				72								
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				23.5	23.5						19.5	19.5
Effective Green, g (s)				23.0	23.0						19.0	19.0
Actuated g/C Ratio				0.46	0.46						0.38	0.38
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				650	2202						1345	1059
v/s Ratio Prot											c0.08	
v/s Ratio Perm				0.07	0.15							0.03
v/c Ratio				0.16	0.33						0.20	0.08
Uniform Delay, d1				7.9	8.6						10.4	9.9
Progression Factor				1.00	1.00						0.45	0.71
Incremental Delay, d2				0.5	0.4						0.3	0.1
Delay (s)				8.4	9.0						5.0	7.2
Level of Service				A	A						A	A
Approach Delay (s)		0.0			8.8			0.0			6.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			7.9		HCM Level of Service			A				
HCM Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			29.0%		ICU Level of Service			A				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

28: J St & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↔↔↔						↔		↘		
Volume (vph)	390	2048	0	0	0	0	0	8	4	28	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.98		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.94		
Frt	1.00	1.00						0.96		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4794						1737		1665		
Flt Permitted	0.95	1.00						1.00		0.75		
Satd. Flow (perm)	1404	4794						1737		1314		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	390	2048	0	0	0	0	0	8	4	28	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	351	2087	0	0	0	0	0	9	0	28	0	0
Confl. Peds. (#/hr)	36								36	36		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	71.5	71.5						21.5		21.5		
Effective Green, g (s)	71.0	71.0						21.0		21.0		
Actuated g/C Ratio	0.71	0.71						0.21		0.21		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	997	3404						365		276		
v/s Ratio Prot								0.01				
v/s Ratio Perm	0.25	0.44								c0.02		
v/c Ratio	0.35	0.61						0.02		0.10		
Uniform Delay, d1	5.6	7.4						31.4		31.9		
Progression Factor	1.28	1.17						1.00		0.79		
Incremental Delay, d2	0.8	0.7						0.1		0.7		
Delay (s)	8.0	9.4						31.5		25.9		
Level of Service	A	A						C		C		
Approach Delay (s)		9.2			0.0			31.5			25.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

29: J St & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	1986	280	0	0	0	0	0	0	156	254	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frbp, ped/bikes		1.00	0.93								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.98	
Satd. Flow (prot)		4791	1265								4876	
Flt Permitted		1.00	1.00								0.98	
Satd. Flow (perm)		4791	1265								4876	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1986	280	0	0	0	0	0	0	156	254	0
RTOR Reduction (vph)	0	1	60	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	2013	192	0	0	0	0	0	0	0	401	0
Confl. Peds. (#/hr)			36							36		
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		61.5	61.5								31.5	
Effective Green, g (s)		61.0	61.0								31.0	
Actuated g/C Ratio		0.61	0.61								0.31	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		2923	772								1512	
v/s Ratio Prot		0.42										
v/s Ratio Perm			0.15								0.08	
v/c Ratio		0.69	0.25								0.27	
Uniform Delay, d1		13.1	9.0								25.9	
Progression Factor		0.35	0.04								0.94	
Incremental Delay, d2		1.1	0.6								0.4	
Delay (s)		5.8	1.0								24.9	
Level of Service		A	A								C	
Approach Delay (s)		5.2			0.0			0.0			24.9	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Richard Blvd & I-5 SB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	533	58	594	378	0	0	0	0	325	3	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.99		1.00	1.00						1.00	0.86
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.99		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3444		3433	1863						1775	1365
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3444		3433	1863						1775	1365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	533	58	594	378	0	0	0	0	325	3	244
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	188
Lane Group Flow (vph)	0	580	0	594	378	0	0	0	0	0	328	56
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												4
Actuated Green, G (s)		12.5		31.0	46.5						16.0	16.0
Effective Green, g (s)		12.5		29.5	46.0						16.0	16.0
Actuated g/C Ratio		0.18		0.42	0.66						0.23	0.23
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		615		1447	1224						406	312
v/s Ratio Prot		c0.17		c0.17	0.20						c0.18	
v/s Ratio Perm												0.04
v/c Ratio		0.94		0.41	0.31						0.81	0.18
Uniform Delay, d1		28.4		14.2	5.2						25.5	21.7
Progression Factor		1.00		0.07	0.03						1.00	1.00
Incremental Delay, d2		24.0		0.3	0.2						12.7	0.6
Delay (s)		52.4		1.3	0.4						38.2	22.3
Level of Service		D		A	A						D	C
Approach Delay (s)		52.4			1.0			0.0			31.4	
Approach LOS		D			A			A			C	

Intersection Summary

HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Richard Blvd & I-5 NB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↕	↗			
Volume (vph)	355	504	0	0	921	985	51	9	328	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.84		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.90	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	1337		1564	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	1337		1564	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	504	0	0	921	985	51	9	328	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	470	0	101	113	0	0	0
Lane Group Flow (vph)	355	504	0	0	921	515	0	97	77	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	12.7	29.5			27.0	23.5		19.3	33.5			
Effective Green, g (s)	12.2	29.0			23.5	23.5		18.8	28.5			
Actuated g/C Ratio	0.17	0.41			0.34	0.34		0.27	0.41			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	308	1466			1188	449		420	612			
v/s Ratio Prot	c0.20	0.14			0.26	c0.17		c0.06	0.05			
v/s Ratio Perm						0.22						
v/c Ratio	1.15	0.34			0.78	1.15		0.23	0.13			
Uniform Delay, d1	28.9	14.0			20.9	23.3		20.0	13.0			
Progression Factor	0.80	0.09			1.00	1.00		1.00	1.00			
Incremental Delay, d2	84.1	0.1			3.8	89.6		0.6	0.2			
Delay (s)	107.3	1.4			24.7	112.9		20.6	13.2			
Level of Service	F	A			C	F		C	B			
Approach Delay (s)		45.2			70.2			16.9			0.0	
Approach LOS		D			E			B			A	

Intersection Summary

HCM Average Control Delay	56.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↖		↕	↖
Volume (vph)	196	594	61	20	1379	36	175	15	13	40	14	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.96		1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.98	1.00			1.00	1.00		0.98	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1768	3470		1740	5054			1781	1523		1769	1583
Flt Permitted	0.15	1.00		0.40	1.00			0.70	1.00		0.75	1.00
Satd. Flow (perm)	285	3470		738	5054			1311	1523		1370	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	196	594	61	20	1379	36	175	15	13	40	14	259
RTOR Reduction (vph)	0	10	0	0	3	0	0	0	10	0	0	197
Lane Group Flow (vph)	196	645	0	20	1412	0	0	190	3	0	54	62
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	32.5	32.5		22.6	22.6			13.3	13.3		13.3	13.3
Effective Green, g (s)	32.0	33.1		23.2	23.2			12.8	12.8		12.8	12.8
Actuated g/C Ratio	0.59	0.61		0.43	0.43			0.24	0.24		0.24	0.24
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	332	2131		318	2175			311	362		325	376
v/s Ratio Prot	c0.06	0.19			c0.28							
v/s Ratio Perm	0.29			0.03				c0.14	0.00		0.04	0.04
v/c Ratio	0.59	0.30		0.06	0.65			0.61	0.01		0.17	0.16
Uniform Delay, d1	7.2	4.9		9.0	12.1			18.3	15.7		16.3	16.3
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.0		0.0	0.5			2.5	0.0		0.1	0.1
Delay (s)	9.1	5.0		9.0	12.6			20.8	15.7		16.4	16.4
Level of Service	A	A		A	B			C	B		B	B
Approach Delay (s)		5.9			12.6			20.5			16.4	
Approach LOS		A			B			C			B	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Richard Blvd & 5th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	12	628	21	9	1568	11	13	1	17	15	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00		0.96	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3514		1770	3534		1705	1523		1702	1504	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3514		1770	3534		1308	1523		1336	1504	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	628	21	9	1568	11	13	1	17	15	0	43
RTOR Reduction (vph)	0	2	0	0	0	0	0	14	0	0	34	0
Lane Group Flow (vph)	12	647	0	9	1579	0	13	4	0	15	9	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot		Prot		Perm		Perm					
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	5.1	40.7		5.0	40.6		14.9	14.9		14.9	14.9	
Effective Green, g (s)	4.1	41.0		4.0	40.9		14.4	14.4		14.4	14.4	
Actuated g/C Ratio	0.06	0.57		0.06	0.57		0.20	0.20		0.20	0.20	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	102	2018		99	2024		264	307		269	303	
v/s Ratio Prot	c0.01	0.18		0.01	c0.45			0.00			0.01	
v/s Ratio Perm							0.01			c0.01		
v/c Ratio	0.12	0.32		0.09	0.78		0.05	0.01		0.06	0.03	
Uniform Delay, d1	31.9	7.9		32.0	11.8		23.0	22.8		23.0	22.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	1.8		0.0	0.0		0.0	0.0	
Delay (s)	32.1	8.0		32.1	13.6		23.0	22.8		23.0	22.9	
Level of Service	C	A		C	B		C	C		C	C	
Approach Delay (s)		8.4			13.7			22.9			22.9	
Approach LOS		A			B			C			C	

Intersection Summary

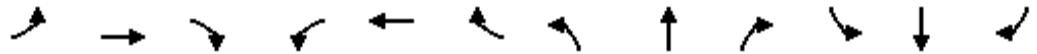
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Richard Blvd & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	553	97	84	1201	5	352	3	50	10	13	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3430		1770	3536		1681	1687	1583	1770	1666	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3430		1770	3536		1681	1687	1583	1770	1666	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	9	553	97	84	1201	5	352	3	50	10	13	31
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	34	0	30	0
Lane Group Flow (vph)	9	643	0	84	1206	0	176	179	16	10	14	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Prot	Split		
Protected Phases	1	6		5	2		8	8	8	7	7	
Permitted Phases												
Actuated Green, G (s)	5.1	37.6		8.5	41.0		15.2	15.2	15.2	3.6	3.6	
Effective Green, g (s)	4.1	37.6		7.5	41.0		14.7	14.7	14.7	3.1	3.1	
Actuated g/C Ratio	0.05	0.48		0.10	0.52		0.19	0.19	0.19	0.04	0.04	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	92	1635		168	1837		313	314	295	70	65	
v/s Ratio Prot	0.01	0.19		c0.05	c0.34		0.10	c0.11	0.01	0.01	c0.01	
v/s Ratio Perm												
v/c Ratio	0.10	0.39		0.50	0.66		0.56	0.57	0.05	0.14	0.22	
Uniform Delay, d1	35.6	13.3		33.9	13.8		29.2	29.2	26.4	36.6	36.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.9	0.7		1.4	1.6	0.0	0.3	0.6	
Delay (s)	35.8	13.4		34.8	14.5		30.6	30.8	26.4	37.0	37.3	
Level of Service	D	B		C	B		C	C	C	D	D	
Approach Delay (s)		13.7			15.8			30.1			37.3	
Approach LOS		B			B			C			D	

Intersection Summary

HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

6: Richard Blvd & 10th St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	565	31	6	1019	15	17	13	10	70	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1496	1770	3529		1733	1863	1583	1770	1863	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1770	3539	1496	1770	3529		1337	1863	1583	1395	1863	1492
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	565	31	6	1019	15	17	13	10	70	37	170
RTOR Reduction (vph)	0	0	12	0	0	0	0	0	8	0	0	132
Lane Group Flow (vph)	26	565	19	6	1034	0	17	13	2	70	37	38
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	1.9	27.2	27.2	0.7	26.0		12.1	12.1	12.1	12.1	12.1	12.1
Effective Green, g (s)	1.4	27.7	27.7	0.2	26.5		11.6	11.6	11.6	11.6	11.6	11.6
Actuated g/C Ratio	0.03	0.54	0.54	0.00	0.51		0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	48	1904	805	7	1816		301	420	357	314	420	336
v/s Ratio Prot	c0.01	0.16		0.00	c0.29			0.01			0.02	
v/s Ratio Perm			0.01				0.01		0.00	c0.05		0.03
v/c Ratio	0.54	0.30	0.02	0.86	0.57		0.06	0.03	0.01	0.22	0.09	0.11
Uniform Delay, d1	24.7	6.5	5.6	25.6	8.6		15.7	15.6	15.5	16.3	15.8	15.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.5	0.0	0.0	238.9	0.2		0.0	0.0	0.0	0.1	0.0	0.1
Delay (s)	31.3	6.6	5.6	264.5	8.8		15.7	15.6	15.5	16.4	15.8	15.9
Level of Service	C	A	A	F	A		B	B	B	B	B	B
Approach Delay (s)		7.6			10.3			15.6			16.0	
Approach LOS		A			B			B			B	

Intersection Summary

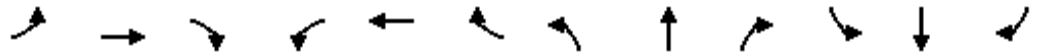
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

7: Richard Blvd & Dos Rios St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	545	39	7	899	4	42	13	18	24	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.98			0.98	
Flpb, ped/bikes	0.97	1.00		0.95	1.00			0.97			0.98	
Frt	1.00	0.99		1.00	1.00			0.97			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1715	3470		1673	3535			1674			1660	
Flt Permitted	0.28	1.00		0.42	1.00			0.84			0.90	
Satd. Flow (perm)	504	3470		736	3535			1450			1518	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	545	39	7	899	4	42	13	18	24	13	22
RTOR Reduction (vph)	0	5	0	0	0	0	0	14	0	0	17	0
Lane Group Flow (vph)	12	579	0	7	903	0	0	59	0	0	42	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	49.4	49.4		49.4	49.4			19.6			19.6	
Effective Green, g (s)	49.9	49.9		49.9	49.9			19.1			19.1	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.25			0.25	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	327	2249		477	2291			360			377	
v/s Ratio Prot		0.17			c0.26							
v/s Ratio Perm	0.02			0.01				c0.04			0.03	
v/c Ratio	0.04	0.26		0.01	0.39			0.17			0.11	
Uniform Delay, d1	4.9	5.7		4.8	6.4			22.7			22.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.3		0.1	0.5			0.1			0.0	
Delay (s)	5.1	6.0		4.9	6.9			22.8			22.4	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		6.0			6.9			22.8			22.4	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

11: Bercut Dr & Bannon St

12/19/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	41	13	0	87	13	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	13	0	87	13	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			54		134	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		134	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1551		859	1022

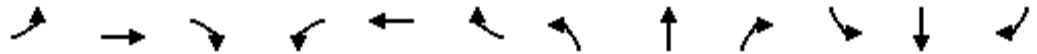
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	87	14
Volume Left	0	0	13
Volume Right	13	0	1
cSH	1700	1551	869
Volume to Capacity	0.03	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		14.6%	ICU Level of Service A
Analysis Period (min)		15	
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis

15: Water St & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔		↔	↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	29	11	54	43	67	62	332	205	39	155	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	29	11	54	43	67	62	332	205	39	155	6

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	41	97	67	599	39	161
Volume Left (vph)	1	54	0	62	39	0
Volume Right (vph)	11	0	67	205	0	6
Hadj (s)	-0.12	0.31	-0.67	-0.15	0.53	0.01
Departure Headway (s)	6.9	7.0	6.0	5.3	6.4	5.9
Degree Utilization, x	0.08	0.19	0.11	0.88	0.07	0.26
Capacity (veh/h)	485	484	562	670	539	588
Control Delay (s)	10.5	10.5	8.6	35.2	8.7	9.8
Approach Delay (s)	10.5	9.7		35.2	9.6	
Approach LOS	B	A		E	A	

Intersection Summary	
Delay	24.9
HCM Level of Service	C
Intersection Capacity Utilization	63.8%
ICU Level of Service	B
Analysis Period (min)	15

HCM Signalized Intersection Capacity Analysis

16: Water St & 12th Street

12/19/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations	↑↑		↵	↑			↕		5111			
Volume (vph)	313	60	58	65	31	4	27	18	55	1848	53	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0			
Lane Util. Factor	0.95		1.00		1.00		1.00		0.91			
Frbp, ped/bikes	0.99		1.00		0.97		0.98		0.99			
Flpb, ped/bikes	1.00		0.98		1.00		1.00		0.90			
Frt	0.98		1.00		0.95		0.95		1.00			
Flt Protected	1.00		0.95		1.00		1.00		0.95			
Satd. Flow (prot)	3424		1729		1721		1719		5738			
Flt Permitted	1.00		0.39		1.00		1.00		0.95			
Satd. Flow (perm)	3424		704		1721		1719		5738			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	313	60	58	65	31	4	27	18	55	1848	53	4
RTOR Reduction (vph)	17	0	0	0	0	0	16	0	0	0	0	0
Lane Group Flow (vph)	356		0		58		96		0		1960	
Confl. Peds. (#/hr)	36		36		36		36		36		36	
Turn Type			Perm				Perm		Perm			
Protected Phases	4		4		4		1		2 3			
Permitted Phases			4				1		2 3			
Actuated Green, G (s)	21.0		21.0		21.0		13.0		47.0			
Effective Green, g (s)	21.0		21.0		21.0		13.0		50.0			
Actuated g/C Ratio	0.21		0.21		0.21		0.13		0.50			
Clearance Time (s)	4.0		4.0		4.0		4.0		4.0			
Vehicle Extension (s)	5.0		5.0		5.0		5.0		5.0			
Lane Grp Cap (vph)	719		148		361		223		2869			
v/s Ratio Prot	c0.10				0.06							
v/s Ratio Perm			0.08				0.02		0.34			
v/c Ratio	0.50		0.39		0.27		0.15		0.68			
Uniform Delay, d1	34.8		34.0		33.1		38.6		19.0			
Progression Factor	1.00		1.03		1.02		1.00		1.00			
Incremental Delay, d2	1.1		3.3		0.8		0.7		1.3			
Delay (s)	36.0		38.2		34.3		39.2		20.3			
Level of Service	D		D		C		D		C			
Approach Delay (s)	36.0				35.8		39.2		20.3			
Approach LOS	D				D		D		C			

Intersection Summary

HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

21: F Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖		↗		↕			↕	
Volume (veh/h)	34	25	23	88	0	142	0	257	23	50	160	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	34	25	23	88	0	142	0	257	23	50	160	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								439				
pX, platoon unblocked												
vC, conflicting volume	672	542	162	566	532	268	163			280		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	672	542	162	566	532	268	163			280		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	94	97	78	100	82	100			96		
cM capacity (veh/h)	292	430	883	393	436	770	1416			1283		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	82	88	142	280	213
Volume Left	34	88	0	0	50
Volume Right	23	0	142	23	3
cSH	409	393	770	1416	1283
Volume to Capacity	0.20	0.22	0.18	0.00	0.04
Queue Length 95th (ft)	18	21	17	0	3
Control Delay (s)	16.0	16.8	10.7	0.0	2.1
Lane LOS	C	C	B		A
Approach Delay (s)	16.0	13.0		0.0	2.1
Approach LOS	C	B			

Intersection Summary				
Average Delay			5.9	
Intersection Capacity Utilization		47.6%		ICU Level of Service
Analysis Period (min)		15		A

HCM Signalized Intersection Capacity Analysis

23: G Street & 7th Street

12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	360	204	0	0	0	391
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	360	204	0	0	0	391
RTOR Reduction (vph)	209	118	0	0	0	0
Lane Group Flow (vph)	151	86	0	0	0	391
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.04	c0.05				c0.21
v/s Ratio Perm						
v/c Ratio	0.10	0.13				0.50
Uniform Delay, d1	8.8	8.9				10.6
Progression Factor	1.00	1.24				1.00
Incremental Delay, d2	0.1	0.4				2.3
Delay (s)	8.9	11.4				12.9
Level of Service	A	B				B
Approach Delay (s)	9.8		0.0			12.9
Approach LOS	A		A			B
Intersection Summary						
HCM Average Control Delay			11.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.31			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			44.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

24: H Street & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔↔						↔↔			↔	
Volume (vph)	4	319	79	0	0	0	0	14	193	2	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						0.95			1.00	
Frbp, ped/bikes		0.99						0.93			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.97						0.86			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		4880						2822			1845	
Flt Permitted		1.00						1.00			0.98	
Satd. Flow (perm)		4880						2822			1817	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	319	79	0	0	0	0	14	193	2	19	0
RTOR Reduction (vph)	0	38	0	0	0	0	0	131	0	0	0	0
Lane Group Flow (vph)	0	364	0	0	0	0	0	76	0	0	21	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type										Perm		
Protected Phases		1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		26.5						16.5			16.5	
Effective Green, g (s)		26.0						16.0			16.0	
Actuated g/C Ratio		0.52						0.32			0.32	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2538						903			581	
v/s Ratio Prot								c0.03				
v/s Ratio Perm		0.07									0.01	
v/c Ratio		1.00dr						0.08			0.04	
Uniform Delay, d1		6.2						11.9			11.7	
Progression Factor		1.66						0.48			1.00	
Incremental Delay, d2		0.1						0.2			0.1	
Delay (s)		10.4						5.8			11.8	
Level of Service		B						A			B	
Approach Delay (s)		10.4				0.0		5.8			11.8	
Approach LOS		B				A		A			B	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.12		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

25: H Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑								↘	↙↑	
Volume (vph)	0	453	60	0	0	0	0	0	0	145	573	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.91								0.91	0.91	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								0.95	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		4960								1528	3381	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		4960								1528	3381	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	453	60	0	0	0	0	0	0	145	573	0
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	75	3	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	0	0	55	585	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		21.5								21.5	21.5	
Effective Green, g (s)		21.0								21.0	21.0	
Actuated g/C Ratio		0.42								0.42	0.42	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		2083								642	1420	
v/s Ratio Prot		0.10										
v/s Ratio Perm										0.04	0.17	
v/c Ratio		0.23								0.09	0.41	
Uniform Delay, d1		9.3								8.7	10.2	
Progression Factor		0.90								1.89	0.92	
Incremental Delay, d2		0.3								0.2	0.8	
Delay (s)		8.7								16.7	10.2	
Level of Service		A								B	B	
Approach Delay (s)		8.7			0.0			0.0			11.4	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM Average Control Delay			10.2								HCM Level of Service	B
HCM Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			50.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			44.7%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

26: I St & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	41	1997	65	292	106	0	0	13	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					1.00		1.00	1.00			0.86	0.85
Flt Protected					1.00		0.95	0.97			1.00	1.00
Satd. Flow (prot)					5044		1610	3295			1527	1504
Flt Permitted					1.00		0.95	0.97			1.00	1.00
Satd. Flow (perm)					5044		1610	3295			1527	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	41	1997	65	292	106	0	0	13	288
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	20	20
Lane Group Flow (vph)	0	0	0	0	2100	0	146	252	0	0	131	130
Confl. Peds. (#/hr)							36					
Turn Type					Perm		custom					custom
Protected Phases						4		1	1		2	2
Permitted Phases					4			1				2
Actuated Green, G (s)						66.5		13.5	13.5		9.5	9.5
Effective Green, g (s)						66.0		13.0	13.0		9.0	9.0
Actuated g/C Ratio						0.66		0.13	0.13		0.09	0.09
Clearance Time (s)						3.5		3.5	3.5		3.5	3.5
Vehicle Extension (s)						3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)						3329		209	428		137	135
v/s Ratio Prot								c0.09	0.08		0.09	c0.09
v/s Ratio Perm						0.42						
v/c Ratio						0.63		0.70	0.59		0.96	0.96
Uniform Delay, d1						9.9		41.6	41.0		45.3	45.3
Progression Factor						1.04		0.98	0.98		0.97	0.97
Incremental Delay, d2						0.8		17.4	5.7		65.9	68.1
Delay (s)						11.1		58.1	45.8		109.7	112.0
Level of Service						B		E	D		F	F
Approach Delay (s)		0.0				11.1		50.3			110.8	
Approach LOS		A				B		D			F	

Intersection Summary

HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

27: I St & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	191	1618	0	0	0	0	0	368	496
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4799						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4799						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	191	1618	0	0	0	0	0	368	496
RTOR Reduction (vph)	0	0	0	65	1	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	107	1636	0	0	0	0	0	368	457
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				62.5	62.5						30.5	30.5
Effective Green, g (s)				62.0	62.0						30.0	30.0
Actuated g/C Ratio				0.62	0.62						0.30	0.30
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				875	2975						1062	767
v/s Ratio Prot											0.10	
v/s Ratio Perm				0.08	0.34							c0.18
v/c Ratio				0.12	0.55						0.35	0.60
Uniform Delay, d1				7.8	11.0						27.3	29.8
Progression Factor				1.00	1.00						0.80	0.78
Incremental Delay, d2				0.3	0.7						0.9	3.3
Delay (s)				8.1	11.7						22.7	26.5
Level of Service				A	B						C	C
Approach Delay (s)		0.0			11.3			0.0			24.9	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM Average Control Delay			15.7		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			56.8%		ICU Level of Service						B	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

28: J St & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↔↕↕						↔		↘		
Volume (vph)	105	1244	0	0	0	0	0	142	185	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.97		
Frt	1.00	1.00						0.92		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4801						1652		1708		
Flt Permitted	0.95	1.00						1.00		0.47		
Satd. Flow (perm)	1404	4801						1652		838		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	1244	0	0	0	0	0	142	185	67	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	94	1255	0	0	0	0	0	306	0	67	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	24.5	24.5						18.5		18.5		
Effective Green, g (s)	24.0	24.0						18.0		18.0		
Actuated g/C Ratio	0.48	0.48						0.36		0.36		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	674	2304						595		302		
v/s Ratio Prot							c0.19					
v/s Ratio Perm	0.07	0.26								0.08		
v/c Ratio	0.14	0.54						0.51		0.22		
Uniform Delay, d1	7.2	9.2						12.6		11.1		
Progression Factor	1.56	1.61						1.00		0.68		
Incremental Delay, d2	0.4	0.8						3.2		1.4		
Delay (s)	11.7	15.6						15.7		9.0		
Level of Service	B						B		A			
Approach Delay (s)	15.3				0.0		15.7				9.0	
Approach LOS	B				A		B				A	

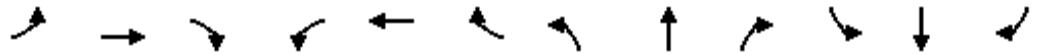
Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

29: J St & 7th Street

12/19/2006



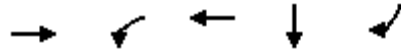
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑									↑↑↑		
Volume (vph)	0	1289	294	0	0	0	0	0	0	83	471	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0									4.0		
Lane Util. Factor		0.91									0.91		
Frbp, ped/bikes		0.99									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		4879									5002		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		4879									5002		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	1289	294	0	0	0	0	0	0	83	471	0	
RTOR Reduction (vph)	0	74	0	0	0	0	0	0	0	0	19	0	
Lane Group Flow (vph)	0	1509	0	0	0	0	0	0	0	0	535	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		24.5									18.5		
Effective Green, g (s)		24.0									18.0		
Actuated g/C Ratio		0.48									0.36		
Clearance Time (s)		3.5									3.5		
Lane Grp Cap (vph)		2342									1801		
v/s Ratio Prot		0.31											
v/s Ratio Perm											0.11		
v/c Ratio		0.64									0.30		
Uniform Delay, d1		9.8									11.5		
Progression Factor		0.48									1.06		
Incremental Delay, d2		1.2									0.4		
Delay (s)		5.9									12.6		
Level of Service		A									B		
Approach Delay (s)		5.9			0.0			0.0			12.6		
Approach LOS		A			A			A			B		
Intersection Summary													
HCM Average Control Delay			7.7									HCM Level of Service	A
HCM Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			50.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			49.8%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

Existing AM Peak Hour

1/9/2007

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	451	295	202	667	344
v/c Ratio	0.72	0.25	0.19	1.26	0.53
Control Delay	33.3	3.3	2.0	155.9	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	3.3	2.0	155.9	5.9
Queue Length 50th (ft)	92	4	2	~368	0
Queue Length 95th (ft)	#142	7	3	#559	55
Internal Link Dist (ft)	205		310	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	627	1205	1071	531	650
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.24	0.19	1.26	0.53

Intersection Summary

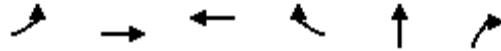
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2: Richard Blvd & I-5 NB Off

Existing AM Peak Hour

1/9/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	183	877	453	268	367	364
v/c Ratio	0.50	0.51	0.37	0.48	0.59	0.55
Control Delay	31.1	2.0	18.2	5.8	10.3	15.2
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	31.1	2.3	18.2	5.8	10.3	15.2
Queue Length 50th (ft)	60	9	75	0	29	86
Queue Length 95th (ft)	m59	m8	113	45	107	168
Internal Link Dist (ft)		310	238		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	381	1712	1238	559	607	649
Starvation Cap Reductn	0	278	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.61	0.37	0.48	0.60	0.56

Intersection Summary

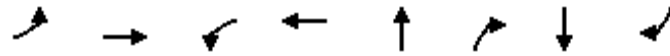
m Volume for 95th percentile queue is metered by upstream signal.

Queues

Existing AM Peak Hour

3: Richard Blvd & Bercut Dr

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	206	1382	19	536	93	7	44	110
v/c Ratio	0.36	0.58	0.12	0.23	0.32	0.02	0.14	0.26
Control Delay	8.2	9.0	16.9	11.8	18.9	8.7	16.0	5.3
Queue Delay	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	9.2	16.9	11.8	18.9	8.7	16.0	5.3
Queue Length 50th (ft)	12	57	2	26	23	0	10	0
Queue Length 95th (ft)	75	287	21	83	57	7	31	29
Internal Link Dist (ft)		238		1336	432		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	699	2804	226	3187	515	565	552	666
Starvation Cap Reductn	113	512	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.60	0.08	0.17	0.18	0.01	0.08	0.17

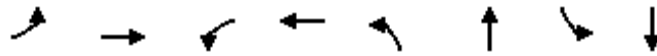
Intersection Summary

Queues

Existing AM Peak Hour

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	1108	10	619	17	7	18	35
v/c Ratio	0.17	0.62	0.07	0.37	0.05	0.01	0.06	0.09
Control Delay	29.5	10.6	31.0	9.9	16.7	0.0	16.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	10.6	31.0	9.9	16.7	0.0	16.7	7.8
Queue Length 50th (ft)	5	44	2	20	3	0	3	0
Queue Length 95th (ft)	36	257	18	132	19	0	19	19
Internal Link Dist (ft)		727		1052		442		731
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	635	2356	624	2284	575	893	589	680
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.47	0.02	0.27	0.03	0.01	0.03	0.05

Intersection Summary

Queues
5: Richard Blvd & 7th Street

Existing AM Peak Hour
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	1099	171	542	49	48	21	5	13
v/c Ratio	0.23	0.59	0.67	0.21	0.21	0.20	0.09	0.04	0.11
Control Delay	49.1	18.7	48.4	8.7	33.0	32.9	13.9	45.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	18.7	48.4	8.7	33.0	32.9	13.9	45.2	28.1
Queue Length 50th (ft)	9	138	69	18	21	21	0	2	1
Queue Length 95th (ft)	40	422	173	143	60	60	20	15	21
Internal Link Dist (ft)		1052		1196		1332			821
Turn Bay Length (ft)	200		200		200		100	150	
Base Capacity (vph)	492	1860	554	2527	521	526	505	497	465
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.59	0.31	0.21	0.09	0.09	0.04	0.01	0.03

Intersection Summary

Queues
6: Richard Blvd & 10th St

Existing AM Peak Hour
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	585	41	12	676	14	20	4	13	11	36
v/c Ratio	0.49	0.22	0.04	0.08	0.45	0.06	0.06	0.01	0.05	0.03	0.12
Control Delay	27.2	6.8	4.7	34.8	15.5	18.9	18.8	12.2	18.8	18.5	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	6.8	4.7	34.8	15.5	18.9	18.8	12.2	18.8	18.5	8.1
Queue Length 50th (ft)	38	16	1	3	64	3	5	0	3	3	0
Queue Length 95th (ft)	135	130	18	22	195	17	22	6	17	15	20
Internal Link Dist (ft)		1196			830		214			270	
Turn Bay Length (ft)	150		100	150		125		100	150		75
Base Capacity (vph)	761	2704	1102	641	2034	538	752	642	559	752	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.22	0.04	0.02	0.33	0.03	0.03	0.01	0.02	0.01	0.06

Intersection Summary

Queues
7: Richard Blvd & Dos Rios St

Existing AM Peak Hour
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	570	23	644	69	46
v/c Ratio	0.03	0.25	0.05	0.28	0.18	0.11
Control Delay	9.1	7.6	9.0	7.9	11.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	7.6	9.0	7.9	11.8	11.0
Queue Length 50th (ft)	3	65	5	77	17	11
Queue Length 95th (ft)	12	98	16	113	35	26
Internal Link Dist (ft)		830		1264	1815	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	463	2304	504	2327	537	563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.25	0.05	0.28	0.13	0.08

Intersection Summary

Queues
16: Water St & 12th Street

Existing AM Peak Hour
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	95	35	101	57	2616
v/c Ratio	0.14	0.15	0.31	0.22	0.85
Control Delay	20.9	28.1	30.8	19.9	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.9	28.1	30.8	19.9	20.2
Queue Length 50th (ft)	15	15	42	12	-316
Queue Length 95th (ft)	36	37	81	47	#384
Internal Link Dist (ft)	354		1674	1815	1536
Turn Bay Length (ft)		125			
Base Capacity (vph)	864	310	434	338	3077
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.11	0.23	0.17	0.85

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
23: G Street & 7th Street

Existing AM Peak Hour
1/9/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	229	123	360
v/c Ratio	0.12	0.17	0.46
Control Delay	0.3	4.1	12.8
Queue Delay	0.0	0.0	0.0
Total Delay	0.3	4.1	12.8
Queue Length 50th (ft)	1	0	71
Queue Length 95th (ft)	0	0	129
Internal Link Dist (ft)	344		141
Turn Bay Length (ft)			
Base Capacity (vph)	1846	736	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.12	0.17	0.46
Intersection Summary			

Queues
24: H Street & 6th Street

Existing AM Peak Hour
1/9/2007

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	451	300	25
v/c Ratio	1.00dr	0.27	0.04
Control Delay	2.6	1.7	12.1
Queue Delay	0.0	0.0	0.0
Total Delay	2.6	1.7	12.1
Queue Length 50th (ft)	0	0	5
Queue Length 95th (ft)	0	2	18
Internal Link Dist (ft)	322	349	99
Turn Bay Length (ft)			
Base Capacity (vph)	1665	1093	557
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.27	0.04

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
25: H Street & 7th Street

Existing AM Peak Hour
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	661	126	401
v/c Ratio	0.31	0.18	0.28
Control Delay	10.3	5.2	11.0
Queue Delay	0.0	0.0	0.0
Total Delay	10.3	5.2	11.0
Queue Length 50th (ft)	67	8	54
Queue Length 95th (ft)	67	38	75
Internal Link Dist (ft)	333		360
Turn Bay Length (ft)			
Base Capacity (vph)	2125	715	1423
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.18	0.28
Intersection Summary			

Queues
26: I St & 6th Street

Existing AM Peak Hour
1/9/2007



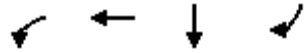
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	921	31	242	39	36
v/c Ratio	0.58	0.06	0.24	0.16	0.15
Control Delay	11.6	16.2	17.1	11.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	16.2	17.1	11.0	7.4
Queue Length 50th (ft)	86	10	42	2	0
Queue Length 95th (ft)	120	m27	67	21	11
Internal Link Dist (ft)	345		362	349	
Turn Bay Length (ft)					
Base Capacity (vph)	1601	483	1016	246	242
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.58	0.06	0.24	0.16	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I St & 7th Street

Existing AM Peak Hour
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	228	726	266	218
v/c Ratio	0.29	0.33	0.20	0.18
Control Delay	2.6	8.9	5.0	1.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.6	8.9	5.0	1.4
Queue Length 50th (ft)	0	47	7	0
Queue Length 95th (ft)	32	69	10	0
Internal Link Dist (ft)		1246	351	
Turn Bay Length (ft)				100
Base Capacity (vph)	773	2208	1345	1194
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.33	0.20	0.18

Intersection Summary

Queues
28: J St & 6th Street

Existing AM Peak Hour
1/9/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	351	2087	12	28
v/c Ratio	0.35	0.61	0.03	0.10
Control Delay	8.2	9.5	26.3	26.4
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.5	9.6	26.3	26.4
Queue Length 50th (ft)	104	253	4	11
Queue Length 95th (ft)	156	275	19	m21
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	997	3404	368	276
Starvation Cap Reductn	213	76	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.63	0.03	0.10

Intersection Summary

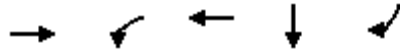
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2014	252	410
v/c Ratio	0.69	0.30	0.27
Control Delay	5.8	0.9	24.2
Queue Delay	0.1	0.0	0.0
Total Delay	5.9	0.9	24.2
Queue Length 50th (ft)	50	0	60
Queue Length 95th (ft)	45	0	89
Internal Link Dist (ft)	341		371
Turn Bay Length (ft)		100	
Base Capacity (vph)	2924	832	1520
Starvation Cap Reductn	135	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.72	0.30	0.27

Intersection Summary

1: Richard Blvd & I-5 SB Off

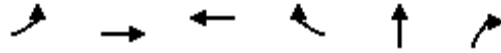


Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	591	594	378	328	244
v/c Ratio	0.94	0.41	0.31	0.81	0.49
Control Delay	54.6	1.7	0.7	43.4	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	1.7	0.7	43.4	7.3
Queue Length 50th (ft)	131	5	2	134	0
Queue Length 95th (ft)	#229	8	2	#262	52
Internal Link Dist (ft)	205		310	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	626	1448	1203	406	500
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	0.41	0.31	0.81	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

2: Richard Blvd & I-5 NB Off

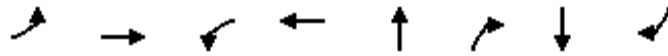


Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	355	504	921	985	198	190
v/c Ratio	1.15	0.34	0.67	1.08	0.38	0.23
Control Delay	110.9	1.6	20.9	62.8	9.8	2.7
Queue Delay	0.0	0.0	2.6	0.0	0.0	0.0
Total Delay	110.9	1.6	23.5	62.8	9.8	2.7
Queue Length 50th (ft)	~187	1	168	~201	21	0
Queue Length 95th (ft)	m#224	m4	230	#497	71	31
Internal Link Dist (ft)		310	238		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	308	1466	1366	915	509	798
Starvation Cap Reductn	0	0	314	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.34	0.88	1.08	0.39	0.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

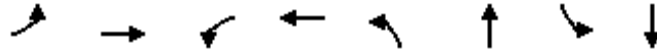
3: Richard Blvd & Bercut Dr



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	655	20	1415	190	13	54	259
v/c Ratio	0.59	0.31	0.06	0.66	0.61	0.04	0.17	0.45
Control Delay	14.9	6.6	14.1	16.1	27.5	8.8	17.5	5.5
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	6.7	14.1	16.1	27.5	8.8	17.5	5.5
Queue Length 50th (ft)	19	34	3	110	50	0	13	0
Queue Length 95th (ft)	80	102	19	243	123	11	41	46
Internal Link Dist (ft)		238		1336	432		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	599	2660	431	2993	484	557	500	748
Starvation Cap Reductn	14	721	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.34	0.05	0.47	0.39	0.02	0.11	0.35

Intersection Summary

4: Richard Blvd & 5th Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	649	9	1579	13	18	15	43
v/c Ratio	0.12	0.32	0.09	0.78	0.05	0.06	0.06	0.07
Control Delay	37.7	9.8	37.2	17.6	21.6	11.2	21.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	9.8	37.2	17.6	21.6	11.2	21.7	0.2
Queue Length 50th (ft)	6	90	4	328	5	0	5	0
Queue Length 95th (ft)	22	129	18	#455	18	15	19	0
Internal Link Dist (ft)		727		1052		442		731
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	454	2015	453	2021	379	453	387	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.32	0.02	0.78	0.03	0.04	0.04	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

5: Richard Blvd & 7th Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	9	650	84	1206	176	179	50	10	44
v/c Ratio	0.10	0.39	0.49	0.65	0.55	0.56	0.15	0.08	0.30
Control Delay	42.6	16.3	46.2	17.8	35.6	35.9	11.8	40.0	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	16.3	46.2	17.8	35.6	35.9	11.8	40.0	24.8
Queue Length 50th (ft)	4	100	39	210	85	87	3	5	6
Queue Length 95th (ft)	21	203	91	393	154	156	31	22	40
Internal Link Dist (ft)		1052		1196		1332			821
Turn Bay Length (ft)	200		200		200		100	150	
Base Capacity (vph)	532	1740	549	1868	568	569	562	524	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.37	0.15	0.65	0.31	0.31	0.09	0.02	0.09

Intersection Summary

6: Richard Blvd & 10th St



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	565	31	6	1034	17	13	10	70	37	170
v/c Ratio	0.15	0.29	0.04	0.04	0.56	0.06	0.03	0.03	0.22	0.09	0.35
Control Delay	31.1	8.3	5.2	32.8	12.6	16.8	16.4	10.0	17.8	16.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	8.3	5.2	32.8	12.6	16.8	16.4	10.0	17.8	16.4	5.8
Queue Length 50th (ft)	4	20	0	1	45	3	2	0	12	6	0
Queue Length 95th (ft)	35	123	15	14	266	19	16	10	53	32	40
Internal Link Dist (ft)		1196			830		1437			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	683	2339	954	670	2277	560	800	685	638	852	780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.24	0.03	0.01	0.45	0.03	0.02	0.01	0.11	0.04	0.22

Intersection Summary

7: Richard Blvd & Dos Rios St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	584	7	903	73	59
v/c Ratio	0.04	0.26	0.01	0.39	0.19	0.14
Control Delay	9.5	7.8	9.0	9.0	11.0	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	7.8	9.0	9.0	11.0	9.4
Queue Length 50th (ft)	2	68	1	122	15	10
Queue Length 95th (ft)	11	101	7	170	36	29
Internal Link Dist (ft)		830		1188	1815	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	332	2280	487	2315	531	557
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.26	0.01	0.39	0.14	0.11

Intersection Summary

16: Water St & 12th Street



Lane Group	EBT	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	373	58	96	49	1960
v/c Ratio	0.51	0.39	0.27	0.18	0.66
Control Delay	34.6	41.0	33.8	26.1	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	41.0	33.8	26.1	12.6
Queue Length 50th (ft)	98	32	51	16	153
Queue Length 95th (ft)	143	m57	m82	48	178
Internal Link Dist (ft)	354		1583	1815	1378
Turn Bay Length (ft)		125			
Base Capacity (vph)	872	176	430	341	2965
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.33	0.22	0.14	0.66

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

23: G Street & 7th Street



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	360	204	391
v/c Ratio	0.20	0.26	0.50
Control Delay	1.3	2.5	13.4
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	2.5	13.4
Queue Length 50th (ft)	0	0	79
Queue Length 95th (ft)	0	0	141
Internal Link Dist (ft)	344		141
Turn Bay Length (ft)			
Base Capacity (vph)	1808	783	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.26	0.50
Intersection Summary			

24: H Street & 6th Street

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	402	207	21
v/c Ratio	1.00dr	0.20	0.04
Control Delay	9.0	1.5	12.0
Queue Delay	0.0	0.0	0.0
Total Delay	9.0	1.5	12.0
Queue Length 50th (ft)	75	0	4
Queue Length 95th (ft)	116	6	16
Internal Link Dist (ft)	322	349	99
Turn Bay Length (ft)			
Base Capacity (vph)	1643	1034	581
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.20	0.04
Intersection Summary			
dr Defacto Right Lane. Recode with 1 though lane as a right lane.			

25: H Street & 7th Street



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	513	130	588
v/c Ratio	0.24	0.18	0.41
Control Delay	7.7	3.7	10.2
Queue Delay	0.0	0.0	0.0
Total Delay	7.7	3.7	10.2
Queue Length 50th (ft)	28	5	69
Queue Length 95th (ft)	39	27	91
Internal Link Dist (ft)	333		360
Turn Bay Length (ft)			
Base Capacity (vph)	2116	717	1424
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.18	0.41
Intersection Summary			

26: I St & 6th Street

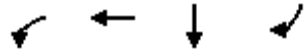


Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2103	146	252	151	150
v/c Ratio	0.63	0.70	0.59	0.96	0.97
Control Delay	11.2	59.3	46.1	102.1	104.0
Queue Delay	0.1	0.0	0.0	0.0	0.0
Total Delay	11.3	59.3	46.1	102.1	104.0
Queue Length 50th (ft)	365	96	81	90	89
Queue Length 95th (ft)	422	#195	121	#221	#222
Internal Link Dist (ft)	345		362	349	
Turn Bay Length (ft)					
Base Capacity (vph)	3331	209	428	157	155
Starvation Cap Reductn	309	0	0	0	0
Spillback Cap Reductn	119	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.70	0.59	0.96	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

27: I St & 7th Street



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	172	1637	368	496
v/c Ratio	0.18	0.55	0.35	0.62
Control Delay	1.7	11.8	22.9	24.3
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	1.7	11.9	22.9	24.3
Queue Length 50th (ft)	0	213	78	101
Queue Length 95th (ft)	27	255	108	139
Internal Link Dist (ft)		1246	351	
Turn Bay Length (ft)				100
Base Capacity (vph)	941	2975	1062	806
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	382	0	4
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.63	0.35	0.62

Intersection Summary

28: J St & 6th Street



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	94	1255	327	67
v/c Ratio	0.14	0.54	0.53	0.22
Control Delay	12.1	15.8	15.1	9.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.1	15.8	15.1	9.3
Queue Length 50th (ft)	25	125	65	10
Queue Length 95th (ft)	m60	167	127	m22
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	674	2305	616	302
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.54	0.53	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

29: J St & 7th Street



Lane Group	EBT	SBT
Lane Group Flow (vph)	1583	554
v/c Ratio	0.66	0.30
Control Delay	5.5	12.0
Queue Delay	0.0	0.0
Total Delay	5.5	12.0
Queue Length 50th (ft)	26	95
Queue Length 95th (ft)	30	121
Internal Link Dist (ft)	341	371
Turn Bay Length (ft)		
Base Capacity (vph)	2415	1820
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.66	0.30
Intersection Summary		

Baseline

HCM Signalized Intersection Capacity Analysis

1: Richard Blvd & I-5 SB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	463	61	372	202	0	0	0	0	1187	0	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.99		1.00	1.00						1.00	0.86
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.98		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3427		3433	1863						1770	1365
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3427		3433	1863						1770	1365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	463	61	372	202	0	0	0	0	1187	0	344
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	0	194
Lane Group Flow (vph)	0	509	0	372	202	0	0	0	0	0	1187	150
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												4
Actuated Green, G (s)		12.5		26.0	41.5						21.0	21.0
Effective Green, g (s)		12.5		24.5	41.0						21.0	21.0
Actuated g/C Ratio		0.18		0.35	0.59						0.30	0.30
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		612		1202	1091						531	410
v/s Ratio Prot		c0.15		c0.11	0.11						c0.67	
v/s Ratio Perm												0.11
v/c Ratio		0.83		0.31	0.19						2.24	0.37
Uniform Delay, d1		27.7		16.6	6.7						24.5	19.3
Progression Factor		1.00		0.31	0.48						1.00	1.00
Incremental Delay, d2		10.9		0.3	0.2						562.0	1.2
Delay (s)		38.6		5.4	3.4						586.5	20.4
Level of Service		D		A	A						F	C
Approach Delay (s)		38.6			4.7			0.0			459.3	
Approach LOS		D			A			A			F	

Intersection Summary

HCM Average Control Delay	276.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	160.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Richard Blvd & I-5 NB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↕	↗			
Volume (vph)	183	1470	0	0	530	331	44	0	1368	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.79		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1244		1516	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1244		1516	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	1470	0	0	530	331	44	0	1368	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	220	0	158	11	0	0	0
Lane Group Flow (vph)	183	1470	0	0	530	111	0	556	687	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	12.5	34.3			27.0	23.5		19.5	28.7			
Effective Green, g (s)	12.0	33.8			23.5	23.5		19.0	23.7			
Actuated g/C Ratio	0.17	0.48			0.34	0.34		0.27	0.34			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	303	1709			1188	418		411	509			
v/s Ratio Prot	0.10	c0.42			0.15	0.02		c0.37	c0.46			
v/s Ratio Perm						0.07						
v/c Ratio	0.60	0.86			0.45	0.27		1.35	1.35			
Uniform Delay, d1	26.8	16.0			18.2	17.0		25.5	23.2			
Progression Factor	1.33	0.26			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.5	0.5			0.6	0.7		174.0	169.8			
Delay (s)	36.2	4.6			18.7	17.7		199.5	192.9			
Level of Service	D	A			B	B		F	F			
Approach Delay (s)		8.1			18.3			196.2			0.0	
Approach LOS		A			B			F			A	

Intersection Summary

HCM Average Control Delay	78.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	160.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	206	2492	164	19	666	10	77	16	7	28	16	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1748	3487		1770	5064			1789	1493		1760	1583
Flt Permitted	0.35	1.00		0.06	1.00			0.73	1.00		0.81	1.00
Satd. Flow (perm)	650	3487		111	5064			1369	1493		1476	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	2492	164	19	666	10	77	16	7	28	16	110
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	5	0	0	92
Lane Group Flow (vph)	206	2652	0	19	675	0	0	93	2	0	44	18
Confl. Peds. (#/hr)	36		36	36		36			36	36		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	76.6	76.6		66.6	66.6			16.9	16.9		16.9	16.9
Effective Green, g (s)	76.1	77.2		67.2	67.2			16.4	16.4		16.4	16.4
Actuated g/C Ratio	0.75	0.76		0.66	0.66			0.16	0.16		0.16	0.16
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	552	2650		73	3349			221	241		238	256
v/s Ratio Prot	0.02	c0.76			0.13							
v/s Ratio Perm	0.26			0.17				c0.07	0.00		0.03	0.01
v/c Ratio	0.37	1.00		0.26	0.20			0.42	0.01		0.18	0.07
Uniform Delay, d1	3.8	12.2		7.0	6.7			38.3	35.8		36.8	36.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	17.7		8.5	0.1			0.5	0.0		0.1	0.0
Delay (s)	4.0	29.9		15.5	6.9			38.8	35.8		37.0	36.2
Level of Service	A	C		B	A			D	D		D	D
Approach Delay (s)		28.0			7.1			38.6			36.4	
Approach LOS		C			A			D			D	

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	118.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Richard Blvd & 5th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1865	12	10	995	27	17	0	7	18	1	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.94		1.00	0.94	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3534		1770	3518		1688	1489		1685	1499	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3534		1770	3518		1305	1489		1335	1499	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1865	12	10	995	27	17	0	7	18	1	34
RTOR Reduction (vph)	0	0	0	0	1	0	0	6	0	0	29	0
Lane Group Flow (vph)	30	1877	0	10	1021	0	17	1	0	18	6	0
Confl. Peds. (#/hr)			36			36	36		36	36		36
Turn Type	Prot		Prot		Perm		Perm					
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	6.2	67.2		5.2	66.2		15.6	15.6		15.6	15.6	
Effective Green, g (s)	5.2	67.5		4.2	66.5		15.1	15.1		15.1	15.1	
Actuated g/C Ratio	0.05	0.68		0.04	0.67		0.15	0.15		0.15	0.15	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	93	2414		75	2368		199	228		204	229	
v/s Ratio Prot	c0.02	c0.53		0.01	0.29			0.00			0.00	
v/s Ratio Perm							0.01			c0.01		
v/c Ratio	0.32	0.78		0.13	0.43		0.09	0.00		0.09	0.03	
Uniform Delay, d1	45.1	10.6		45.5	7.4		35.9	35.5		35.9	35.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	2.5		0.3	0.6		0.1	0.0		0.1	0.0	
Delay (s)	45.8	13.1		45.8	8.0		36.0	35.5		36.0	35.6	
Level of Service	D	B		D	A		D	D		D	D	
Approach Delay (s)		13.6			8.4			35.8			35.8	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Richard Blvd & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	469	1153	268	171	743	226	229	295	51	34	84	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3378		1770	3341		1681	1763	1495	1770	1744	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3378		1770	3341		1681	1763	1495	1770	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	469	1153	268	171	743	226	229	295	51	34	84	62
RTOR Reduction (vph)	0	9	0	0	16	0	0	0	35	0	20	0
Lane Group Flow (vph)	469	1412	0	171	953	0	206	318	16	34	126	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		8	8		7	7	
Permitted Phases									8			
Actuated Green, G (s)	32.0	72.2		18.9	59.1		29.7	29.7	29.7	15.2	15.2	
Effective Green, g (s)	31.0	72.2		17.9	59.1		29.2	29.2	29.2	14.7	14.7	
Actuated g/C Ratio	0.21	0.48		0.12	0.39		0.19	0.19	0.19	0.10	0.10	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	366	1626		211	1316		327	343	291	173	171	
v/s Ratio Prot	c0.27	c0.42		0.10	0.29		0.12	c0.18		0.02	c0.07	
v/s Ratio Perm									0.01			
v/c Ratio	1.28	0.87		0.81	0.72		0.63	0.93	0.05	0.20	0.74	
Uniform Delay, d1	59.5	34.7		64.4	38.5		55.4	59.4	49.2	62.2	65.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	146.1	5.0		19.5	3.5		2.7	29.9	0.0	0.2	13.3	
Delay (s)	205.6	39.7		83.9	42.0		58.2	89.2	49.2	62.4	79.1	
Level of Service	F	D		F	D		E	F	D	E	E	
Approach Delay (s)		80.8			48.3			74.6			75.9	
Approach LOS		F			D			E			E	

Intersection Summary

HCM Average Control Delay	69.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

6: Richard Blvd & 10th St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	175	932	41	12	1017	87	14	20	11	13	11	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1431	1770	3471		1688	1863	1583	1770	1863	1446
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1431	1770	3471		1333	1863	1583	1386	1863	1446
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	932	41	12	1017	87	14	20	11	13	11	36
RTOR Reduction (vph)	0	0	5	0	3	0	0	0	9	0	0	31
Lane Group Flow (vph)	175	932	36	12	1101	0	14	20	2	13	11	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	15.5	82.8	82.8	1.4	68.7		15.8	15.8	15.8	15.8	15.8	15.8
Effective Green, g (s)	15.0	83.3	83.3	0.9	69.2		15.3	15.3	15.3	15.3	15.3	15.3
Actuated g/C Ratio	0.13	0.75	0.75	0.01	0.62		0.14	0.14	0.14	0.14	0.14	0.14
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	238	2644	1069	14	2154		183	256	217	190	256	198
v/s Ratio Prot	c0.10	0.26		0.01	c0.32			c0.01			0.01	
v/s Ratio Perm			0.02				0.01		0.00	0.01		0.00
v/c Ratio	0.74	0.35	0.03	0.86	0.51		0.08	0.08	0.01	0.07	0.04	0.02
Uniform Delay, d1	46.3	4.8	3.7	55.2	11.7		41.9	41.9	41.5	41.9	41.7	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.7	0.4	0.1	160.8	0.9		0.1	0.0	0.0	0.1	0.0	0.0
Delay (s)	56.1	5.2	3.7	216.1	12.6		42.0	42.0	41.5	41.9	41.8	41.7
Level of Service	E	A	A	F	B		D	D	D	D	D	D
Approach Delay (s)		12.9			14.8			41.9			41.7	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

7: Richard Blvd & Dos Rios St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	874	50	23	1040	32	35	22	24	17	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	0.98	1.00		0.98	1.00			0.98			0.98	
Frt	1.00	0.99		1.00	1.00			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1741	3486		1729	3510			1687			1726	
Flt Permitted	0.15	1.00		0.21	1.00			0.90			0.93	
Satd. Flow (perm)	279	3486		380	3510			1554			1629	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	874	50	23	1040	32	35	22	24	17	19	10
RTOR Reduction (vph)	0	6	0	0	3	0	0	14	0	0	6	0
Lane Group Flow (vph)	16	918	0	23	1069	0	0	67	0	0	40	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	30.0	30.0		30.0	30.0			30.0			30.0	
Effective Green, g (s)	30.5	30.5		30.5	30.5			29.5			29.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.43			0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	125	1564		170	1574			674			707	
v/s Ratio Prot		0.26			c0.30							
v/s Ratio Perm	0.06			0.06				c0.04			0.02	
v/c Ratio	0.13	0.59		0.14	0.68			0.10			0.06	
Uniform Delay, d1	11.0	14.0		11.0	14.9			11.4			11.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.1	1.6		1.6	2.4			0.3			0.2	
Delay (s)	13.1	15.7		12.7	17.2			11.7			11.3	
Level of Service	B	B		B	B			B			B	
Approach Delay (s)		15.6			17.2			11.7			11.3	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

8: Richard Blvd & 12th Street

12/19/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	699	76	20	0	20	100	1181	50	2993	1066
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		5.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Fr t	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Fl t Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Fl t Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	699	76	20	0	20	100	1181	50	2993	1066
RTOR Reduction (vph)	0	63	0	18	0	0	0	33	0	547
Lane Group Flow (vph)	699	13	0	22	0	100	1181	17	2993	519
Confl. Peds. (#/hr)		36								36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	6 14
Permitted Phases								2		6
Actuated Green, G (s)	18.0	18.0		11.8		8.3	52.7	34.2	39.4	39.4
Effective Green, g (s)	18.0	17.0		10.8		8.3	52.7	34.2	39.4	39.4
Actuated g/C Ratio	0.18	0.17		0.11		0.08	0.53	0.34	0.39	0.39
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	618	269		183		147	3377	541	2525	624
v/s Ratio Prot	c0.20	0.01		c0.01		c0.06	0.18		c0.47	0.33
v/s Ratio Perm								0.01		
v/c Ratio	1.13	0.05		0.12		0.68	0.35	0.03	1.19	0.83
Uniform Delay, d1	41.0	34.7		40.3		44.6	13.7	21.9	30.3	27.3
Progression Factor	1.00	1.00		1.00		1.07	0.83	0.99	1.00	1.00
Incremental Delay, d2	78.0	0.0		0.1		11.6	0.1	0.1	87.7	9.2
Delay (s)	119.0	34.8		40.4		59.3	11.5	21.8	118.0	36.5
Level of Service	F	C		D		E	B	C	F	D
Approach Delay (s)				40.4			15.5			
Approach LOS				D			B			

Intersection Summary

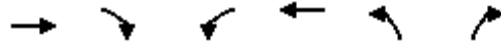
HCM Average Control Delay	80.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

11: Bercut Dr & Bannon St

12/19/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	102	14	0	35	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	14	0	35	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	490					
pX, platoon unblocked						
vC, conflicting volume			116		144	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		144	109
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1473		849	945



















Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	116	35	1
Volume Left	0	0	0
Volume Right	14	0	1
cSH	1700	1473	945
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		16.2%	ICU Level of Service
Analysis Period (min)		15	A
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis

15: Water St & 7th Street

12/19/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	47	21	171	36	330	9	215	13	62	453	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	47	21	171	36	330	9	215	13	62	453	9
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total (vph)	80	207	330	237	62	462						
Volume Left (vph)	12	171	0	9	62	0						
Volume Right (vph)	21	0	330	13	0	9						
Hadj (s)	-0.09	0.45	-0.67	0.01	0.53	0.02						
Departure Headway (s)	8.2	7.7	6.5	7.5	7.5	7.0						
Degree Utilization, x	0.18	0.44	0.60	0.49	0.13	0.90						
Capacity (veh/h)	407	450	523	453	464	509						
Control Delay (s)	13.0	15.4	17.6	17.4	10.4	43.2						
Approach Delay (s)	13.0	16.8		17.4	39.4							
Approach LOS	B	C		C	E							
Intersection Summary												
Delay			25.3									
HCM Level of Service			D									
Intersection Capacity Utilization			57.5%	ICU Level of Service	B							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

16: Water St & 12th Street

12/19/2006

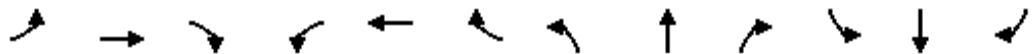


Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑↑		↘		
Volume (vph)	40	52	35	351	29	23	2577	172	34	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		
Lane Util. Factor	0.95		1.00		1.00		0.86		1.00		
Frbp, ped/bikes	1.00		1.00		0.99		1.00		0.97		
Flpb, ped/bikes	1.00		0.96		1.00		1.00		1.00		
Frt	0.92		1.00		0.99		0.99		0.95		
Flt Protected	1.00		0.95		1.00		1.00		0.97		
Satd. Flow (prot)	3239		1702		1829		6313		1664		
Flt Permitted	1.00		0.69		1.00		1.00		0.97		
Satd. Flow (perm)	3239		1244		1829		6313		1664		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	52	35	351	29	23	2577	172	34	16	7
RTOR Reduction (vph)	39	0	0	0	0	0	0	0	5	0	0
Lane Group Flow (vph)	53	0	35	380	0	0	2772	0	52	0	0
Confl. Peds. (#/hr)			36		36		36		36		
Parking (#/hr)											
Turn Type			Perm				Perm				
Protected Phases	4				4				2 3		
Permitted Phases			4				2 3		1		
Actuated Green, G (s)	24.1		24.1		24.1		43.7		13.2		
Effective Green, g (s)	24.1		24.1		24.1		46.7		13.2		
Actuated g/C Ratio	0.24		0.24		0.24		0.47		0.13		
Clearance Time (s)	4.0		4.0		4.0				4.0		
Vehicle Extension (s)	5.0		5.0		5.0				5.0		
Lane Grp Cap (vph)	781		300		441		2948		220		
v/s Ratio Prot	0.02				c0.21						
v/s Ratio Perm			0.03				0.44		c0.03		
v/c Ratio	0.07		0.12		0.86		0.94		0.24		
Uniform Delay, d1	29.3		29.6		36.4		25.3		38.9		
Progression Factor	1.00		0.77		0.76		1.00		1.00		
Incremental Delay, d2	0.1		0.4		16.5		7.5		1.2		
Delay (s)	29.4		23.1		44.0		32.8		40.0		
Level of Service	C		C		D		C		D		
Approach Delay (s)	29.4				42.3		32.8		40.0		
Approach LOS	C				D		C		D		
Intersection Summary											
HCM Average Control Delay			34.0		HCM Level of Service		C				
HCM Volume to Capacity ratio			0.81								
Actuated Cycle Length (s)			100.0		Sum of lost time (s)		16.0				
Intersection Capacity Utilization			83.9%		ICU Level of Service		E				
Analysis Period (min)			15								
c Critical Lane Group											

HCM Unsignalized Intersection Capacity Analysis

21: F Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘			↕			↕	
Volume (veh/h)	0	0	0	48	19	123	25	143	3	188	374	47
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	48	19	123	25	143	3	188	374	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								417				
pX, platoon unblocked												
vC, conflicting volume	1100	970	398	968	992	144	421			146		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1100	970	398	968	992	144	421			146		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	77	91	86	98			87		
cM capacity (veh/h)	135	215	652	206	209	903	1138			1436		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	0	48	142	171	609
Volume Left	0	48	0	25	188
Volume Right	0	0	123	3	47
cSH	1700	206	625	1138	1436
Volume to Capacity	0.00	0.23	0.23	0.02	0.13
Queue Length 95th (ft)	0	22	22	2	11
Control Delay (s)	0.0	27.6	12.4	1.4	3.4
Lane LOS	A	D	B	A	A
Approach Delay (s)	0.0	16.3		1.4	3.4
Approach LOS	A	C			

Intersection Summary				
Average Delay			5.6	
Intersection Capacity Utilization		60.6%	ICU Level of Service	B
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis

23: G Street & 7th Street

12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	229	207	0	0	0	433
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	207	0	0	0	433
RTOR Reduction (vph)	133	120	0	0	0	0
Lane Group Flow (vph)	96	87	0	0	0	433
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.03	c0.05				c0.23
v/s Ratio Perm						
v/c Ratio	0.07	0.13				0.55
Uniform Delay, d1	8.7	8.9				11.0
Progression Factor	1.00	2.32				1.00
Incremental Delay, d2	0.1	0.4				2.8
Delay (s)	8.7	21.0				13.8
Level of Service	A	C				B
Approach Delay (s)	14.6		0.0			13.8
Approach LOS	B		A			B
Intersection Summary						
HCM Average Control Delay			14.2		HCM Level of Service	B
HCM Volume to Capacity ratio			0.34			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			47.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

24: H Street & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↖	↗		↖	
Volume (vph)	20	378	55	0	0	0	0	20	280	5	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.99						0.92			1.00	
Flpb, ped/bikes	0.93	1.00						1.00			0.99	
Frt	1.00	0.98						0.86			1.00	
Flt Protected	0.95	1.00						1.00			0.99	
Satd. Flow (prot)	1642	3435						2809			1827	
Flt Permitted	0.95	1.00						1.00			0.95	
Satd. Flow (perm)	1642	3435						2809			1752	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	378	55	0	0	0	0	20	280	5	20	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	140	0	0	0	0
Lane Group Flow (vph)	20	410	0	0	0	0	0	160	0	0	25	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1								2			
Actuated Green, G (s)	22.5	22.5						20.5			20.5	
Effective Green, g (s)	22.0	22.0						20.0			20.0	
Actuated g/C Ratio	0.44	0.44						0.40			0.40	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	722	1511						1124			701	
v/s Ratio Prot		c0.12						c0.06				
v/s Ratio Perm	0.01										0.01	
v/c Ratio	0.03	0.27						0.14			0.04	
Uniform Delay, d1	7.9	8.9						9.5			9.1	
Progression Factor	0.31	0.32						0.27			1.00	
Incremental Delay, d2	0.1	0.4						0.3			0.1	
Delay (s)	2.5	3.3						2.8			9.2	
Level of Service	A	A						A			A	
Approach Delay (s)		3.2			0.0			2.8			9.2	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	3.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

25: H Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑								↘	↙↑		
Volume (vph)	0	631	32	0	0	0	0	0	0	140	460	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								0.91	0.91		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.93	1.00		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		3500								1494	3378		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		3500								1494	3378		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	631	32	0	0	0	0	0	0	140	460	0	
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	78	4	0	
Lane Group Flow (vph)	0	656	0	0	0	0	0	0	0	48	470	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		23.5								19.5	19.5		
Effective Green, g (s)		23.0								19.0	19.0		
Actuated g/C Ratio		0.46								0.38	0.38		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1610								568	1284		
v/s Ratio Prot		0.19											
v/s Ratio Perm										0.03	0.14		
v/c Ratio		0.41								0.08	0.37		
Uniform Delay, d1		9.0								9.9	11.2		
Progression Factor		1.20								2.75	1.15		
Incremental Delay, d2		0.8								0.3	0.8		
Delay (s)		11.5								27.6	13.6		
Level of Service		B								C	B		
Approach Delay (s)		11.5			0.0			0.0			16.5		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM Average Control Delay			13.9									HCM Level of Service	B
HCM Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			50.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			47.0%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

26: I St & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	53	914	73	34	239	0	0	20	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Frt					0.99		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4959		1610	3388			1640	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4959		1610	3388			1640	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	53	914	73	34	239	0	0	20	55
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	16	31
Lane Group Flow (vph)	0	0	0	0	1023	0	31	242	0	0	23	5
Confl. Peds. (#/hr)				72		72						
Turn Type				Perm		custom					custom	
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					16.5		15.5	15.5			7.5	7.5
Effective Green, g (s)					16.0		15.0	15.0			7.0	7.0
Actuated g/C Ratio					0.32		0.30	0.30			0.14	0.14
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1587		483	1016			230	211
v/s Ratio Prot							0.02	c0.07			c0.01	0.00
v/s Ratio Perm					0.21							
v/c Ratio					0.64		0.06	0.24			0.10	0.02
Uniform Delay, d1					14.6		12.5	13.2			18.7	18.6
Progression Factor					0.69		1.34	1.32			0.85	0.97
Incremental Delay, d2					1.9		0.2	0.5			0.8	0.2
Delay (s)					12.0		16.9	17.9			16.8	18.1
Level of Service					B		B	B			B	B
Approach Delay (s)		0.0			12.0			17.8			17.4	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

27: I St & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔↔↔						↕↕	↗↗
Volume (vph)	0	0	0	253	808	0	0	0	0	0	328	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4788						3539	2787
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4788						3539	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	253	808	0	0	0	0	0	328	230
RTOR Reduction (vph)	0	0	0	123	6	0	0	0	0	0	0	117
Lane Group Flow (vph)	0	0	0	105	827	0	0	0	0	0	328	113
Confl. Peds. (#/hr)				72								
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				23.5	23.5						19.5	19.5
Effective Green, g (s)				23.0	23.0						19.0	19.0
Actuated g/C Ratio				0.46	0.46						0.38	0.38
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				650	2202						1345	1059
v/s Ratio Prot											c0.09	
v/s Ratio Perm				0.07	0.17							0.04
v/c Ratio				0.16	0.38						0.24	0.11
Uniform Delay, d1				7.9	8.8						10.6	10.0
Progression Factor				1.00	1.00						0.24	0.00
Incremental Delay, d2				0.5	0.5						0.4	0.2
Delay (s)				8.4	9.3						3.0	0.2
Level of Service				A	A						A	A
Approach Delay (s)		0.0			9.1			0.0			1.8	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

28: J St & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.94		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.94		
Frt	1.00	1.00						0.89		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4796						1564		1669		
Flt Permitted	0.95	1.00						1.00		0.73		
Satd. Flow (perm)	1404	4796						1564		1282		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	351	2342	0	0	0	0	0	32	0	28	0	0
Confl. Peds. (#/hr)	36								36	36		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	71.5	71.5						21.5		21.5		
Effective Green, g (s)	71.0	71.0						21.0		21.0		
Actuated g/C Ratio	0.71	0.71						0.21		0.21		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	997	3405						328		269		
v/s Ratio Prot								0.02				
v/s Ratio Perm	0.25	0.49								c0.02		
v/c Ratio	0.35	0.69						0.10		0.10		
Uniform Delay, d1	5.6	8.2						31.9		31.9		
Progression Factor	1.34	1.18						1.00		0.77		
Incremental Delay, d2	0.8	0.9						0.6		0.7		
Delay (s)	8.3	10.6						32.4		25.4		
Level of Service	A	B						C		C		
Approach Delay (s)		10.3			0.0			32.4			25.4	
Approach LOS		B			A			C			C	

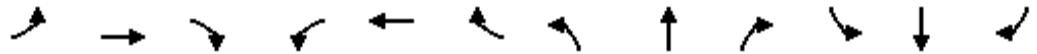
Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

29: J St & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2194	357	0	0	0	0	0	0	184	288	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frbp, ped/bikes		1.00	0.93								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.98	
Satd. Flow (prot)		4789	1265								4871	
Flt Permitted		1.00	1.00								0.98	
Satd. Flow (perm)		4789	1265								4871	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2194	357	0	0	0	0	0	0	184	288	0
RTOR Reduction (vph)	0	2	125	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	2228	196	0	0	0	0	0	0	0	466	0
Confl. Peds. (#/hr)			36							36		
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		61.5	61.5								31.5	
Effective Green, g (s)		61.0	61.0								31.0	
Actuated g/C Ratio		0.61	0.61								0.31	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		2921	772								1510	
v/s Ratio Prot		0.47										
v/s Ratio Perm			0.15								0.10	
v/c Ratio		0.76	0.25								0.31	
Uniform Delay, d1		14.2	9.0								26.3	
Progression Factor		0.36	0.05								0.92	
Incremental Delay, d2		1.5	0.6								0.5	
Delay (s)		6.7	1.1								24.8	
Level of Service		A	A								C	
Approach Delay (s)		6.0			0.0			0.0			24.8	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

35: New Street A & 7th Street

12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	90	0	0	495	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	90	0	0	495	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	248	248		495		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	248	248		495		
tC, single (s)	6.4	6.2		4.1		
tC, 2 stage (s)						
tF (s)	3.5	3.3		2.2		
p0 queue free %	88	100		100		
cM capacity (veh/h)	741	791		1069		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	495	0
Volume Left	90	0	0
Volume Right	0	495	0
cSH	741	1700	1700
Volume to Capacity	0.12	0.29	0.00
Queue Length 95th (ft)	10	0	0
Control Delay (s)	10.5	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.5	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		42.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

36: Signature St & 7th Street

12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	90	0	495	495	0	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	90	0	495	495	0	90
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			424			
pX, platoon unblocked	0.83	0.83			0.83	
vC, conflicting volume	832	742			990	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	696	588			886	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	100			100	
cM capacity (veh/h)	338	423			635	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	990	90
Volume Left	90	0	0
Volume Right	0	495	0
cSH	338	1700	635
Volume to Capacity	0.27	0.58	0.00
Queue Length 95th (ft)	26	0	0
Control Delay (s)	19.4	0.0	0.0
Lane LOS	C		
Approach Delay (s)	19.4	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		68.0%	ICU Level of Service
Analysis Period (min)		15	C

HCM Signalized Intersection Capacity Analysis

1: Richard Blvd & I-5 SB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	555	58	1044	378	0	0	0	0	544	3	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.99		1.00	1.00						1.00	0.86
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.99		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3448		3433	1863						1775	1365
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3448		3433	1863						1775	1365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	555	58	1044	378	0	0	0	0	544	3	244
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	181
Lane Group Flow (vph)	0	602	0	1044	378	0	0	0	0	0	547	63
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9	3 12 13					4		4
Permitted Phases												4
Actuated Green, G (s)		12.5		29.0	44.5						18.0	18.0
Effective Green, g (s)		12.5		27.5	44.0						18.0	18.0
Actuated g/C Ratio		0.18		0.39	0.63						0.26	0.26
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		616		1349	1171						456	351
v/s Ratio Prot		c0.17		c0.30	0.20						c0.31	
v/s Ratio Perm												0.05
v/c Ratio		0.98		0.77	0.32						1.20	0.18
Uniform Delay, d1		28.6		18.5	6.1						26.0	20.2
Progression Factor		1.00		0.22	0.27						1.00	1.00
Incremental Delay, d2		30.6		1.6	0.2						109.3	0.5
Delay (s)		59.2		5.8	1.8						135.3	20.8
Level of Service		E		A	A						F	C
Approach Delay (s)		59.2			4.7			0.0			100.0	
Approach LOS		E			A			A			F	

Intersection Summary

HCM Average Control Delay	43.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	133.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Richard Blvd & I-5 NB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↔	↗			
Volume (vph)	355	745	0	0	1371	1367	51	9	550	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.81		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	1277		1543	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	1277		1543	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	745	0	0	1371	1367	51	9	550	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	498	0	181	72	0	0	0
Lane Group Flow (vph)	355	745	0	0	1371	869	0	127	230	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	8.6	31.4			31.0	27.5		19.4	31.6			
Effective Green, g (s)	8.1	30.9			27.5	27.5		18.9	26.6			
Actuated g/C Ratio	0.12	0.44			0.39	0.39		0.27	0.38			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	205	1562			1390	502		417	572			
v/s Ratio Prot	c0.20	0.21			0.39	c0.20		0.08	c0.15			
v/s Ratio Perm						0.48						
v/c Ratio	1.73	0.48			0.99	1.73		0.30	0.40			
Uniform Delay, d1	31.0	13.8			21.1	21.3		20.3	15.9			
Progression Factor	0.96	0.13			1.00	1.00		1.00	1.00			
Incremental Delay, d2	331.1	0.0			20.9	337.4		0.9	1.0			
Delay (s)	360.8	1.8			41.9	358.6		21.2	16.9			
Level of Service	F	A			D	F		C	B			
Approach Delay (s)		117.7			200.0			19.0			0.0	
Approach LOS		F			F			B			A	

Intersection Summary

HCM Average Control Delay	154.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↗		↕	↗
Volume (vph)	196	1056	61	20	2211	36	175	15	13	40	14	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.98	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	3492		1740	5061			1781	1486		1751	1583
Flt Permitted	0.06	1.00		0.26	1.00			0.70	1.00		0.65	1.00
Satd. Flow (perm)	116	3492		467	5061			1311	1486		1177	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	196	1056	61	20	2211	36	175	15	13	40	14	259
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	11	0	0	212
Lane Group Flow (vph)	196	1114	0	20	2246	0	0	190	2	0	54	47
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.4	74.4		60.8	60.8			19.1	19.1		19.1	19.1
Effective Green, g (s)	73.9	75.0		61.4	61.4			18.6	18.6		18.6	18.6
Actuated g/C Ratio	0.73	0.74		0.60	0.60			0.18	0.18		0.18	0.18
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	241	2578		282	3059			240	272		215	290
v/s Ratio Prot	c0.08	0.32			0.44							
v/s Ratio Perm	c0.52			0.04				c0.14	0.00		0.05	0.03
v/c Ratio	0.81	0.43		0.07	0.73			0.79	0.01		0.25	0.16
Uniform Delay, d1	27.4	5.1		8.3	14.3			39.6	34.0		35.5	34.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	17.7	0.0		0.5	1.6			15.2	0.0		0.2	0.1
Delay (s)	45.1	5.2		8.8	15.9			54.9	34.0		35.8	35.0
Level of Service	D	A		A	B			D	C		D	D
Approach Delay (s)		11.1			15.8			53.5			35.2	
Approach LOS		B			B			D			D	

Intersection Summary

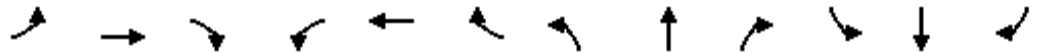
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Richard Blvd & 5th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	12	1325	21	9	2006	11	13	1	17	15	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.94		1.00	0.94	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3526		1770	3535		1680	1501		1677	1481	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3526		1770	3535		1289	1501		1316	1481	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	1325	21	9	2006	11	13	1	17	15	0	43
RTOR Reduction (vph)	0	1	0	0	0	0	0	14	0	0	36	0
Lane Group Flow (vph)	12	1345	0	9	2017	0	13	4	0	15	7	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot		Prot		Perm		Perm					
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	1.3	71.2		1.2	71.1		15.6	15.6		15.6	15.6	
Effective Green, g (s)	0.3	71.5		0.2	71.4		15.1	15.1		15.1	15.1	
Actuated g/C Ratio	0.00	0.72		0.00	0.72		0.15	0.15		0.15	0.15	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	5	2552		4	2555		197	229		201	226	
v/s Ratio Prot	c0.01	0.38		0.01	c0.57			0.00			0.00	
v/s Ratio Perm							0.01			c0.01		
v/c Ratio	2.40	0.53		2.25	0.79		0.07	0.02		0.07	0.03	
Uniform Delay, d1	49.2	6.1		49.3	8.8		35.8	35.5		35.9	35.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1013.6	0.8		1012.5	2.6		0.1	0.0		0.1	0.0	
Delay (s)	1062.8	6.9		1061.8	11.4		35.9	35.5		35.9	35.6	
Level of Service	F	A		F	B		D	D		D	D	
Approach Delay (s)		16.2			16.1			35.7			35.7	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Richard Blvd & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	983	278	84	1255	46	387	96	283	211	361	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	1.00		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3352		1770	3509		1681	1718	1495	1770	1719	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3352		1770	3509		1681	1718	1495	1770	1719	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	95	983	278	84	1255	46	387	96	283	211	361	381
RTOR Reduction (vph)	0	13	0	0	1	0	0	0	236	0	25	0
Lane Group Flow (vph)	95	1248	0	84	1300	0	240	243	47	211	717	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		8	8		7	7	
Permitted Phases									8			
Actuated Green, G (s)	12.5	67.1		11.5	66.1		25.4	25.4	25.4	32.0	32.0	
Effective Green, g (s)	11.5	67.1		10.5	66.1		24.9	24.9	24.9	31.5	31.5	
Actuated g/C Ratio	0.08	0.45		0.07	0.44		0.17	0.17	0.17	0.21	0.21	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	136	1499		124	1546		279	285	248	372	361	
v/s Ratio Prot	c0.05	c0.37		0.05	0.37		c0.14	0.14		0.12	c0.42	
v/s Ratio Perm									0.03			
v/c Ratio	0.70	0.83		0.68	0.84		0.86	0.85	0.19	0.57	1.99	
Uniform Delay, d1	67.6	36.5		68.1	37.3		60.9	60.8	53.9	53.1	59.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.9	3.9		10.9	5.7		22.0	20.4	0.1	1.2	453.2	
Delay (s)	79.5	40.4		79.0	43.0		82.9	81.2	54.0	54.3	512.5	
Level of Service	E	D		E	D		F	F	D	D	F	
Approach Delay (s)		43.2			45.2			71.7			411.1	
Approach LOS		D			D			E			F	

Intersection Summary

HCM Average Control Delay	127.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	114.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

6: Richard Blvd & 10th St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑	↗	↘	↑	↗
Volume (vph)	26	1429	31	6	1114	15	17	13	28	70	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.96	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1431	1770	3528		1691	1863	1583	1770	1863	1458
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1770	3539	1431	1770	3528		1305	1863	1583	1395	1863	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1429	31	6	1114	15	17	13	28	70	37	170
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	24	0	0	144
Lane Group Flow (vph)	26	1429	28	6	1129	0	17	13	4	70	37	26
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	4.3	81.2	81.2	1.2	78.1		17.6	17.6	17.6	17.6	17.6	17.6
Effective Green, g (s)	3.8	81.7	81.7	0.7	78.6		17.1	17.1	17.1	17.1	17.1	17.1
Actuated g/C Ratio	0.03	0.73	0.73	0.01	0.70		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	60	2593	1049	11	2487		200	286	243	214	286	224
v/s Ratio Prot	c0.01	c0.40		0.00	0.32			0.01			0.02	
v/s Ratio Perm			0.02				0.01		0.00	c0.05		0.02
v/c Ratio	0.43	0.55	0.03	0.55	0.45		0.08	0.05	0.02	0.33	0.13	0.12
Uniform Delay, d1	52.8	6.7	4.1	55.2	7.1		40.5	40.2	40.1	42.1	40.8	40.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.8	0.0	26.4	0.6		0.1	0.0	0.0	0.3	0.1	0.1
Delay (s)	54.6	7.5	4.1	81.7	7.7		40.6	40.3	40.1	42.4	40.8	40.8
Level of Service	D	A	A	F	A		D	D	D	D	D	D
Approach Delay (s)		8.3			8.1			40.3			41.2	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

7: Richard Blvd & Dos Rios St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1427	39	7	994	4	42	13	54	24	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.98	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			0.98			0.98	
Frt	1.00	1.00		1.00	1.00			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1735	3513		1770	3535			1629			1669	
Flt Permitted	0.18	1.00		0.13	1.00			0.90			0.90	
Satd. Flow (perm)	328	3513		244	3535			1495			1538	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	1427	39	7	994	4	42	13	54	24	13	22
RTOR Reduction (vph)	0	3	0	0	1	0	0	5	0	0	12	0
Lane Group Flow (vph)	12	1463	0	7	997	0	0	104	0	0	47	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	30.0	30.0		30.0	30.0			30.0			30.0	
Effective Green, g (s)	30.5	30.5		30.5	30.5			29.5			29.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.43			0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	147	1576		109	1586			649			667	
v/s Ratio Prot		c0.42			0.28							
v/s Ratio Perm	0.04			0.03				c0.07			0.03	
v/c Ratio	0.08	0.93		0.06	0.63			0.16			0.07	
Uniform Delay, d1	10.7	17.7		10.6	14.4			11.7			11.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	11.0		1.1	1.9			0.5			0.2	
Delay (s)	11.8	28.8		11.8	16.3			12.2			11.4	
Level of Service	B	C		B	B			B			B	
Approach Delay (s)		28.6			16.3			12.2			11.4	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

8: Richard Blvd & 12th Street

12/19/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1454	262	50	0	50	110	3898	20	1708	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1454	262	50	0	50	110	3898	20	1708	618
RTOR Reduction (vph)	0	139	0	0	0	0	0	8	0	356
Lane Group Flow (vph)	1454	123	0	100	0	110	3898	12	1708	262
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	
Permitted Phases								2		6 14
Actuated Green, G (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Effective Green, g (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Actuated g/C Ratio	0.18	0.18		0.12		0.05	0.52	0.34	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	618	285		205		89	3326	537	2717	671
v/s Ratio Prot	c0.42	0.08		c0.06		0.06	c0.61		0.27	
v/s Ratio Perm								0.01		0.17
v/c Ratio	2.35	0.43		0.49		1.24	1.17	0.02	0.63	0.39
Uniform Delay, d1	41.0	36.5		41.1		47.5	24.0	22.0	22.6	19.9
Progression Factor	1.00	1.00		1.00		0.96	1.41	0.55	1.00	1.00
Incremental Delay, d2	613.8	1.1		1.8		144.3	79.2	0.0	0.5	0.4
Delay (s)	654.8	37.5		42.9		189.7	113.1	12.1	23.1	20.3
Level of Service	F	D		D		F	F	B	C	C
Approach Delay (s)				42.9			114.7			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	181.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

11: Bercut Dr & Bannon St

12/19/2006





















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	41	13	0	87	13	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	13	0	87	13	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			54		134	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		134	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1551		859	1022

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	87	14
Volume Left	0	0	13
Volume Right	13	0	1
cSH	1700	1551	869
Volume to Capacity	0.03	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.2
Lane LOS	A		
Approach Delay (s)	0.0	0.0	9.2
Approach LOS	A		

Intersection Summary			
Average Delay			0.8
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)			15
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis
 15: North B Street & 7th Street

12/19/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	21	11	63	43	129	62	421	182	170	553	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	21	11	63	43	129	62	421	182	170	553	6
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total (vph)	43	106	129	665	170	559						
Volume Left (vph)	11	63	0	62	170	0						
Volume Right (vph)	11	0	129	182	0	6						
Hadj (s)	-0.07	0.33	-0.67	-0.11	0.53	0.03						
Departure Headway (s)	8.5	8.1	7.1	6.4	6.9	6.4						
Degree Utilization, x	0.10	0.24	0.26	1.19	0.33	0.99						
Capacity (veh/h)	407	430	493	565	516	559						
Control Delay (s)	12.4	12.5	11.4	124.3	12.0	59.3						
Approach Delay (s)	12.4	11.9		124.3	48.3							
Approach LOS	B	B		F	E							
Intersection Summary												
Delay			72.5									
HCM Level of Service			F									
Intersection Capacity Utilization			90.6%	ICU Level of Service	E							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

16: North B Street & 12th Street

12/19/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑↑		↘		
Volume (vph)	233	191	58	127	31	55	1935	62	18	27	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.98		1.00	0.98			1.00		0.92		
Flpb, ped/bikes	1.00		0.98	1.00			1.00		1.00		
Frt	0.93		1.00	0.97			1.00		0.91		
Flt Protected	1.00		0.95	1.00			1.00		0.98		
Satd. Flow (prot)	3219		1733	1776			6370		1542		
Flt Permitted	1.00		0.32	1.00			1.00		0.98		
Satd. Flow (perm)	3219		586	1776			6370		1542		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	233	191	58	127	31	55	1935	62	18	27	4
RTOR Reduction (vph)	153	0	0	0	0	0	0	0	3	0	0
Lane Group Flow (vph)	271	0	58	158	0	0	2052	0	46	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	20.1		20.1	20.1			47.7		13.2		
Effective Green, g (s)	20.1		20.1	20.1			50.7		13.2		
Actuated g/C Ratio	0.20		0.20	0.20			0.51		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	647		118	357			3230		204		
v/s Ratio Prot	0.08			0.09							
v/s Ratio Perm			c0.10				0.32		c0.03		
v/c Ratio	0.42		0.49	0.44			0.64		0.22		
Uniform Delay, d1	34.9		35.4	35.0			17.9		38.8		
Progression Factor	1.00		1.06	1.04			1.00		1.00		
Incremental Delay, d2	0.9		5.7	1.6			1.0		1.2		
Delay (s)	35.8		43.2	38.1			18.9		40.0		
Level of Service	D		D	D			B		D		
Approach Delay (s)	35.8			39.5			18.9		40.0		
Approach LOS	D			D			B		D		

Intersection Summary

HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

21: F Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (veh/h)	34	25	23	88	0	163	0	302	23	179	437	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	34	25	23	88	0	163	0	302	23	179	437	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								439				
pX, platoon unblocked												
vC, conflicting volume	1273	1122	438	1146	1112	314	440			325		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1273	1122	438	1146	1112	314	440			325		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	86	96	35	100	78	100			86		
cM capacity (veh/h)	99	176	618	135	179	727	1120			1235		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	82	88	163	325	619
Volume Left	34	88	0	0	179
Volume Right	23	0	163	23	3
cSH	157	135	727	1120	1235
Volume to Capacity	0.52	0.65	0.22	0.00	0.14
Queue Length 95th (ft)	64	88	21	0	13
Control Delay (s)	50.4	71.5	11.4	0.0	3.6
Lane LOS	F	F	B		A
Approach Delay (s)	50.4	32.5		0.0	3.6
Approach LOS	F	D			

Intersection Summary	
Average Delay	11.4
Intersection Capacity Utilization	78.4%
ICU Level of Service	D
Analysis Period (min)	15

HCM Signalized Intersection Capacity Analysis

23: G Street & 7th Street

12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	360	249	0	0	0	668
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	360	249	0	0	0	668
RTOR Reduction (vph)	151	144	0	0	0	0
Lane Group Flow (vph)	209	105	0	0	0	668
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.06	c0.07				c0.36
v/s Ratio Perm						
v/c Ratio	0.15	0.16				0.85
Uniform Delay, d1	9.0	9.0				13.1
Progression Factor	0.82	1.45				1.00
Incremental Delay, d2	0.2	0.5				11.5
Delay (s)	7.6	13.6				24.6
Level of Service	A	B				C
Approach Delay (s)	10.0		0.0			24.6
Approach LOS	B		A			C
Intersection Summary						
HCM Average Control Delay			17.6		HCM Level of Service	B
HCM Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

24: H Street & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↖	↗		↖	↗
Volume (vph)	4	322	79	0	0	0	0	14	193	2	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.98						0.92			1.00	
Flpb, ped/bikes	1.00	1.00						1.00			0.99	
Frt	1.00	0.97						0.86			1.00	
Flt Protected	0.95	1.00						1.00			1.00	
Satd. Flow (prot)	1770	3379						2810			1844	
Flt Permitted	0.95	1.00						1.00			0.98	
Satd. Flow (perm)	1770	3379						2810			1820	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	322	79	0	0	0	0	14	193	2	19	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	120	0	0	0	0
Lane Group Flow (vph)	4	358	0	0	0	0	0	87	0	0	21	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Split						Perm					
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)	23.5	23.5						19.5			19.5	
Effective Green, g (s)	23.0	23.0						19.0			19.0	
Actuated g/C Ratio	0.46	0.46						0.38			0.38	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	814	1554						1068			692	
v/s Ratio Prot	0.00	c0.11						c0.03				
v/s Ratio Perm											0.01	
v/c Ratio	0.00	0.23						0.08			0.03	
Uniform Delay, d1	7.3	8.2						9.9			9.7	
Progression Factor	1.41	2.01						0.17			1.00	
Incremental Delay, d2	0.0	0.3						0.1			0.1	
Delay (s)	10.3	16.7						1.8			9.8	
Level of Service	B	B						A			A	
Approach Delay (s)		16.7			0.0			1.8			9.8	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

25: H Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑								↘	↙↑		
Volume (vph)	0	456	60	0	0	0	0	0	0	145	850	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								0.91	0.91		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								0.93	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		3444								1494	3383		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		3444								1494	3383		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	456	60	0	0	0	0	0	0	145	850	0	
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	70	2	0	
Lane Group Flow (vph)	0	496	0	0	0	0	0	0	0	60	863	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		19.5								23.5	23.5		
Effective Green, g (s)		19.0								23.0	23.0		
Actuated g/C Ratio		0.38								0.46	0.46		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1309								687	1556		
v/s Ratio Prot		0.14											
v/s Ratio Perm										0.04	0.26		
v/c Ratio		0.38								0.09	0.55		
Uniform Delay, d1		11.2								7.6	9.8		
Progression Factor		0.98								1.50	0.86		
Incremental Delay, d2		0.8								0.2	1.1		
Delay (s)		11.8								11.5	9.5		
Level of Service		B								B	A		
Approach Delay (s)		11.8			0.0			0.0			9.8		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM Average Control Delay			10.5									HCM Level of Service	B
HCM Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			50.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.3%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

26: I Street & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	41	2188	65	292	106	0	0	13	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					1.00		1.00	1.00			0.86	0.85
Flt Protected					1.00		0.95	0.97			1.00	1.00
Satd. Flow (prot)					5047		1610	3295			1527	1504
Flt Permitted					1.00		0.95	0.97			1.00	1.00
Satd. Flow (perm)					5047		1610	3295			1527	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	41	2188	65	292	106	0	0	13	288
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	15	15
Lane Group Flow (vph)	0	0	0	0	2291	0	146	252	0	0	136	135
Confl. Peds. (#/hr)							36					
Turn Type				Perm			custom					custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					66.5		13.5	13.5			9.5	9.5
Effective Green, g (s)					66.0		13.0	13.0			9.0	9.0
Actuated g/C Ratio					0.66		0.13	0.13			0.09	0.09
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					3331		209	428			137	135
v/s Ratio Prot							c0.09	0.08			0.09	c0.09
v/s Ratio Perm					0.45							
v/c Ratio					0.69		0.70	0.59			0.99	1.00
Uniform Delay, d1					10.6		41.6	41.0			45.5	45.5
Progression Factor					1.11		0.98	0.98			0.97	0.97
Incremental Delay, d2					0.9		17.2	5.7			74.1	76.5
Delay (s)					12.7		57.8	45.6			118.1	120.6
Level of Service					B		E	D			F	F
Approach Delay (s)		0.0			12.7			50.1			119.3	
Approach LOS		A			B			D			F	

Intersection Summary

HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

27: I Street & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	191	1731	0	0	0	0	0	567	574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4800						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4800						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	191	1731	0	0	0	0	0	567	574
RTOR Reduction (vph)	0	0	0	34	1	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	138	1749	0	0	0	0	0	567	544
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				62.5	62.5						30.5	30.5
Effective Green, g (s)				62.0	62.0						30.0	30.0
Actuated g/C Ratio				0.62	0.62						0.30	0.30
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				875	2976						1062	767
v/s Ratio Prot											0.16	
v/s Ratio Perm				0.10	0.36							c0.21
v/c Ratio				0.16	0.59						0.53	0.71
Uniform Delay, d1				8.0	11.4						29.2	31.1
Progression Factor				1.00	1.00						0.78	0.78
Incremental Delay, d2				0.4	0.9						1.8	5.1
Delay (s)				8.4	12.2						24.5	29.5
Level of Service				A	B						C	C
Approach Delay (s)		0.0			11.9			0.0			27.0	
Approach LOS		A			B			A			C	

Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

28: J St & 6th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↙↙						↗		↘		
Volume (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.95		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.97		
Frt	1.00	1.00						0.91		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4801						1617		1720		
Flt Permitted	0.95	1.00						1.00		0.35		
Satd. Flow (perm)	1404	4801						1617		637		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	94	1427	0	0	0	0	0	407	0	67	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	24.5	24.5						18.5		18.5		
Effective Green, g (s)	24.0	24.0						18.0		18.0		
Actuated g/C Ratio	0.48	0.48						0.36		0.36		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	674	2304						582		229		
v/s Ratio Prot							c0.25					
v/s Ratio Perm	0.07	0.30								0.11		
v/c Ratio	0.14	0.62						0.70		0.29		
Uniform Delay, d1	7.2	9.6						13.7		11.4		
Progression Factor	1.58	1.64						1.00		0.73		
Incremental Delay, d2	0.4	1.1						6.9		2.6		
Delay (s)	11.8	16.9						20.5		10.9		
Level of Service	B						C		B			
Approach Delay (s)	16.5				0.0		20.5				10.9	
Approach LOS	B				A		C				B	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

29: J St & 7th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑									↑↑↑		
Volume (vph)	0	1515	332	0	0	0	0	0	0	160	593	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0									4.0		
Lane Util. Factor		0.91									0.91		
Frbp, ped/bikes		0.99									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		4885									4968		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		4885									4968		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	1515	332	0	0	0	0	0	0	160	593	0	
RTOR Reduction (vph)	0	64	0	0	0	0	0	0	0	0	10	0	
Lane Group Flow (vph)	0	1783	0	0	0	0	0	0	0	0	743	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		24.5									18.5		
Effective Green, g (s)		24.0									18.0		
Actuated g/C Ratio		0.48									0.36		
Clearance Time (s)		3.5									3.5		
Lane Grp Cap (vph)		2345									1788		
v/s Ratio Prot		0.36											
v/s Ratio Perm											0.15		
v/c Ratio		0.76									0.42		
Uniform Delay, d1		10.6									12.0		
Progression Factor		0.57									1.09		
Incremental Delay, d2		1.9									0.6		
Delay (s)		8.0									13.7		
Level of Service		A									B		
Approach Delay (s)		8.0			0.0			0.0			13.7		
Approach LOS		A			A			A			B		
Intersection Summary													
HCM Average Control Delay			9.6									HCM Level of Service	A
HCM Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			50.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			58.9%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

35: New St A & 7th Street

12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	477	0	0	118	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	477	0	0	118	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	59	59			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	59	59			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	50	100			100	
cM capacity (veh/h)	948	1007			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	477	118	0
Volume Left	477	0	0
Volume Right	0	118	0
cSH	948	1700	1700
Volume to Capacity	0.50	0.07	0.00
Queue Length 95th (ft)	72	0	0
Control Delay (s)	12.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		10.1	
Intersection Capacity Utilization		40.4%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis

36: Signature St & 7th Street

12/19/2006



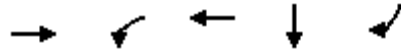
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	476	0	119	118	0	477
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	476	0	119	118	0	477
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			462			
pX, platoon unblocked						
vC, conflicting volume	655	178			237	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	655	178			237	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	100			100	
cM capacity (veh/h)	431	865			1330	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	476	237	477
Volume Left	476	0	0
Volume Right	0	118	0
cSH	431	1700	1330
Volume to Capacity	1.10	0.14	0.00
Queue Length 95th (ft)	412	0	0
Control Delay (s)	105.6	0.0	0.0
Lane LOS	F		
Approach Delay (s)	105.6	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay		42.2	
Intersection Capacity Utilization		58.1%	ICU Level of Service
Analysis Period (min)		15	B

Queues

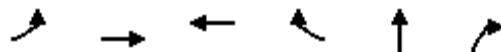
1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	524	372	202	1187	344
v/c Ratio	0.84	0.31	0.19	2.24	0.57
Control Delay	40.7	5.8	3.7	581.7	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	5.8	3.7	581.7	9.2
Queue Length 50th (ft)	112	6	2	~845	21
Queue Length 95th (ft)	#191	m8	m3	#1072	91
Internal Link Dist (ft)	205		308	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	627	1202	1091	531	603
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.31	0.19	2.24	0.57

Intersection Summary

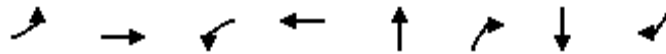
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	183	1470	530	331	714	698
v/c Ratio	0.60	0.86	0.39	0.52	1.25	1.13
Control Delay	37.6	5.6	16.6	5.4	148.0	102.2
Queue Delay	0.0	15.2	0.0	0.0	0.0	0.0
Total Delay	37.6	20.8	16.6	5.4	148.0	102.2
Queue Length 50th (ft)	70	14	84	0	-337	-373
Queue Length 95th (ft)	m43	m9	122	46	#548	#583
Internal Link Dist (ft)		308	235		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	303	1709	1365	632	570	616
Starvation Cap Reductn	0	262	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	1.02	0.39	0.52	1.25	1.13

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	206	2656	19	676	93	7	44	110
v/c Ratio	0.37	1.00	0.26	0.20	0.42	0.03	0.18	0.32
Control Delay	6.5	33.0	22.6	8.3	41.4	19.4	34.6	8.8
Queue Delay	0.4	61.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	94.7	22.6	8.3	41.4	19.4	34.6	8.8
Queue Length 50th (ft)	41	~1037	6	70	50	1	23	0
Queue Length 95th (ft)	67	#1174	30	97	96	12	53	43
Internal Link Dist (ft)		235		1336	410		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	724	2655	74	3354	317	350	341	451
Starvation Cap Reductn	200	355	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	1.15	0.26	0.20	0.29	0.02	0.13	0.24

Intersection Summary

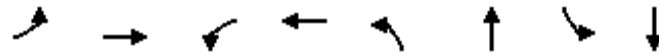
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

Baseline AM Peak

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	1877	10	1022	17	7	18	35
v/c Ratio	0.32	0.78	0.13	0.43	0.08	0.01	0.09	0.14
Control Delay	53.4	15.5	49.0	9.5	32.5	0.0	32.6	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.4	15.5	49.0	9.5	32.5	0.0	32.6	12.4
Queue Length 50th (ft)	19	461	6	171	9	0	9	1
Queue Length 95th (ft)	47	604	23	233	27	0	28	26
Internal Link Dist (ft)		684		1047		442		313
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	412	2416	412	2367	310	667	318	382
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.78	0.02	0.43	0.05	0.01	0.06	0.09

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	469	1421	171	969	206	318	51	34	146
v/c Ratio	1.28	0.87	0.81	0.73	0.63	0.93	0.16	0.20	0.76
Control Delay	192.4	42.4	91.0	42.7	64.3	92.2	16.9	62.4	79.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	192.4	42.4	91.0	42.7	64.3	92.2	16.9	62.4	79.8
Queue Length 50th (ft)	~580	655	166	422	192	318	6	31	121
Queue Length 95th (ft)	#806	#971	239	546	288	#492	44	65	191
Internal Link Dist (ft)		1047		1171		1313			344
Turn Bay Length (ft)	200		200		200		200	150	
Base Capacity (vph)	366	1637	366	1333	353	370	349	372	384
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.28	0.87	0.47	0.73	0.58	0.86	0.15	0.09	0.38

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
6: Richard Blvd & 10th St

Baseline AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	932	41	12	1104	14	20	11	13	11	36
v/c Ratio	0.74	0.34	0.04	0.16	0.51	0.07	0.07	0.05	0.06	0.04	0.14
Control Delay	64.0	6.2	4.1	55.2	15.6	36.1	36.3	17.5	35.8	34.9	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	6.2	4.1	55.2	15.6	36.1	36.3	17.5	35.8	34.9	12.7
Queue Length 50th (ft)	122	122	4	8	266	8	11	0	7	6	0
Queue Length 95th (ft)	186	213	19	28	375	26	32	16	24	22	27
Internal Link Dist (ft)		1171			827		1430			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	468	2782	1129	468	2180	353	493	427	367	493	424
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.34	0.04	0.03	0.51	0.04	0.04	0.03	0.04	0.02	0.08

Intersection Summary

Queues

Baseline AM Peak

7: Richard Blvd & Dos Rios St

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	924	23	1072	81	46
v/c Ratio	0.13	0.59	0.14	0.68	0.12	0.06
Control Delay	14.2	15.8	13.6	17.5	9.3	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	15.8	13.6	17.5	9.3	9.7
Queue Length 50th (ft)	4	143	5	176	13	8
Queue Length 95th (ft)	16	197	19	241	36	25
Internal Link Dist (ft)		827		1230	1822	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	125	1570	170	1578	687	713
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.59	0.14	0.68	0.12	0.06

Intersection Summary

Queues
8: Richard Blvd & 12th Street

Baseline AM Peak
1/9/2007



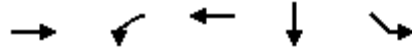
Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	699	76	40	100	1181	50	2993	1066
v/c Ratio	1.13	0.23	0.18	0.68	0.34	0.09	1.13	0.90
Control Delay	116.6	10.4	23.8	72.7	6.7	8.2	88.9	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.6	10.4	23.8	72.7	6.7	8.2	88.9	15.4
Queue Length 50th (ft)	~268	0	11	~77	52	0	~467	39
Queue Length 95th (ft)	#381	39	40	#183	58	m14	#537	#386
Internal Link Dist (ft)			320		814			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	332	305	148	3461	587	2638	1183
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.23	0.13	0.68	0.34	0.09	1.13	0.90

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: Water St & 12th Street

Baseline AM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	92	35	380	2772	57
v/c Ratio	0.11	0.12	0.86	0.91	0.23
Control Delay	15.0	23.4	47.4	23.4	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	23.4	47.4	23.4	34.5
Queue Length 50th (ft)	10	15	180	~327	27
Queue Length 95th (ft)	30	39	#375	#398	63
Internal Link Dist (ft)	289		1610	1439	1822
Turn Bay Length (ft)		125			
Base Capacity (vph)	849	311	458	3051	321
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.11	0.83	0.91	0.18

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
23: G Street & 7th Street

Baseline AM Peak
1/9/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	229	207	433
v/c Ratio	0.13	0.26	0.55
Control Delay	0.5	3.9	14.3
Queue Delay	0.0	0.0	0.0
Total Delay	0.5	3.9	14.3
Queue Length 50th (ft)	0	0	90
Queue Length 95th (ft)	0	1	160
Internal Link Dist (ft)	295		93
Turn Bay Length (ft)			
Base Capacity (vph)	1763	785	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.13	0.26	0.55

Intersection Summary

Queues
24: H Street & 6th Street

Baseline AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	20	433	300	25
v/c Ratio	0.03	0.28	0.24	0.04
Control Delay	2.6	3.0	1.1	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.6	3.0	1.1	9.4
Queue Length 50th (ft)	1	1	1	4
Queue Length 95th (ft)	m1	3	3	15
Internal Link Dist (ft)		321	377	99
Turn Bay Length (ft)				
Base Capacity (vph)	722	1535	1264	701
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.28	0.24	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline AM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	663	126	474
v/c Ratio	0.41	0.20	0.37
Control Delay	11.4	6.0	13.5
Queue Delay	0.0	0.0	0.0
Total Delay	11.4	6.0	13.5
Queue Length 50th (ft)	103	14	72
Queue Length 95th (ft)	123	41	98
Internal Link Dist (ft)	341		341
Turn Bay Length (ft)			
Base Capacity (vph)	1617	646	1289
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.20	0.37

Intersection Summary



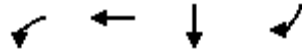
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1040	31	242	39	36
v/c Ratio	0.65	0.06	0.24	0.16	0.15
Control Delay	12.0	17.1	18.0	11.5	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	17.1	18.0	11.5	7.5
Queue Length 50th (ft)	99	10	43	1	0
Queue Length 95th (ft)	137	m26	m65	20	7
Internal Link Dist (ft)	333		319	377	
Turn Bay Length (ft)					
Base Capacity (vph)	1603	483	1016	246	242
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.06	0.24	0.16	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I St & 7th Street

Baseline AM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	228	833	328	230
v/c Ratio	0.29	0.38	0.24	0.20
Control Delay	2.6	9.3	3.0	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.6	9.3	3.0	0.4
Queue Length 50th (ft)	0	56	7	0
Queue Length 95th (ft)	32	80	11	0
Internal Link Dist (ft)		1246	403	
Turn Bay Length (ft)				100
Base Capacity (vph)	773	2210	1345	1176
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.38	0.24	0.20

Intersection Summary



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	351	2342	42	28
v/c Ratio	0.35	0.69	0.12	0.10
Control Delay	8.5	10.9	25.4	25.8
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.9	10.9	25.4	25.8
Queue Length 50th (ft)	104	287	15	10
Queue Length 95th (ft)	156	311	44	m20
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	997	3404	339	269
Starvation Cap Reductn	237	35	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.70	0.12	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

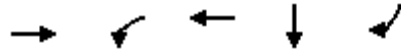
Queues
29: J St & 7th Street

Baseline AM Peak
1/9/2007



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2230	321	472
v/c Ratio	0.76	0.36	0.31
Control Delay	6.8	0.9	24.5
Queue Delay	0.2	0.0	0.0
Total Delay	7.0	0.9	24.5
Queue Length 50th (ft)	68	0	69
Queue Length 95th (ft)	65	0	99
Internal Link Dist (ft)	373		299
Turn Bay Length (ft)		200	
Base Capacity (vph)	2924	897	1516
Starvation Cap Reductn	144	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.36	0.31

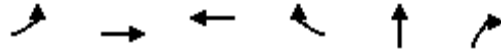
Intersection Summary



Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	613	1044	378	547	244
v/c Ratio	0.98	0.77	0.32	1.20	0.46
Control Delay	61.4	6.4	2.0	136.7	6.4
Queue Delay	0.0	0.9	0.0	0.0	0.0
Total Delay	61.4	7.3	2.0	136.7	6.4
Queue Length 50th (ft)	136	30	5	~292	0
Queue Length 95th (ft)	#242	m41	m5	#470	50
Internal Link Dist (ft)	205		310	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	627	1349	1171	456	532
Starvation Cap Reductn	0	112	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.98	0.84	0.32	1.20	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	355	745	1371	1367	308	302
v/c Ratio	1.73	0.48	0.87	1.37	0.52	0.41
Control Delay	357.4	1.9	25.9	187.4	8.8	9.8
Queue Delay	0.0	0.0	67.3	0.0	0.0	0.0
Total Delay	357.4	1.9	93.2	187.4	8.8	9.8
Queue Length 50th (ft)	~219	6	270	~585	21	50
Queue Length 95th (ft)	m#196	m6	#407	#826	86	109
Internal Link Dist (ft)		310	238		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	205	1562	1567	997	600	735
Starvation Cap Reductn	0	0	372	0	0	0
Spillback Cap Reductn	0	0	43	0	3	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.73	0.48	1.15	1.37	0.52	0.41

Intersection Summary

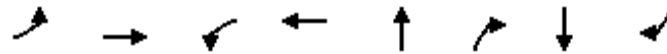
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline PM Peak

3: Richard Blvd & Bercut Dr

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	1117	20	2247	190	13	54	259
v/c Ratio	0.81	0.43	0.07	0.73	0.79	0.05	0.25	0.52
Control Delay	47.0	6.4	13.2	18.4	61.6	15.2	35.9	8.1
Queue Delay	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	7.6	13.2	18.4	61.6	15.2	35.9	8.1
Queue Length 50th (ft)	78	151	6	398	111	0	28	0
Queue Length 95th (ft)	148	190	21	545	189	15	63	63
Internal Link Dist (ft)		238		1267	432		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	435	2581	282	3063	303	354	272	565
Starvation Cap Reductn	0	1161	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.79	0.07	0.73	0.63	0.04	0.20	0.46

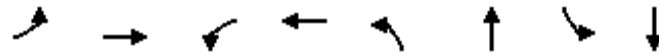
Intersection Summary

Queues

Baseline PM Peak

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	1346	9	2017	13	18	15	43
v/c Ratio	0.16	0.51	0.12	0.76	0.07	0.07	0.07	0.07
Control Delay	49.5	7.6	48.7	12.8	31.9	14.9	32.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	7.6	48.7	12.8	31.9	14.9	32.2	0.3
Queue Length 50th (ft)	7	186	6	404	7	1	8	0
Queue Length 95th (ft)	25	326	22	#797	23	19	25	0
Internal Link Dist (ft)		708		1043		442		247
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	412	2637	412	2639	307	370	313	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.51	0.02	0.76	0.04	0.05	0.05	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
5: Richard Blvd & 7th Street

Baseline PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	95	1261	84	1301	240	243	283	211	742
v/c Ratio	0.70	0.83	0.68	0.84	0.86	0.85	0.58	0.57	1.92
Control Delay	93.1	42.9	93.0	44.3	87.5	85.9	10.4	60.0	454.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.1	42.9	93.0	44.3	87.5	85.9	10.4	60.0	454.2
Queue Length 50th (ft)	92	559	82	590	243	245	0	187	~1097
Queue Length 95th (ft)	152	#808	138	#851	336	338	83	277	#1352
Internal Link Dist (ft)		1043		1130		1403			382
Turn Bay Length (ft)	200		200		200		200	150	
Base Capacity (vph)	366	1511	366	1548	353	361	538	372	386
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.83	0.23	0.84	0.68	0.67	0.53	0.57	1.92

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
6: Richard Blvd & 10th St

Baseline PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1429	31	6	1129	17	13	28	70	37	170
v/c Ratio	0.29	0.53	0.03	0.08	0.45	0.09	0.05	0.11	0.33	0.13	0.45
Control Delay	58.2	8.3	4.9	53.7	9.6	36.4	35.2	13.4	42.8	37.4	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	8.3	4.9	53.7	9.6	36.4	35.2	13.4	42.8	37.4	9.6
Queue Length 50th (ft)	18	232	4	4	218	10	7	0	41	21	0
Queue Length 95th (ft)	47	385	17	18	288	29	24	24	83	50	56
Internal Link Dist (ft)		1130			996		1466			413	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	468	2681	1087	468	2530	345	493	439	369	493	523
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.53	0.03	0.01	0.45	0.05	0.03	0.06	0.19	0.08	0.33

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	1466	7	998	109	59
v/c Ratio	0.08	0.93	0.06	0.63	0.17	0.09
Control Delay	12.6	30.2	12.6	16.6	11.6	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	30.2	12.6	16.6	11.6	8.5
Queue Length 50th (ft)	3	288	2	160	24	9
Queue Length 95th (ft)	12	#443	9	219	53	28
Internal Link Dist (ft)		996		1190	1946	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	147	1578	109	1586	654	680
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.93	0.06	0.63	0.17	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Richard Blvd & 12th Street

Baseline PM Peak
1/9/2007



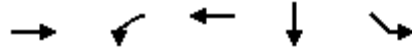
Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1454	262	100	110	3898	20	1708	618
v/c Ratio	2.35	0.62	0.44	1.24	1.13	0.04	0.60	0.59
Control Delay	635.8	21.0	44.7	184.8	85.4	9.0	13.6	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	635.8	21.0	44.7	184.8	85.4	9.0	13.6	3.5
Queue Length 50th (ft)	~787	52	57	~86	~705	0	143	0
Queue Length 95th (ft)	#920	137	107	m#111	#990	m4	167	37
Internal Link Dist (ft)			200		288			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	424	288	89	3443	558	2834	1045
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.35	0.62	0.35	1.24	1.13	0.04	0.60	0.59

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

Baseline PM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	424	58	158	2052	49
v/c Ratio	0.53	0.49	0.44	0.62	0.21
Control Delay	20.7	48.1	38.5	11.4	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	48.1	38.5	11.4	35.1
Queue Length 50th (ft)	63	36	96	165	24
Queue Length 95th (ft)	108	m56	m132	190	57
Internal Link Dist (ft)	785		1656	1565	1946
Turn Bay Length (ft)		125			
Base Capacity (vph)	948	147	444	3334	296
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.39	0.36	0.62	0.17

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	360	249	668
v/c Ratio	0.23	0.31	0.85
Control Delay	2.5	2.8	27.1
Queue Delay	0.0	0.0	0.0
Total Delay	2.5	2.8	27.1
Queue Length 50th (ft)	0	0	167
Queue Length 95th (ft)	0	0	#342
Internal Link Dist (ft)	344		141
Turn Bay Length (ft)			
Base Capacity (vph)	1593	809	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.31	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
24: H Street & 6th Street

Baseline PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	4	401	207	21
v/c Ratio	0.00	0.25	0.17	0.03
Control Delay	10.2	13.6	0.6	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.2	13.6	0.6	10.0
Queue Length 50th (ft)	2	97	0	4
Queue Length 95th (ft)	m0	164	m4	14
Internal Link Dist (ft)		322	349	99
Turn Bay Length (ft)				
Base Capacity (vph)	814	1596	1187	692
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.00	0.25	0.17	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	516	130	865
v/c Ratio	0.39	0.17	0.56
Control Delay	11.2	2.6	9.6
Queue Delay	0.0	0.0	0.0
Total Delay	11.2	2.6	9.6
Queue Length 50th (ft)	114	8	120
Queue Length 95th (ft)	110	m12	m126
Internal Link Dist (ft)	333		360
Turn Bay Length (ft)			
Base Capacity (vph)	1330	757	1558
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.17	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



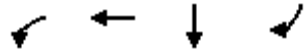
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2294	146	252	151	150
v/c Ratio	0.69	0.70	0.59	0.99	0.99
Control Delay	12.8	59.0	46.0	110.9	113.0
Queue Delay	0.2	0.0	0.0	1.6	1.7
Total Delay	13.0	59.0	46.0	112.5	114.8
Queue Length 50th (ft)	425	93	79	93	92
Queue Length 95th (ft)	485	m#179	m121	#227	#229
Internal Link Dist (ft)	345		362	349	
Turn Bay Length (ft)					
Base Capacity (vph)	3335	209	428	153	151
Starvation Cap Reductn	314	0	0	0	0
Spillback Cap Reductn	252	0	0	1	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.70	0.59	0.99	1.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	172	1750	567	574
v/c Ratio	0.19	0.59	0.53	0.72
Control Delay	4.5	12.4	24.8	28.1
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	4.5	12.6	24.8	28.1
Queue Length 50th (ft)	23	236	118	119
Queue Length 95th (ft)	53	282	153	227
Internal Link Dist (ft)		1246	351	
Turn Bay Length (ft)				100
Base Capacity (vph)	909	2975	1062	797
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	500	0	4
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.71	0.53	0.72

Intersection Summary



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	94	1427	420	67
v/c Ratio	0.14	0.62	0.71	0.29
Control Delay	12.3	17.2	21.5	11.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.3	17.2	21.5	11.3
Queue Length 50th (ft)	26	156	96	12
Queue Length 95th (ft)	m55	201	#213	m23
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	674	2305	595	229
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.62	0.71	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	1847	753
v/c Ratio	0.77	0.42
Control Delay	7.6	13.6
Queue Delay	0.0	0.0
Total Delay	7.6	13.6
Queue Length 50th (ft)	38	148
Queue Length 95th (ft)	41	182
Internal Link Dist (ft)	341	371
Turn Bay Length (ft)		
Base Capacity (vph)	2409	1797
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.77	0.42
Intersection Summary		

Baseline + Project

HCM Signalized Intersection Capacity Analysis

Baseline +Proj(Res) AM Peak

1: Richard Blvd & I-5 SB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	481	61	498	244	0	0	0	0	1288	0	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.99		1.00	1.00						1.00	0.86
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.98		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3430		3433	1863						1770	1365
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3430		3433	1863						1770	1365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	481	61	498	244	0	0	0	0	1288	0	344
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	0	179
Lane Group Flow (vph)	0	528	0	498	244	0	0	0	0	0	1288	166
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9 3 12 13						4	4	
Permitted Phases												4
Actuated Green, G (s)		12.5		26.0	41.5						21.0	21.0
Effective Green, g (s)		12.5		24.5	41.0						21.0	21.0
Actuated g/C Ratio		0.18		0.35	0.59						0.30	0.30
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		613		1202	1091						531	410
v/s Ratio Prot		c0.15		c0.15	0.13						c0.73	
v/s Ratio Perm												0.12
v/c Ratio		0.86		0.41	0.22						2.43	0.40
Uniform Delay, d1		27.9		17.3	6.9						24.5	19.5
Progression Factor		1.00		0.26	0.40						1.00	1.00
Incremental Delay, d2		13.4		0.4	0.2						647.2	1.4
Delay (s)		41.3		5.0	3.0						671.7	20.9
Level of Service		D		A	A						F	C
Approach Delay (s)		41.3			4.3			0.0			534.5	
Approach LOS		D			A			A			F	

Intersection Summary

HCM Average Control Delay	307.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	185.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↕	↗			
Volume (vph)	183	1589	0	0	698	561	44	0	1465	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.79		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1244		1515	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1244		1515	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	1589	0	0	698	561	44	0	1465	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	373	0	154	8	0	0	0
Lane Group Flow (vph)	183	1589	0	0	698	188	0	608	739	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	12.5	34.3			27.0	23.5		19.5	28.7			
Effective Green, g (s)	12.0	33.8			23.5	23.5		19.0	23.7			
Actuated g/C Ratio	0.17	0.48			0.34	0.34		0.27	0.34			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	303	1709			1188	418		411	509			
v/s Ratio Prot	0.10	c0.45			0.20	0.03		c0.40	c0.49			
v/s Ratio Perm						0.12						
v/c Ratio	0.60	0.93			0.59	0.45		1.48	1.45			
Uniform Delay, d1	26.8	17.0			19.2	18.2		25.5	23.2			
Progression Factor	1.35	0.32			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.5	1.1			1.2	1.6		228.0	214.2			
Delay (s)	36.6	6.6			20.4	19.8		253.5	237.3			
Level of Service	D	A			C	B		F	F			
Approach Delay (s)		9.7			20.1			245.5			0.0	
Approach LOS		A			C			F			A	

Intersection Summary

HCM Average Control Delay	91.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	185.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

Baseline +Proj(Res) AM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	206	2708	164	19	1064	10	77	16	7	28	16	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1764	3491		1770	5072			1789	1493		1760	1583
Flt Permitted	0.22	1.00		0.06	1.00			0.73	1.00		0.81	1.00
Satd. Flow (perm)	407	3491		111	5072			1369	1493		1476	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	2708	164	19	1064	10	77	16	7	28	16	110
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	3	0	0	92
Lane Group Flow (vph)	206	2869	0	19	1073	0	0	93	4	0	44	18
Confl. Peds. (#/hr)	36		36	36		36			36	36		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	76.6	76.6		66.6	66.6			16.9	16.9		16.9	16.9
Effective Green, g (s)	76.1	77.2		67.2	67.2			16.4	16.4		16.4	16.4
Actuated g/C Ratio	0.75	0.76		0.66	0.66			0.16	0.16		0.16	0.16
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	385	2653		73	3355			221	241		238	256
v/s Ratio Prot	0.03	c0.82			0.21							
v/s Ratio Perm	0.37			0.17				c0.07	0.00		0.03	0.01
v/c Ratio	0.54	1.08		0.26	0.32			0.42	0.02		0.18	0.07
Uniform Delay, d1	4.4	12.2		7.0	7.4			38.3	35.8		36.8	36.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	44.1		8.5	0.3			0.5	0.0		0.1	0.0
Delay (s)	5.2	56.3		15.5	7.6			38.8	35.8		37.0	36.2
Level of Service	A	E		B	A			D	D		D	D
Approach Delay (s)		52.8			7.8			38.6			36.4	
Approach LOS		D			A			D			D	

Intersection Summary

HCM Average Control Delay	40.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	124.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

Baseline +Proj(Res) AM Peak

4: Richard Blvd & 5th Street

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	183	1928	12	10	1205	54	17	0	7	144	1	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.94		1.00	0.94	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.95	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3534		1770	3504		1718	1489		1685	1491	
Flt Permitted	0.95	1.00		0.95	1.00		0.34	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3534		1770	3504		613	1489		1335	1491	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	1928	12	10	1205	54	17	0	7	144	1	222
RTOR Reduction (vph)	0	0	0	0	2	0	0	6	0	0	184	0
Lane Group Flow (vph)	183	1940	0	10	1257	0	17	1	0	144	39	0
Confl. Peds. (#/hr)			36			36	36		36	36		36
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	14.6	65.5		5.2	56.1		17.3	17.3		17.3	17.3	
Effective Green, g (s)	13.6	65.8		4.2	56.4		16.8	16.8		16.8	16.8	
Actuated g/C Ratio	0.14	0.67		0.04	0.57		0.17	0.17		0.17	0.17	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	244	2354		75	2000		104	253		227	254	
v/s Ratio Prot	c0.10	c0.55		0.01	0.36			0.00			0.03	
v/s Ratio Perm							0.03			c0.11		
v/c Ratio	0.75	0.82		0.13	0.63		0.16	0.00		0.63	0.15	
Uniform Delay, d1	41.0	12.2		45.5	14.2		35.0	34.1		38.1	34.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.9	3.4		0.3	1.5		0.3	0.0		4.2	0.1	
Delay (s)	51.9	15.6		45.8	15.7		35.3	34.1		42.4	35.0	
Level of Service	D	B		D	B		D	C		D	D	
Approach Delay (s)		18.8			15.9			34.9			37.9	
Approach LOS		B			B			C			D	

Intersection Summary

HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Volume (vph)	532	1213	334	171	784	290	277	383	51	214	426	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	0.97		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3355		1770	3310		1681	1764	1495	1770	1797	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3355		1770	3310		1681	1764	1495	1770	1797	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	532	1213	334	171	784	290	277	383	51	214	426	131
RTOR Reduction (vph)	0	15	0	0	26	0	0	0	27	0	7	0
Lane Group Flow (vph)	532	1532	0	171	1048	0	249	411	24	214	550	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		8	8		7	7	
Permitted Phases									8			
Actuated Green, G (s)	32.0	53.1		18.9	40.0		32.0	32.0	32.0	32.0	32.0	
Effective Green, g (s)	31.0	53.1		17.9	40.0		31.5	31.5	31.5	31.5	31.5	
Actuated g/C Ratio	0.21	0.35		0.12	0.27		0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	366	1188		211	883		353	370	314	372	377	
v/s Ratio Prot	c0.30	c0.46		0.10	0.32		0.15	c0.23		0.12	c0.31	
v/s Ratio Perm									0.02			
v/c Ratio	1.45	1.29		0.81	1.19		0.71	1.11	0.08	0.58	1.46	
Uniform Delay, d1	59.5	48.4		64.4	55.0		54.9	59.2	47.6	53.2	59.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	218.8	136.8		19.5	95.6		5.2	80.2	0.0	1.3	220.6	
Delay (s)	278.3	185.2		83.9	150.6		60.1	139.4	47.6	54.6	279.8	
Level of Service	F	F		F	F		E	F	D	D	F	
Approach Delay (s)		209.1			141.5			105.1			217.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	177.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	124.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

Baseline +Proj(Res) AM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	175	1173	41	12	1122	87	14	20	11	13	11	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1431	1770	3477		1688	1863	1583	1770	1863	1446
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1431	1770	3477		1333	1863	1583	1386	1863	1446
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1173	41	12	1122	87	14	20	11	13	11	36
RTOR Reduction (vph)	0	0	4	0	3	0	0	0	9	0	0	31
Lane Group Flow (vph)	175	1173	37	12	1206	0	14	20	2	13	11	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	15.5	82.8	82.8	1.4	68.7		15.8	15.8	15.8	15.8	15.8	15.8
Effective Green, g (s)	15.0	83.3	83.3	0.9	69.2		15.3	15.3	15.3	15.3	15.3	15.3
Actuated g/C Ratio	0.13	0.75	0.75	0.01	0.62		0.14	0.14	0.14	0.14	0.14	0.14
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	238	2644	1069	14	2158		183	256	217	190	256	198
v/s Ratio Prot	c0.10	0.33		0.01	c0.35			c0.01			0.01	
v/s Ratio Perm			0.03				0.01		0.00	0.01		0.00
v/c Ratio	0.74	0.44	0.03	0.86	0.56		0.08	0.08	0.01	0.07	0.04	0.02
Uniform Delay, d1	46.3	5.3	3.7	55.2	12.3		41.9	41.9	41.5	41.9	41.7	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.7	0.5	0.1	160.8	1.1		0.1	0.0	0.0	0.1	0.0	0.0
Delay (s)	56.1	5.9	3.7	216.1	13.3		42.0	42.0	41.5	41.9	41.8	41.7
Level of Service	E	A	A	F	B		D	D	D	D	D	D
Approach Delay (s)		12.1			15.3			41.9			41.7	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	1115	50	23	1145	32	35	22	24	17	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			0.98			0.98	
Frt	1.00	0.99		1.00	1.00			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1748	3497		1747	3512			1687			1726	
Flt Permitted	0.13	1.00		0.13	1.00			0.90			0.93	
Satd. Flow (perm)	241	3497		241	3512			1554			1629	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	1115	50	23	1145	32	35	22	24	17	19	10
RTOR Reduction (vph)	0	5	0	0	3	0	0	14	0	0	6	0
Lane Group Flow (vph)	16	1160	0	23	1174	0	0	67	0	0	40	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	30.0	30.0		30.0	30.0			30.0			30.0	
Effective Green, g (s)	30.5	30.5		30.5	30.5			29.5			29.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.43			0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	108	1569		108	1575			674			707	
v/s Ratio Prot		0.33			c0.33							
v/s Ratio Perm	0.07			0.10				c0.04			0.02	
v/c Ratio	0.15	0.74		0.21	0.75			0.10			0.06	
Uniform Delay, d1	11.1	15.5		11.4	15.5			11.4			11.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.9	3.2		4.5	3.3			0.3			0.2	
Delay (s)	14.0	18.6		15.9	18.8			11.7			11.3	
Level of Service	B	B		B	B			B			B	
Approach Delay (s)		18.6			18.7			11.7			11.3	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	940	76	20	0	20	100	1181	50	2993	1171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		5.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	940	76	20	0	20	100	1181	50	2993	1171
RTOR Reduction (vph)	0	62	0	18	0	0	0	33	0	586
Lane Group Flow (vph)	940	14	0	22	0	100	1181	17	2993	585
Confl. Peds. (#/hr)		36								36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	6 14
Permitted Phases								2		6
Actuated Green, G (s)	18.0	18.0		11.8		8.3	52.7	34.2	39.4	39.4
Effective Green, g (s)	18.0	17.0		10.8		8.3	52.7	34.2	39.4	39.4
Actuated g/C Ratio	0.18	0.17		0.11		0.08	0.53	0.34	0.39	0.39
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	618	269		183		147	3377	541	2525	624
v/s Ratio Prot	c0.27	0.01		c0.01		c0.06	0.18		c0.47	0.37
v/s Ratio Perm								0.01		
v/c Ratio	1.52	0.05		0.12		0.68	0.35	0.03	1.19	0.94
Uniform Delay, d1	41.0	34.7		40.3		44.6	13.7	21.9	30.3	29.1
Progression Factor	1.00	1.00		1.00		1.07	0.83	1.00	1.00	1.00
Incremental Delay, d2	242.7	0.0		0.1		11.6	0.1	0.1	87.7	21.7
Delay (s)	283.7	34.8		40.4		59.2	11.5	22.0	118.0	50.8
Level of Service	F	C		D		E	B	C	F	D
Approach Delay (s)				40.4			15.5			
Approach LOS				D			B			

Intersection Summary

HCM Average Control Delay	107.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 11: Bercut Dr & Bannon St

Baseline +Proj(Res) AM Peak
 12/19/2006





















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↙	↘
Volume (veh/h)	102	14	0	35	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	14	0	35	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	490					
pX, platoon unblocked						
vC, conflicting volume			116		144	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		144	109
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1473		849	945

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	116	35	1
Volume Left	0	0	0
Volume Right	14	0	1
cSH	1700	1473	945
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		16.2%	ICU Level of Service A
Analysis Period (min)		15	
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis
 15: Water St & 7th Street

Baseline +Proj(Res) AM Peak
 12/19/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	47	21	171	36	399	9	283	13	219	704	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	47	21	171	36	399	9	283	13	219	704	9
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total (vph)	80	207	399	305	219	713						
Volume Left (vph)	12	171	0	9	219	0						
Volume Right (vph)	21	0	399	13	0	9						
Hadj (s)	-0.09	0.45	-0.67	0.01	0.53	0.03						
Departure Headway (s)	8.8	8.1	7.0	7.8	8.0	7.5						
Degree Utilization, x	0.20	0.47	0.77	0.66	0.49	1.48						
Capacity (veh/h)	369	435	506	449	444	484						
Control Delay (s)	13.9	16.7	28.8	24.4	17.1	245.9						
Approach Delay (s)	13.9	24.7		24.4	192.1							
Approach LOS	B	C		C	F							
Intersection Summary												
Delay			105.3									
HCM Level of Service			F									
Intersection Capacity Utilization			81.8%	ICU Level of Service	D							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
16: Water St & 12th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	40	209	35	420	29	23	2577	172	34	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	1.00		1.00	0.99			1.00		0.97		
Flpb, ped/bikes	1.00		0.97	1.00			1.00		1.00		
Frt	0.87		1.00	0.99			0.99		0.95		
Flt Protected	1.00		0.95	1.00			1.00		0.97		
Satd. Flow (prot)	3094		1718	1834			6313		1664		
Flt Permitted	1.00		0.55	1.00			1.00		0.97		
Satd. Flow (perm)	3094		998	1834			6313		1664		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	209	35	420	29	23	2577	172	34	16	7
RTOR Reduction (vph)	157	0	0	0	0	0	0	0	5	0	0
Lane Group Flow (vph)	92	0	35	449	0	0	2772	0	52	0	0
Confl. Peds. (#/hr)			36		36	36		36			36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	25.0		25.0	25.0			42.8		13.2		
Effective Green, g (s)	25.0		25.0	25.0			45.8		13.2		
Actuated g/C Ratio	0.25		0.25	0.25			0.46		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	774		250	459			2891		220		
v/s Ratio Prot	0.03			c0.24							
v/s Ratio Perm			0.04				0.44		c0.03		
v/c Ratio	0.12		0.14	0.98			0.96		0.24		
Uniform Delay, d1	29.0		29.1	37.2			26.2		38.9		
Progression Factor	1.00		0.81	0.80			1.00		1.00		
Incremental Delay, d2	0.1		0.5	35.8			9.6		1.2		
Delay (s)	29.1		24.1	65.4			35.8		40.0		
Level of Service	C		C	E			D		D		
Approach Delay (s)	29.1			62.5			35.8		40.0		
Approach LOS	C			E			D		D		

Intersection Summary

HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
21: F Street & 7th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (veh/h)	0	0	0	48	19	124	25	210	3	188	625	47
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	48	19	124	25	210	3	188	625	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								417				
pX, platoon unblocked												
vC, conflicting volume	1420	1288	648	1286	1310	212	672			213		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1420	1288	648	1286	1310	212	672			213		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	61	86	85	97			86		
cM capacity (veh/h)	76	137	470	124	133	829	919			1357		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	0	48	143	238	860
Volume Left	0	48	0	25	188
Volume Right	0	0	124	3	47
cSH	1700	124	489	919	1357
Volume to Capacity	0.00	0.39	0.29	0.03	0.14
Queue Length 95th (ft)	0	41	30	2	12
Control Delay (s)	0.0	51.5	15.4	1.2	3.2
Lane LOS	A	F	C	A	A
Approach Delay (s)	0.0	24.4		1.2	3.2
Approach LOS	A	C			

Intersection Summary				
Average Delay			6.0	
Intersection Capacity Utilization		77.4%	ICU Level of Service	D
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖				↗
Volume (vph)	229	274	0	0	0	684
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	274	0	0	0	684
RTOR Reduction (vph)	133	159	0	0	0	0
Lane Group Flow (vph)	96	115	0	0	0	684
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.03	c0.07				c0.37
v/s Ratio Perm						
v/c Ratio	0.07	0.17				0.87
Uniform Delay, d1	8.7	9.1				13.3
Progression Factor	2.55	2.58				1.00
Incremental Delay, d2	0.1	0.5				13.0
Delay (s)	22.2	23.9				26.3
Level of Service	C	C				C
Approach Delay (s)	23.1		0.0			26.3
Approach LOS	C		A			C
Intersection Summary						
HCM Average Control Delay			25.0		HCM Level of Service	C
HCM Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			60.2%		ICU Level of Service	B
Analysis Period (min)			15			
c	Critical Lane Group					

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↖	↗		↖	
Volume (vph)	20	378	55	0	0	0	0	20	280	5	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.99						0.92			1.00	
Flpb, ped/bikes	0.93	1.00						1.00			0.99	
Frt	1.00	0.98						0.86			1.00	
Flt Protected	0.95	1.00						1.00			0.99	
Satd. Flow (prot)	1642	3435						2809			1827	
Flt Permitted	0.95	1.00						1.00			0.95	
Satd. Flow (perm)	1642	3435						2809			1752	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	378	55	0	0	0	0	20	280	5	20	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	140	0	0	0	0
Lane Group Flow (vph)	20	410	0	0	0	0	0	160	0	0	25	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1								2			
Actuated Green, G (s)	22.5	22.5						20.5			20.5	
Effective Green, g (s)	22.0	22.0						20.0			20.0	
Actuated g/C Ratio	0.44	0.44						0.40			0.40	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	722	1511						1124			701	
v/s Ratio Prot		c0.12						c0.06				
v/s Ratio Perm	0.01										0.01	
v/c Ratio	0.03	0.27						0.14			0.04	
Uniform Delay, d1	7.9	8.9						9.5			9.1	
Progression Factor	0.31	0.32						0.23			1.00	
Incremental Delay, d2	0.1	0.4						0.3			0.1	
Delay (s)	2.6	3.3						2.5			9.2	
Level of Service	A	A						A			A	
Approach Delay (s)		3.2			0.0			2.5			9.2	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑								↘	↙↑	
Volume (vph)	0	631	32	0	0	0	0	0	0	140	711	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								0.91	0.91	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.93	1.00	
Frt		0.99								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		3500								1494	3382	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		3500								1494	3382	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	631	32	0	0	0	0	0	0	140	711	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	78	2	0
Lane Group Flow (vph)	0	656	0	0	0	0	0	0	0	48	723	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		23.5								19.5	19.5	
Effective Green, g (s)		23.0								19.0	19.0	
Actuated g/C Ratio		0.46								0.38	0.38	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1610								568	1285	
v/s Ratio Prot		0.19										
v/s Ratio Perm										0.03	0.21	
v/c Ratio		0.41								0.08	0.56	
Uniform Delay, d1		9.0								9.9	12.2	
Progression Factor		1.20								2.38	1.08	
Incremental Delay, d2		0.8								0.2	1.3	
Delay (s)		11.5								23.9	14.5	
Level of Service		B								C	B	
Approach Delay (s)		11.5			0.0			0.0			15.9	
Approach LOS		B			A			A			B	

Intersection Summary		
HCM Average Control Delay	13.9	HCM Level of Service B
HCM Volume to Capacity ratio	0.48	
Actuated Cycle Length (s)	50.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	60.2%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
26: I St & 6th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	53	1010	73	34	239	0	0	20	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Frt					0.99		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4970		1610	3388			1640	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4970		1610	3388			1640	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	53	1010	73	34	239	0	0	20	55
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	16	31
Lane Group Flow (vph)	0	0	0	0	1120	0	31	242	0	0	23	5
Confl. Peds. (#/hr)				72		72						
Turn Type				Perm		custom						custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					16.5		15.5	15.5			7.5	7.5
Effective Green, g (s)					16.0		15.0	15.0			7.0	7.0
Actuated g/C Ratio					0.32		0.30	0.30			0.14	0.14
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1590		483	1016			230	211
v/s Ratio Prot							0.02	c0.07			c0.01	0.00
v/s Ratio Perm					0.23							
v/c Ratio					0.70		0.06	0.24			0.10	0.02
Uniform Delay, d1					14.9		12.5	13.2			18.7	18.6
Progression Factor					0.78		1.34	1.32			0.85	0.97
Incremental Delay, d2					2.5		0.2	0.5			0.8	0.2
Delay (s)					14.2		16.9	17.9			16.8	18.1
Level of Service					B		B	B			B	B
Approach Delay (s)		0.0			14.2			17.8			17.4	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I St & 7th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔↔↔						↕↕	↗↗
Volume (vph)	0	0	0	253	808	0	0	0	0	0	483	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4788						3539	2787
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4788						3539	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	253	808	0	0	0	0	0	483	326
RTOR Reduction (vph)	0	0	0	112	6	0	0	0	0	0	0	117
Lane Group Flow (vph)	0	0	0	116	827	0	0	0	0	0	483	209
Confl. Peds. (#/hr)				72								
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				23.5	23.5						19.5	19.5
Effective Green, g (s)				23.0	23.0						19.0	19.0
Actuated g/C Ratio				0.46	0.46						0.38	0.38
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				650	2202						1345	1059
v/s Ratio Prot											c0.14	
v/s Ratio Perm				0.08	0.17							0.08
v/c Ratio				0.18	0.38						0.36	0.20
Uniform Delay, d1				7.9	8.8						11.1	10.4
Progression Factor				1.00	1.00						0.16	0.00
Incremental Delay, d2				0.6	0.5						0.7	0.4
Delay (s)				8.5	9.3						2.4	0.4
Level of Service				A	A						A	A
Approach Delay (s)		0.0			9.1			0.0			1.6	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.94		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.94		
Frt	1.00	1.00						0.89		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4796						1564		1669		
Flt Permitted	0.95	1.00						1.00		0.73		
Satd. Flow (perm)	1404	4796						1564		1282		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	351	2342	0	0	0	0	0	32	0	28	0	0
Confl. Peds. (#/hr)	36								36	36		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	71.5	71.5						21.5		21.5		
Effective Green, g (s)	71.0	71.0						21.0		21.0		
Actuated g/C Ratio	0.71	0.71						0.21		0.21		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	997	3405						328		269		
v/s Ratio Prot								0.02				
v/s Ratio Perm	0.25	0.49								c0.02		
v/c Ratio	0.35	0.69						0.10		0.10		
Uniform Delay, d1	5.6	8.2						31.9		31.9		
Progression Factor	1.34	1.18						1.00		0.77		
Incremental Delay, d2	0.8	0.9						0.6		0.7		
Delay (s)	8.3	10.6						32.4		25.3		
Level of Service	A	B						C		C		
Approach Delay (s)		10.3			0.0			32.4			25.3	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

Baseline +Proj(Res) AM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↑								↑↑↑			
Volume (vph)	0	2194	357	0	0	0	0	0	0	268	360	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		4.0	4.0								4.0			
Lane Util. Factor		0.86	0.86								0.91			
Frbp, ped/bikes		1.00	0.93								1.00			
Flpb, ped/bikes		1.00	1.00								0.97			
Frt		1.00	0.85								1.00			
Flt Protected		1.00	1.00								0.98			
Satd. Flow (prot)		4789	1265								4852			
Flt Permitted		1.00	1.00								0.98			
Satd. Flow (perm)		4789	1265								4852			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	0	2194	357	0	0	0	0	0	0	268	360	0		
RTOR Reduction (vph)	0	2	94	0	0	0	0	0	0	0	6	0		
Lane Group Flow (vph)	0	2228	227	0	0	0	0	0	0	0	622	0		
Confl. Peds. (#/hr)			36							36				
Turn Type			Perm								Perm			
Protected Phases		1										2		
Permitted Phases			1								2			
Actuated Green, G (s)		61.5	61.5								31.5			
Effective Green, g (s)		61.0	61.0								31.0			
Actuated g/C Ratio		0.61	0.61								0.31			
Clearance Time (s)		3.5	3.5								3.5			
Lane Grp Cap (vph)		2921	772								1504			
v/s Ratio Prot		0.47												
v/s Ratio Perm			0.18								0.13			
v/c Ratio		0.76	0.29								0.41			
Uniform Delay, d1		14.2	9.3								27.3			
Progression Factor		0.36	0.06								0.87			
Incremental Delay, d2		1.5	0.8								0.8			
Delay (s)		6.7	1.3								24.5			
Level of Service		A	A								C			
Approach Delay (s)		6.0			0.0			0.0			24.5			
Approach LOS		A			A			A			C			
Intersection Summary														
HCM Average Control Delay			9.7									HCM Level of Service	A	
HCM Volume to Capacity ratio			0.65											
Actuated Cycle Length (s)			100.0								8.0		Sum of lost time (s)	
Intersection Capacity Utilization			66.7%										ICU Level of Service	C
Analysis Period (min)			15											
c Critical Lane Group														

HCM Unsignalized Intersection Capacity Analysis

33: Riverfront Dr & 5th Street

12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	45	0	0	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	45	0	0	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		90	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		90	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1623		885	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	45	23
Volume Left	0	45	0
Volume Right	0	0	23
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.02
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

34: Riverfront Dr & 7th Street

12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	0	0	68	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	68	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0	136	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	136	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			96	100	100	
cM capacity (veh/h)			1623	822	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	68	0
Volume Left	0	68	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.00	0.04	0.00
Queue Length 95th (ft)	0	3	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	0.0
Approach LOS			A

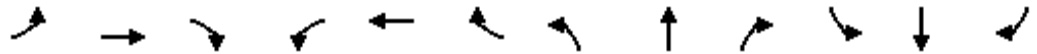
Intersection Summary			
Average Delay		7.3	
Intersection Capacity Utilization		7.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

Baseline +Proj(Res) PM Peak

1: Richard Blvd & I-5 SB Off

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	603	58	1139	411	0	0	0	0	806	3	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.99		1.00	1.00						1.00	0.86
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.99		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3454		3433	1863						1774	1365
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3454		3433	1863						1774	1365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	603	58	1139	411	0	0	0	0	806	3	244
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	181
Lane Group Flow (vph)	0	650	0	1139	411	0	0	0	0	0	809	63
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												4
Actuated Green, G (s)		12.5		29.0	44.5						18.0	18.0
Effective Green, g (s)		12.5		27.5	44.0						18.0	18.0
Actuated g/C Ratio		0.18		0.39	0.63						0.26	0.26
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		617		1349	1171						456	351
v/s Ratio Prot		c0.19		c0.33	0.22						c0.46	
v/s Ratio Perm												0.05
v/c Ratio		1.05		0.84	0.35						1.77	0.18
Uniform Delay, d1		28.8		19.3	6.2						26.0	20.2
Progression Factor		1.00		0.21	0.26						1.00	1.00
Incremental Delay, d2		51.3		1.9	0.1						357.2	0.5
Delay (s)		80.0		6.1	1.8						383.2	20.8
Level of Service		F		A	A						F	C
Approach Delay (s)		80.0			4.9			0.0			299.2	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	115.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	195.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↔	↗			
Volume (vph)	355	1054	0	0	1499	1547	51	9	802	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.81		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	1277		1532	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	1277		1532	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	1054	0	0	1499	1547	51	9	802	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	498	0	255	27	0	0	0
Lane Group Flow (vph)	355	1054	0	0	1499	1049	0	182	398	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	8.5	31.3			31.0	27.5		19.5	31.7			
Effective Green, g (s)	8.0	30.8			27.5	27.5		19.0	26.7			
Actuated g/C Ratio	0.11	0.44			0.39	0.39		0.27	0.38			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	202	1557			1390	502		416	574			
v/s Ratio Prot	c0.20	0.30			0.42	c0.24		0.12	c0.26			
v/s Ratio Perm						0.58						
v/c Ratio	1.76	0.68			1.08	2.09		0.44	0.69			
Uniform Delay, d1	31.0	15.6			21.3	21.3		21.1	18.2			
Progression Factor	1.07	0.14			1.00	1.00		1.00	1.00			
Incremental Delay, d2	342.7	0.1			48.3	497.2		1.5	4.6			
Delay (s)	375.8	2.4			69.5	518.5		22.6	22.8			
Level of Service	F	A			E	F		C	C			
Approach Delay (s)		96.4			297.6			22.7			0.0	
Approach LOS		F			F			C			A	

Intersection Summary

HCM Average Control Delay	199.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	195.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	196	1617	61	20	2519	36	175	15	13	40	14	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	3508		1758	5064			1781	1486		1751	1583
Flt Permitted	0.06	1.00		0.13	1.00			0.70	1.00		0.65	1.00
Satd. Flow (perm)	116	3508		232	5064			1311	1486		1177	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	196	1617	61	20	2519	36	175	15	13	40	14	259
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	11	0	0	212
Lane Group Flow (vph)	196	1676	0	20	2554	0	0	190	2	0	54	47
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.4	74.4		60.9	60.9			19.1	19.1		19.1	19.1
Effective Green, g (s)	73.9	75.0		61.5	61.5			18.6	18.6		18.6	18.6
Actuated g/C Ratio	0.73	0.74		0.61	0.61			0.18	0.18		0.18	0.18
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	239	2590		140	3065			240	272		215	290
v/s Ratio Prot	c0.08	0.48			0.50							
v/s Ratio Perm	c0.52			0.09				c0.14	0.00		0.05	0.03
v/c Ratio	0.82	0.65		0.14	0.83			0.79	0.01		0.25	0.16
Uniform Delay, d1	29.2	6.7		8.7	16.0			39.6	34.0		35.5	34.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	18.8	0.4		2.1	2.8			15.2	0.0		0.2	0.1
Delay (s)	48.1	7.1		10.8	18.8			54.9	34.0		35.8	35.0
Level of Service	D	A		B	B			D	C		D	D
Approach Delay (s)		11.4			18.7			53.5			35.2	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Richard Blvd & 5th Street

Baseline +Proj(Res) PM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
Volume (vph)	403	1496	21	9	2175	87	13	1	17	107	0	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.94		1.00	0.94	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00		0.95	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3528		1770	3507		1704	1501		1677	1481	
Flt Permitted	0.95	1.00		0.95	1.00		0.43	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3528		1770	3507		770	1501		1316	1481	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	403	1496	21	9	2175	87	13	1	17	107	0	182
RTOR Reduction (vph)	0	1	0	0	3	0	0	14	0	0	153	0
Lane Group Flow (vph)	403	1516	0	9	2259	0	13	4	0	107	29	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot		Prot		Perm		Perm		Perm		Perm	
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	24.0	70.3		1.2	47.5		16.5	16.5		16.5	16.5	
Effective Green, g (s)	23.0	70.6		0.2	47.8		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.23	0.71		0.00	0.48		0.16	0.16		0.16	0.16	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	2521		4	1697		125	243		213	240	
v/s Ratio Prot	c0.23	0.43		0.01	c0.64			0.00			0.02	
v/s Ratio Perm							0.02			c0.08		
v/c Ratio	0.98	0.60		2.25	1.33		0.10	0.02		0.50	0.12	
Uniform Delay, d1	37.7	7.1		49.3	25.5		35.3	34.8		37.8	35.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.0	1.1		1012.5	153.3		0.1	0.0		0.7	0.1	
Delay (s)	75.7	8.1		1061.8	178.8		35.4	34.8		38.4	35.5	
Level of Service	E	A		F	F		D	C		D	D	
Approach Delay (s)		22.3			182.3			35.1			36.6	
Approach LOS		C			F			D			D	

Intersection Summary

HCM Average Control Delay	103.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Volume (vph)	266	1027	326	84	1360	214	509	328	283	355	635	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3334		1770	3423		1681	1750	1495	1770	1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3334		1770	3423		1681	1750	1495	1770	1750	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	266	1027	326	84	1360	214	509	328	283	355	635	432
RTOR Reduction (vph)	0	17	0	0	8	0	0	0	144	0	17	0
Lane Group Flow (vph)	266	1336	0	84	1566	0	412	425	139	355	1050	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		8	8		7	7	
Permitted Phases									8			
Actuated Green, G (s)	26.2	60.5		11.5	45.8		32.0	32.0	32.0	32.0	32.0	
Effective Green, g (s)	25.2	60.5		10.5	45.8		31.5	31.5	31.5	31.5	31.5	
Actuated g/C Ratio	0.17	0.40		0.07	0.31		0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	297	1345		124	1045		353	368	314	372	368	
v/s Ratio Prot	c0.15	c0.40		0.05	c0.46		c0.25	0.24		0.20	c0.60	
v/s Ratio Perm									0.09			
v/c Ratio	0.90	0.99		0.68	1.50		1.17	1.15	0.44	0.95	2.85	
Uniform Delay, d1	61.1	44.6		68.1	52.1		59.2	59.2	51.6	58.5	59.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.6	22.8		10.9	229.6		101.6	96.1	0.4	34.4	841.9	
Delay (s)	87.7	67.4		79.0	281.7		160.8	155.4	52.0	92.9	901.2	
Level of Service	F	E		E	F		F	F	D	F	F	
Approach Delay (s)		70.7			271.4			131.3			699.4	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	293.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	155.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

Baseline +Proj(Res) PM Peak

6: Richard Blvd & 10th St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1617	31	6	1387	15	17	13	28	70	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.96	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1431	1770	3530		1691	1863	1583	1770	1863	1458
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1770	3539	1431	1770	3530		1305	1863	1583	1395	1863	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1617	31	6	1387	15	17	13	28	70	37	170
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	24	0	0	144
Lane Group Flow (vph)	26	1617	29	6	1402	0	17	13	4	70	37	26
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	4.3	81.2	81.2	1.2	78.1		17.6	17.6	17.6	17.6	17.6	17.6
Effective Green, g (s)	3.8	81.7	81.7	0.7	78.6		17.1	17.1	17.1	17.1	17.1	17.1
Actuated g/C Ratio	0.03	0.73	0.73	0.01	0.70		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	60	2593	1049	11	2488		200	286	243	214	286	224
v/s Ratio Prot	c0.01	c0.46		0.00	0.40			0.01				0.02
v/s Ratio Perm			0.02				0.01		0.00	c0.05		0.02
v/c Ratio	0.43	0.62	0.03	0.55	0.56		0.08	0.05	0.02	0.33	0.13	0.12
Uniform Delay, d1	52.8	7.3	4.1	55.2	8.1		40.5	40.2	40.1	42.1	40.8	40.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	1.1	0.0	26.4	0.9		0.1	0.0	0.0	0.3	0.1	0.1
Delay (s)	54.6	8.5	4.1	81.7	9.0		40.6	40.3	40.1	42.4	40.8	40.8
Level of Service	D	A	A	F	A		D	D	D	D	D	D
Approach Delay (s)		9.1			9.3			40.3			41.2	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1615	39	7	1267	4	42	13	54	24	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.98	
Frt	1.00	1.00		1.00	1.00			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3516		1770	3536			1629			1669	
Flt Permitted	0.13	1.00		0.13	1.00			0.90			0.90	
Satd. Flow (perm)	244	3516		244	3536			1495			1538	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	1615	39	7	1267	4	42	13	54	24	13	22
RTOR Reduction (vph)	0	2	0	0	1	0	0	3	0	0	9	0
Lane Group Flow (vph)	12	1652	0	7	1270	0	0	106	0	0	50	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	30.0	30.0		30.0	30.0			30.0			30.0	
Effective Green, g (s)	30.5	30.5		30.5	30.5			29.5			29.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.43			0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	109	1577		109	1586			649			667	
v/s Ratio Prot		c0.47			0.36							
v/s Ratio Perm	0.05			0.03				c0.07			0.03	
v/c Ratio	0.11	1.05		0.06	0.80			0.16			0.07	
Uniform Delay, d1	10.9	18.8		10.6	16.1			11.7			11.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	36.2		1.1	4.4			0.5			0.2	
Delay (s)	12.9	55.0		11.8	20.5			12.3			11.5	
Level of Service	B	D		B	C			B			B	
Approach Delay (s)		54.7			20.4			12.3			11.5	
Approach LOS		D			C			B			B	

Intersection Summary

HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1642	262	50	0	50	110	3898	20	1708	891
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1642	262	50	0	50	110	3898	20	1708	891
RTOR Reduction (vph)	0	123	0	0	0	0	0	8	0	513
Lane Group Flow (vph)	1642	139	0	100	0	110	3898	12	1708	378
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	
Permitted Phases								2		6 14
Actuated Green, G (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Effective Green, g (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Actuated g/C Ratio	0.18	0.18		0.12		0.05	0.52	0.34	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	618	285		205		89	3326	537	2717	671
v/s Ratio Prot	c0.48	0.09		c0.06		0.06	c0.61		0.27	
v/s Ratio Perm								0.01		0.24
v/c Ratio	2.66	0.49		0.49		1.24	1.17	0.02	0.63	0.56
Uniform Delay, d1	41.0	36.9		41.1		47.5	24.0	22.0	22.6	21.8
Progression Factor	1.00	1.00		1.00		0.96	1.41	0.55	1.00	1.00
Incremental Delay, d2	750.3	1.3		1.8		144.3	79.2	0.0	0.5	1.1
Delay (s)	791.3	38.2		42.9		189.7	113.1	12.1	23.1	22.9
Level of Service	F	D		D		F	F	B	C	C
Approach Delay (s)				42.9			114.7			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	212.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 11: Bercut Dr & Bannon St

Baseline +Proj(Res) PM Peak
 12/19/2006





















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	41	13	0	87	13	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	13	0	87	13	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			54		134	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		134	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1551		859	1022

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	87	14
Volume Left	0	0	13
Volume Right	13	0	1
cSH	1700	1551	869
Volume to Capacity	0.03	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		14.6%	ICU Level of Service A
Analysis Period (min)		15	
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis
 15: North B Street & 7th Street

Baseline +Proj(Res) PM Peak
 12/19/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	21	11	63	43	307	62	597	182	293	752	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	21	11	63	43	307	62	597	182	293	752	6
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total (vph)	43	106	307	841	293	758						
Volume Left (vph)	11	63	0	62	293	0						
Volume Right (vph)	11	0	307	182	0	6						
Hadj (s)	-0.07	0.33	-0.67	-0.08	0.53	0.03						
Departure Headway (s)	9.2	8.2	7.2	7.1	7.6	7.1						
Degree Utilization, x	0.11	0.24	0.62	1.65	0.62	1.50						
Capacity (veh/h)	375	427	484	515	461	510						
Control Delay (s)	13.3	12.6	20.0	320.1	21.1	252.8						
Approach Delay (s)	13.3	18.1		320.1	188.2							
Approach LOS	B	C		F	F							
Intersection Summary												
Delay			202.3									
HCM Level of Service			F									
Intersection Capacity Utilization			110.0%		ICU Level of Service	H						
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

Baseline +Proj(Res) PM Peak
 12/19/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	233	314	58	305	31	55	1935	62	18	27	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.97		1.00	0.99			1.00		0.92		
Flpb, ped/bikes	1.00		0.98	1.00			1.00		1.00		
Frt	0.91		1.00	0.99			1.00		0.91		
Flt Protected	1.00		0.95	1.00			1.00		0.98		
Satd. Flow (prot)	3134		1741	1822			6370		1542		
Flt Permitted	1.00		0.25	1.00			1.00		0.98		
Satd. Flow (perm)	3134		463	1822			6370		1542		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	233	314	58	305	31	55	1935	62	18	27	4
RTOR Reduction (vph)	236	0	0	0	0	0	0	0	3	0	0
Lane Group Flow (vph)	311	0	58	336	0	0	2052	0	46	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	24.0		24.0	24.0			43.8		13.2		
Effective Green, g (s)	24.0		24.0	24.0			46.8		13.2		
Actuated g/C Ratio	0.24		0.24	0.24			0.47		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	752		111	437			2981		204		
v/s Ratio Prot	0.10			c0.18							
v/s Ratio Perm			0.13				0.32		c0.03		
v/c Ratio	0.41		0.52	0.77			0.69		0.22		
Uniform Delay, d1	32.1		33.0	35.4			20.9		38.8		
Progression Factor	1.00		1.04	1.05			1.00		1.00		
Incremental Delay, d2	0.8		8.0	9.1			1.3		1.2		
Delay (s)	32.8		42.3	46.3			22.2		40.0		
Level of Service	C		D	D			C		D		
Approach Delay (s)	32.8			45.7			22.2		40.0		
Approach LOS	C			D			C		D		

Intersection Summary

HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 21: F Street & 7th Street

Baseline +Proj(Res) PM Peak
 12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (veh/h)	34	25	23	88	0	164	0	477	23	179	636	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	34	25	23	88	0	164	0	477	23	179	636	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								439				
pX, platoon unblocked												
vC, conflicting volume	1648	1496	638	1520	1486	488	639			500		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1648	1496	638	1520	1486	488	639			500		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	31	76	95	0	100	72	100			83		
cM capacity (veh/h)	49	102	477	66	104	579	945			1064		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	82	88	164	500	818
Volume Left	34	88	0	0	179
Volume Right	23	0	164	23	3
cSH	84	66	579	945	1064
Volume to Capacity	0.98	1.34	0.28	0.00	0.17
Queue Length 95th (ft)	136	182	29	0	15
Control Delay (s)	181.9	332.2	13.6	0.0	3.9
Lane LOS	F	F	B		A
Approach Delay (s)	181.9	124.9		0.0	3.9
Approach LOS	F	F			

Intersection Summary				
Average Delay			30.0	
Intersection Capacity Utilization		98.1%	ICU Level of Service	F
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖				↗
Volume (vph)	360	424	0	0	0	867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	360	424	0	0	0	867
RTOR Reduction (vph)	78	246	0	0	0	0
Lane Group Flow (vph)	282	178	0	0	0	867
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.08	c0.11				c0.47
v/s Ratio Perm						
v/c Ratio	0.20	0.27				1.11
Uniform Delay, d1	9.2	9.5				14.5
Progression Factor	0.84	1.66				1.00
Incremental Delay, d2	0.3	1.0				66.2
Delay (s)	8.0	16.7				80.7
Level of Service	A	B				F
Approach Delay (s)	12.7		0.0			80.7
Approach LOS	B		A			F
Intersection Summary						
HCM Average Control Delay			48.5		HCM Level of Service	D
HCM Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			69.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↖	↗		↖	↗
Volume (vph)	4	322	79	0	0	0	0	14	193	2	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.98						0.92			1.00	
Flpb, ped/bikes	1.00	1.00						1.00			0.99	
Frt	1.00	0.97						0.86			1.00	
Flt Protected	0.95	1.00						1.00			1.00	
Satd. Flow (prot)	1770	3379						2810			1844	
Flt Permitted	0.95	1.00						1.00			0.98	
Satd. Flow (perm)	1770	3379						2810			1820	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	322	79	0	0	0	0	14	193	2	19	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	120	0	0	0	0
Lane Group Flow (vph)	4	358	0	0	0	0	0	87	0	0	21	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Split						Perm					
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)	23.5	23.5						19.5			19.5	
Effective Green, g (s)	23.0	23.0						19.0			19.0	
Actuated g/C Ratio	0.46	0.46						0.38			0.38	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	814	1554						1068			692	
v/s Ratio Prot	0.00	c0.11						c0.03				
v/s Ratio Perm											0.01	
v/c Ratio	0.00	0.23						0.08			0.03	
Uniform Delay, d1	7.3	8.2						9.9			9.7	
Progression Factor	1.41	2.01						0.14			1.00	
Incremental Delay, d2	0.0	0.3						0.1			0.1	
Delay (s)	10.3	16.7						1.5			9.8	
Level of Service	B	B						A			A	
Approach Delay (s)		16.7			0.0			1.5			9.8	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑								↘	↙↑		
Volume (vph)	0	456	60	0	0	0	0	0	0	145	1049	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								0.91	0.91		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								0.93	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		3444								1494	3384		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		3444								1494	3384		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	456	60	0	0	0	0	0	0	145	1049	0	
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	70	2	0	
Lane Group Flow (vph)	0	496	0	0	0	0	0	0	0	60	1062	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		19.5								23.5	23.5		
Effective Green, g (s)		19.0								23.0	23.0		
Actuated g/C Ratio		0.38								0.46	0.46		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1309								687	1557		
v/s Ratio Prot		0.14											
v/s Ratio Perm										0.04	0.31		
v/c Ratio		0.38								0.09	0.68		
Uniform Delay, d1		11.2								7.6	10.6		
Progression Factor		0.98								1.36	0.87		
Incremental Delay, d2		0.8								0.1	1.2		
Delay (s)		11.8								10.5	10.4		
Level of Service		B								B	B		
Approach Delay (s)		11.8			0.0			0.0			10.4		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM Average Control Delay			10.8		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			69.8%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	41	2265	65	292	106	0	0	13	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					1.00		1.00	1.00			0.86	0.85
Flt Protected					1.00		0.95	0.97			1.00	1.00
Satd. Flow (prot)					5049		1610	3295			1527	1504
Flt Permitted					1.00		0.95	0.97			1.00	1.00
Satd. Flow (perm)					5049		1610	3295			1527	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	41	2265	65	292	106	0	0	13	288
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	15	15
Lane Group Flow (vph)	0	0	0	0	2368	0	146	252	0	0	136	135
Confl. Peds. (#/hr)							36					
Turn Type				Perm			custom					custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					66.5		13.5	13.5			9.5	9.5
Effective Green, g (s)					66.0		13.0	13.0			9.0	9.0
Actuated g/C Ratio					0.66		0.13	0.13			0.09	0.09
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					3332		209	428			137	135
v/s Ratio Prot							c0.09	0.08			0.09	c0.09
v/s Ratio Perm					0.47							
v/c Ratio					0.71		0.70	0.59			1.00	1.00
Uniform Delay, d1					10.9		41.6	41.0			45.5	45.5
Progression Factor					1.19		0.98	0.98			0.97	0.97
Incremental Delay, d2					1.0		17.2	5.7			75.8	78.3
Delay (s)					14.0		57.8	45.6			119.9	122.3
Level of Service					B		E	D			F	F
Approach Delay (s)		0.0			14.0			50.1			121.1	
Approach LOS		A			B			D			F	

Intersection Summary

HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	191	1731	0	0	0	0	0	689	651
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4800						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4800						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	191	1731	0	0	0	0	0	689	651
RTOR Reduction (vph)	0	0	0	19	1	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	153	1749	0	0	0	0	0	689	621
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				62.5	62.5						30.5	30.5
Effective Green, g (s)				62.0	62.0						30.0	30.0
Actuated g/C Ratio				0.62	0.62						0.30	0.30
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				875	2976						1062	767
v/s Ratio Prot											0.19	
v/s Ratio Perm				0.11	0.36							c0.24
v/c Ratio				0.17	0.59						0.65	0.81
Uniform Delay, d1				8.1	11.4						30.4	32.4
Progression Factor				1.00	1.00						0.75	0.76
Incremental Delay, d2				0.4	0.9						2.6	7.7
Delay (s)				8.5	12.2						25.5	32.2
Level of Service				A	B						C	C
Approach Delay (s)		0.0			11.9			0.0			28.8	
Approach LOS		A			B			A			C	

Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↘↗						↗		↘		
Volume (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.95		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.97		
Frt	1.00	1.00						0.91		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4801						1617		1720		
Flt Permitted	0.95	1.00						1.00		0.35		
Satd. Flow (perm)	1404	4801						1617		637		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	94	1427	0	0	0	0	0	407	0	67	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	24.5	24.5						18.5		18.5		
Effective Green, g (s)	24.0	24.0						18.0		18.0		
Actuated g/C Ratio	0.48	0.48						0.36		0.36		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	674	2304						582		229		
v/s Ratio Prot							c0.25					
v/s Ratio Perm	0.07	0.30								0.11		
v/c Ratio	0.14	0.62						0.70		0.29		
Uniform Delay, d1	7.2	9.6						13.7		11.4		
Progression Factor	1.58	1.64						1.00		0.75		
Incremental Delay, d2	0.4	1.1						6.9		2.5		
Delay (s)	11.8	16.9						20.5		11.1		
Level of Service	B								C		B	
Approach Delay (s)	16.5				0.0		20.5				11.1	
Approach LOS	B				A		C				B	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

Baseline +Proj(Res) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	1515	332	0	0	0	0	0	0	225	650	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.98	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4885									4943	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4885									4943	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1515	332	0	0	0	0	0	0	225	650	0
RTOR Reduction (vph)	0	52	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	1795	0	0	0	0	0	0	0	0	865	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		24.5									18.5	
Effective Green, g (s)		24.0									18.0	
Actuated g/C Ratio		0.48									0.36	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2345									1779	
v/s Ratio Prot		0.37										
v/s Ratio Perm											0.18	
v/c Ratio		0.77									0.49	
Uniform Delay, d1		10.7									12.4	
Progression Factor		0.57									1.07	
Incremental Delay, d2		2.0									0.8	
Delay (s)		8.1									14.0	
Level of Service		A									B	
Approach Delay (s)		8.1			0.0			0.0			14.0	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM Average Control Delay			10.0		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			61.4%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

Baseline +Proj(Res) PM Peak
12/27/2006



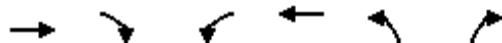
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↗
Volume (veh/h)	0	0	34	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	34	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume	0			68	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0			68	0	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	98			100	94	
cM capacity (veh/h)	1623			917	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	34	60
Volume Left	0	34	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.1	
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
34: Riverfront Dr & 7th Street

Baseline +Proj(Res) PM Peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	34	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	34	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		68	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		68	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	94
cM capacity (veh/h)			1623		917	1085

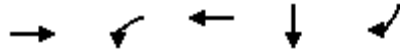
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	34	60
Volume Left	0	34	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.1	
Intersection Capacity Utilization		13.7%	ICU Level of Service A
Analysis Period (min)		15	

Queues

1: Richard Blvd & I-5 SB Off

1/9/2007



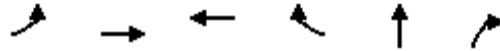
Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	542	498	244	1288	344
v/c Ratio	0.87	0.41	0.22	2.43	0.59
Control Delay	43.5	5.5	3.3	665.9	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	5.5	3.3	665.9	10.6
Queue Length 50th (ft)	116	6	2	~938	29
Queue Length 95th (ft)	#201	m8	m3	#1169	103
Internal Link Dist (ft)	205		308	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	626	1202	1091	531	588
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.41	0.22	2.43	0.59

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	183	1589	698	561	762	747
v/c Ratio	0.60	0.93	0.51	0.71	1.35	1.22
Control Delay	38.0	8.6	18.1	7.7	187.9	136.0
Queue Delay	0.0	43.9	0.7	0.0	0.0	0.0
Total Delay	38.0	52.5	18.8	7.7	187.9	136.0
Queue Length 50th (ft)	71	40	117	0	-389	-425
Queue Length 95th (ft)	m40	m9	165	57	#605	#638
Internal Link Dist (ft)		308	235		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	303	1709	1365	786	566	613
Starvation Cap Reductn	0	261	343	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	1.10	0.68	0.71	1.35	1.22

Intersection Summary

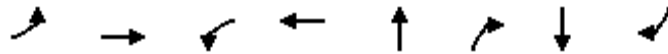
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) AM Peak

3: Richard Blvd & Bercut Dr

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	206	2872	19	1074	93	7	44	110
v/c Ratio	0.53	1.08	0.26	0.32	0.42	0.03	0.18	0.32
Control Delay	9.6	60.2	22.6	9.2	41.4	23.1	34.6	8.8
Queue Delay	0.2	48.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	108.3	22.6	9.2	41.4	23.1	34.6	8.8
Queue Length 50th (ft)	41	~1194	6	123	50	2	23	0
Queue Length 95th (ft)	67	#1328	30	163	96	13	53	43
Internal Link Dist (ft)		235		1336	410		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	598	2656	74	3360	317	348	341	451
Starvation Cap Reductn	84	244	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	1.19	0.26	0.32	0.29	0.02	0.13	0.24

Intersection Summary

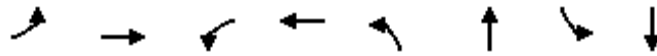
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

Baseline +Proj(Res) AM Peak

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	1940	10	1259	17	7	144	223
v/c Ratio	0.75	0.82	0.13	0.63	0.16	0.01	0.63	0.51
Control Delay	59.3	17.7	49.0	18.0	35.8	0.0	49.7	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	17.7	49.0	18.0	35.8	0.0	49.7	9.1
Queue Length 50th (ft)	112	495	6	293	9	0	80	1
Queue Length 95th (ft)	174	650	23	421	28	0	143	60
Internal Link Dist (ft)		684		1047		442		322
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	412	2356	412	2005	146	667	318	524
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.82	0.02	0.63	0.12	0.01	0.45	0.43

Intersection Summary

Queues

5: Richard Blvd & 7th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	532	1547	171	1074	249	411	51	214	557
v/c Ratio	1.45	1.29	0.81	1.18	0.71	1.11	0.15	0.58	1.45
Control Delay	259.8	173.8	91.0	139.1	67.0	133.1	22.5	60.3	255.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	259.8	173.8	91.0	139.1	67.0	133.1	22.5	60.3	255.6
Queue Length 50th (ft)	~708	~1006	166	~650	241	~482	13	190	~737
Queue Length 95th (ft)	#939	#1231	239	#791	348	#708	52	281	#973
Internal Link Dist (ft)		1047		1171		1313			344
Turn Bay Length (ft)	200		200		200		200	150	
Base Capacity (vph)	366	1203	366	908	353	370	341	372	385
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	1.29	0.47	1.18	0.71	1.11	0.15	0.58	1.45

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
6: Richard Blvd & 10th St

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1173	41	12	1209	14	20	11	13	11	36
v/c Ratio	0.74	0.42	0.04	0.16	0.55	0.07	0.07	0.05	0.06	0.04	0.14
Control Delay	64.0	7.0	4.5	55.2	16.5	36.1	36.3	17.5	35.8	34.9	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	7.0	4.5	55.2	16.5	36.1	36.3	17.5	35.8	34.9	12.7
Queue Length 50th (ft)	122	170	5	8	305	8	11	0	7	6	0
Queue Length 95th (ft)	186	292	20	28	428	26	32	16	24	22	27
Internal Link Dist (ft)		1171			827		1430			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	468	2782	1128	468	2183	353	493	427	367	493	424
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.42	0.04	0.03	0.55	0.04	0.04	0.03	0.04	0.02	0.08

Intersection Summary

Queues

Baseline +Proj(Res) AM Peak

7: Richard Blvd & Dos Rios St

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	1165	23	1177	81	46
v/c Ratio	0.15	0.74	0.21	0.75	0.12	0.06
Control Delay	15.3	18.9	17.6	19.1	9.3	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	18.9	17.6	19.1	9.3	9.7
Queue Length 50th (ft)	4	198	6	203	13	8
Queue Length 95th (ft)	17	272	23	276	36	25
Internal Link Dist (ft)		827		1230	1822	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	108	1574	108	1578	687	713
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.74	0.21	0.75	0.12	0.06

Intersection Summary

Queues

8: Richard Blvd & 12th Street



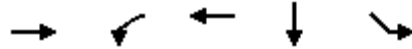
Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	940	76	40	100	1181	50	2993	1171
v/c Ratio	1.52	0.23	0.18	0.68	0.34	0.09	1.13	0.96
Control Delay	273.9	10.7	23.8	72.7	6.7	8.3	88.9	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	273.9	10.7	23.8	72.7	6.7	8.3	88.9	23.2
Queue Length 50th (ft)	~434	1	11	~77	52	0	~467	50
Queue Length 95th (ft)	#557	40	40	#183	57	m15	#537	#840
Internal Link Dist (ft)			320		814			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	331	305	148	3461	587	2638	1221
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.52	0.23	0.13	0.68	0.34	0.09	1.13	0.96

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: Water St & 12th Street

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	249	35	449	2772	57
v/c Ratio	0.27	0.14	0.98	0.93	0.23
Control Delay	7.6	25.3	68.9	24.9	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	25.3	68.9	24.9	34.5
Queue Length 50th (ft)	10	16	223	~327	27
Queue Length 95th (ft)	41	40	#480	#398	63
Internal Link Dist (ft)	289		1610	1439	1822
Turn Bay Length (ft)		125			
Base Capacity (vph)	930	250	458	2995	321
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.14	0.98	0.93	0.18

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
23: G Street & 7th Street

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	229	274	684
v/c Ratio	0.14	0.33	0.87
Control Delay	2.7	4.1	29.2
Queue Delay	0.0	0.0	0.0
Total Delay	2.7	4.1	29.2
Queue Length 50th (ft)	9	0	173
Queue Length 95th (ft)	0	2	#354
Internal Link Dist (ft)	295		93
Turn Bay Length (ft)			
Base Capacity (vph)	1585	824	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.14	0.33	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
24: H Street & 6th Street

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	20	433	300	25
v/c Ratio	0.03	0.28	0.24	0.04
Control Delay	2.6	3.0	1.0	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.6	3.0	1.0	9.4
Queue Length 50th (ft)	1	1	1	4
Queue Length 95th (ft)	m1	3	3	15
Internal Link Dist (ft)		321	377	99
Turn Bay Length (ft)				
Base Capacity (vph)	722	1535	1264	701
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.28	0.24	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	663	126	725
v/c Ratio	0.41	0.20	0.56
Control Delay	11.4	5.1	14.5
Queue Delay	0.0	0.0	0.0
Total Delay	11.4	5.1	14.5
Queue Length 50th (ft)	103	16	124
Queue Length 95th (ft)	123	m20	m138
Internal Link Dist (ft)	341		341
Turn Bay Length (ft)			
Base Capacity (vph)	1617	646	1288
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.20	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I St & 6th Street

Baseline +Proj(Res) AM Peak
1/9/2007



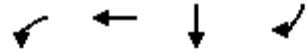
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1136	31	242	39	36
v/c Ratio	0.71	0.06	0.24	0.16	0.15
Control Delay	14.2	17.1	18.0	11.5	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	17.1	18.0	11.5	7.5
Queue Length 50th (ft)	114	10	43	1	0
Queue Length 95th (ft)	154	m26	m65	20	7
Internal Link Dist (ft)	333		319	377	
Turn Bay Length (ft)					
Base Capacity (vph)	1606	483	1016	246	242
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.06	0.24	0.16	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I St & 7th Street

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	228	833	483	326
v/c Ratio	0.30	0.38	0.36	0.28
Control Delay	3.1	9.3	2.4	0.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.1	9.3	2.4	0.5
Queue Length 50th (ft)	3	56	7	0
Queue Length 95th (ft)	37	80	10	0
Internal Link Dist (ft)		1246	403	
Turn Bay Length (ft)				100
Base Capacity (vph)	761	2210	1345	1176
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.36	0.28

Intersection Summary

Queues
28: J St & 6th Street

Baseline +Proj(Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	351	2342	42	28
v/c Ratio	0.35	0.69	0.12	0.10
Control Delay	8.5	10.9	25.4	25.7
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.9	10.9	25.4	25.7
Queue Length 50th (ft)	104	287	15	10
Queue Length 95th (ft)	156	311	44	m18
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	997	3404	339	269
Starvation Cap Reductn	237	35	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.70	0.12	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

Baseline +Proj(Res) AM Peak
1/9/2007



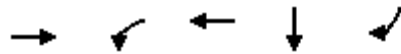
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2230	321	628
v/c Ratio	0.76	0.37	0.42
Control Delay	6.8	1.1	24.4
Queue Delay	0.2	0.0	0.0
Total Delay	7.0	1.1	24.4
Queue Length 50th (ft)	68	0	91
Queue Length 95th (ft)	65	0	123
Internal Link Dist (ft)	373		299
Turn Bay Length (ft)		200	
Base Capacity (vph)	2924	865	1509
Starvation Cap Reductn	144	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.37	0.42

Intersection Summary

Queues

1: Richard Blvd & I-5 SB Off

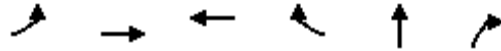
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	661	1139	411	809	244
v/c Ratio	1.05	0.84	0.35	1.77	0.46
Control Delay	80.8	7.5	2.0	380.2	6.4
Queue Delay	0.0	2.4	1.1	0.0	0.0
Total Delay	80.8	9.9	3.1	380.2	6.4
Queue Length 50th (ft)	~165	30	5	~533	0
Queue Length 95th (ft)	#268	m38	m5	#736	50
Internal Link Dist (ft)	205		310	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	628	1349	1171	456	532
Starvation Cap Reductn	0	112	518	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.05	0.92	0.63	1.77	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	355	1054	1499	1547	437	425
v/c Ratio	1.76	0.68	0.96	1.55	0.65	0.61
Control Delay	368.2	2.5	35.0	268.6	10.5	17.8
Queue Delay	0.0	0.7	99.8	0.0	0.1	0.0
Total Delay	368.2	3.1	134.8	268.6	10.5	17.8
Queue Length 50th (ft)	~223	10	314	~755	30	124
Queue Length 95th (ft)	m#136	m7	#471	#1003	121	218
Internal Link Dist (ft)		310	238		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	202	1557	1567	997	671	695
Starvation Cap Reductn	0	203	348	0	0	0
Spillback Cap Reductn	0	0	79	0	8	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.76	0.78	1.23	1.55	0.66	0.61

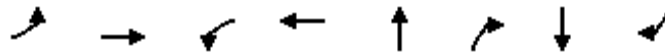
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

3: Richard Blvd & Bercut Dr

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	1678	20	2555	190	13	54	259
v/c Ratio	0.82	0.65	0.14	0.83	0.79	0.05	0.25	0.52
Control Delay	47.8	9.1	16.2	21.7	61.6	15.2	35.9	8.1
Queue Delay	0.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	16.5	16.2	21.7	61.6	15.2	35.9	8.1
Queue Length 50th (ft)	78	297	6	508	111	0	28	0
Queue Length 95th (ft)	148	372	24	#745	189	15	63	63
Internal Link Dist (ft)		238		1267	432		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	435	2593	141	3069	303	354	272	565
Starvation Cap Reductn	0	877	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.98	0.14	0.83	0.63	0.04	0.20	0.46

Intersection Summary

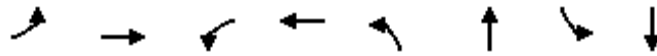
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues

Baseline +Proj(Res) PM Peak

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	403	1517	9	2262	13	18	107	182
v/c Ratio	0.98	0.58	0.12	1.33	0.10	0.07	0.50	0.31
Control Delay	78.4	8.7	48.7	178.2	33.4	14.9	44.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	8.7	48.7	178.2	33.4	14.9	44.1	1.4
Queue Length 50th (ft)	253	228	6	~1056	7	1	58	0
Queue Length 95th (ft)	#443	398	22	#1197	23	19	109	0
Internal Link Dist (ft)		708		1043		442		361
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	412	2607	412	1700	183	370	313	664
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.58	0.02	1.33	0.07	0.05	0.34	0.27

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

5: Richard Blvd & 7th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	266	1353	84	1574	412	425	283	355	1067
v/c Ratio	0.90	0.99	0.68	1.49	1.17	1.15	0.62	0.95	2.78
Control Delay	91.6	66.2	93.0	263.8	152.1	147.2	25.2	94.5	828.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.6	66.2	93.0	263.8	152.1	147.2	25.2	94.5	828.7
Queue Length 50th (ft)	257	680	82	~1130	-503	~514	88	347	~1777
Queue Length 95th (ft)	351	#908	138	#1335	#729	#743	194	#548	#2044
Internal Link Dist (ft)		1043		1130		1403			382
Turn Bay Length (ft)	200		200		200		200	150	
Base Capacity (vph)	366	1362	366	1053	353	368	458	372	384
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.99	0.23	1.49	1.17	1.15	0.62	0.95	2.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
6: Richard Blvd & 10th St

Baseline +Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1617	31	6	1402	17	13	28	70	37	170
v/c Ratio	0.29	0.60	0.03	0.08	0.55	0.09	0.05	0.11	0.33	0.13	0.45
Control Delay	58.2	9.3	5.0	53.7	11.1	36.4	35.2	13.4	42.8	37.4	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	9.3	5.0	53.7	11.1	36.4	35.2	13.4	42.8	37.4	9.6
Queue Length 50th (ft)	18	288	4	4	306	10	7	0	41	21	0
Queue Length 95th (ft)	47	477	17	18	400	29	24	24	83	50	56
Internal Link Dist (ft)		1130			996		1466			413	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	468	2681	1087	468	2530	345	493	439	369	493	523
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.60	0.03	0.01	0.55	0.05	0.03	0.06	0.19	0.08	0.33

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	1654	7	1271	109	59
v/c Ratio	0.11	1.05	0.06	0.80	0.17	0.09
Control Delay	14.0	57.4	12.6	21.0	12.1	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	57.4	12.6	21.0	12.1	9.4
Queue Length 50th (ft)	3	-405	2	228	25	10
Queue Length 95th (ft)	13	#537	9	309	54	29
Internal Link Dist (ft)		996		1190	1946	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	109	1578	109	1587	651	676
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	1.05	0.06	0.80	0.17	0.09

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Richard Blvd & 12th Street

Baseline +Proj(Res) PM Peak
1/9/2007



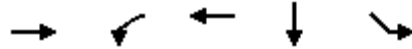
Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1642	262	100	110	3898	20	1708	891
v/c Ratio	2.66	0.64	0.44	1.24	1.13	0.04	0.60	0.74
Control Delay	770.2	24.3	44.7	184.8	85.4	9.0	13.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	770.2	24.3	44.7	184.8	85.4	9.0	13.6	5.2
Queue Length 50th (ft)	~916	64	57	~86	~705	0	143	0
Queue Length 95th (ft)	#1051	151	107	m#111	#990	m4	167	42
Internal Link Dist (ft)			200		288			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	408	288	89	3443	558	2834	1197
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.66	0.64	0.35	1.24	1.13	0.04	0.60	0.74

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

Baseline +Proj(Res) PM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	547	58	336	2052	49
v/c Ratio	0.55	0.52	0.77	0.66	0.21
Control Delay	16.0	52.2	49.8	12.9	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	52.2	49.8	12.9	35.1
Queue Length 50th (ft)	64	34	208	165	24
Queue Length 95th (ft)	117	m66	m291	190	57
Internal Link Dist (ft)	785		1656	1565	1946
Turn Bay Length (ft)		125			
Base Capacity (vph)	1016	116	455	3087	296
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.50	0.74	0.66	0.17

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	360	424	867
v/c Ratio	0.24	0.47	1.11
Control Delay	5.2	3.4	85.6
Queue Delay	0.0	0.0	0.0
Total Delay	5.2	3.4	85.6
Queue Length 50th (ft)	11	0	~304
Queue Length 95th (ft)	20	0	#485
Internal Link Dist (ft)	344		141
Turn Bay Length (ft)			
Base Capacity (vph)	1520	911	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.47	1.11

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
24: H Street & 6th Street

Baseline +Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	4	401	207	21
v/c Ratio	0.00	0.25	0.17	0.03
Control Delay	10.2	13.6	0.5	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.2	13.6	0.5	10.0
Queue Length 50th (ft)	2	97	0	4
Queue Length 95th (ft)	m0	164	m3	14
Internal Link Dist (ft)		322	349	99
Turn Bay Length (ft)				
Base Capacity (vph)	814	1596	1187	692
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.00	0.25	0.17	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline +Proj(Res) PM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	516	130	1064
v/c Ratio	0.39	0.17	0.68
Control Delay	11.2	2.2	10.5
Queue Delay	0.0	0.0	0.0
Total Delay	11.2	2.2	10.5
Queue Length 50th (ft)	112	6	152
Queue Length 95th (ft)	110	m8	m137
Internal Link Dist (ft)	333		360
Turn Bay Length (ft)			
Base Capacity (vph)	1330	757	1558
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.17	0.68

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

Baseline +Proj(Res) PM Peak
1/9/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2371	146	252	151	150
v/c Ratio	0.71	0.70	0.59	0.99	1.00
Control Delay	14.2	59.0	46.0	113.1	115.3
Queue Delay	0.3	0.0	0.0	1.7	1.8
Total Delay	14.4	59.0	46.0	114.9	117.1
Queue Length 50th (ft)	454	93	79	93	92
Queue Length 95th (ft)	516	m#179	m121	#229	#230
Internal Link Dist (ft)	345		362	349	
Turn Bay Length (ft)					
Base Capacity (vph)	3335	209	428	152	150
Starvation Cap Reductn	315	0	0	0	0
Spillback Cap Reductn	210	0	0	1	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.79	0.70	0.59	1.00	1.01

Intersection Summary

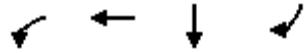
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

Baseline +Proj(Res) PM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	172	1750	689	651
v/c Ratio	0.19	0.59	0.65	0.82
Control Delay	6.3	12.4	25.8	31.4
Queue Delay	0.0	0.3	0.0	0.1
Total Delay	6.3	12.7	25.8	31.5
Queue Length 50th (ft)	34	236	142	165
Queue Length 95th (ft)	67	282	200	#308
Internal Link Dist (ft)		1246	351	
Turn Bay Length (ft)				100
Base Capacity (vph)	894	2975	1062	797
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	580	0	5
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.73	0.65	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	94	1427	420	67
v/c Ratio	0.14	0.62	0.71	0.29
Control Delay	12.3	17.2	21.5	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.3	17.2	21.5	11.6
Queue Length 50th (ft)	26	156	96	13
Queue Length 95th (ft)	m55	201	#213	m23
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	674	2305	595	229
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.62	0.71	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

Baseline +Proj(Res) PM Peak
1/9/2007



Lane Group	EBT	SBT
Lane Group Flow (vph)	1847	875
v/c Ratio	0.77	0.49
Control Delay	7.9	13.9
Queue Delay	0.0	0.0
Total Delay	7.9	13.9
Queue Length 50th (ft)	39	178
Queue Length 95th (ft)	48	212
Internal Link Dist (ft)	341	371
Turn Bay Length (ft)		
Base Capacity (vph)	2397	1789
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.77	0.49
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

Baseline +Proj(Office) AM peak
 12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	516	61	493	243	0	0	0	0	1476	0	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.99		1.00	1.00						1.00	0.86
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.98		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3437		3433	1863						1770	1365
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3437		3433	1863						1770	1365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	516	61	493	243	0	0	0	0	1476	0	344
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	0	0	0	156
Lane Group Flow (vph)	0	564	0	493	243	0	0	0	0	0	1476	188
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												4
Actuated Green, G (s)		12.5		26.0	41.5						21.0	21.0
Effective Green, g (s)		12.5		24.5	41.0						21.0	21.0
Actuated g/C Ratio		0.18		0.35	0.59						0.30	0.30
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		614		1202	1091						531	410
v/s Ratio Prot		c0.16		c0.14	0.13						c0.83	
v/s Ratio Perm												0.14
v/c Ratio		0.92		0.41	0.22						2.78	0.46
Uniform Delay, d1		28.2		17.3	6.9						24.5	19.9
Progression Factor		1.00		0.27	0.41						1.00	1.00
Incremental Delay, d2		20.1		0.4	0.2						806.1	1.7
Delay (s)		48.4		5.0	3.0						830.6	21.6
Level of Service		D		A	A						F	C
Approach Delay (s)		48.4			4.3			0.0			677.7	
Approach LOS		D			A			A			F	

Intersection Summary		
HCM Average Control Delay	403.6	HCM Level of Service F
HCM Volume to Capacity ratio	1.38	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	203.5%	ICU Level of Service H
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↕	↗			
Volume (vph)	183	1811	0	0	692	554	44	0	1644	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.79		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1244		1514	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1244		1514	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	1811	0	0	692	554	44	0	1644	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	368	0	152	4	0	0	0
Lane Group Flow (vph)	183	1811	0	0	692	186	0	698	834	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot				custom		Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	12.5	34.3			27.0	23.5		19.5	28.7			
Effective Green, g (s)	12.0	33.8			23.5	23.5		19.0	23.7			
Actuated g/C Ratio	0.17	0.48			0.34	0.34		0.27	0.34			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	303	1709			1188	418		411	509			
v/s Ratio Prot	0.10	c0.51			0.20	0.03		c0.46	c0.55			
v/s Ratio Perm						0.12						
v/c Ratio	0.60	1.06			0.58	0.44		1.70	1.64			
Uniform Delay, d1	26.8	18.1			19.2	18.2		25.5	23.2			
Progression Factor	1.37	0.42			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.5	28.4			1.1	1.6		325.0	296.2			
Delay (s)	37.2	36.0			20.3	19.7		350.5	319.3			
Level of Service	D	D			C	B		F	F			
Approach Delay (s)		36.1			20.1			335.0			0.0	
Approach LOS		D			C			F			A	

Intersection Summary

HCM Average Control Delay	134.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	203.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

Baseline +Proj(Office) AM peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↖	↗		↖	↗
Volume (vph)	206	3109	164	19	1051	10	77	16	7	28	16	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1763	3497		1770	5071			1789	1493		1760	1583
Flt Permitted	0.22	1.00		0.06	1.00			0.73	1.00		0.81	1.00
Satd. Flow (perm)	413	3497		111	5071			1369	1493		1476	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	3109	164	19	1051	10	77	16	7	28	16	110
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	2	0	0	92
Lane Group Flow (vph)	206	3270	0	19	1060	0	0	93	5	0	44	18
Confl. Peds. (#/hr)	36		36	36		36			36	36		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	76.6	76.6		66.6	66.6			16.9	16.9		16.9	16.9
Effective Green, g (s)	76.1	77.2		67.2	67.2			16.4	16.4		16.4	16.4
Actuated g/C Ratio	0.75	0.76		0.66	0.66			0.16	0.16		0.16	0.16
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	389	2657		73	3354			221	241		238	256
v/s Ratio Prot	0.03	c0.94			0.21							
v/s Ratio Perm	0.37			0.17				c0.07	0.00		0.03	0.01
v/c Ratio	0.53	1.23		0.26	0.32			0.42	0.02		0.18	0.07
Uniform Delay, d1	4.4	12.2		7.0	7.4			38.3	35.9		36.8	36.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	107.3		8.5	0.2			0.5	0.0		0.1	0.0
Delay (s)	5.0	119.5		15.5	7.6			38.8	35.9		37.0	36.2
Level of Service	A	F		B	A			D	D		D	D
Approach Delay (s)		112.8			7.7			38.6			36.4	
Approach LOS		F			A			D			D	

Intersection Summary

HCM Average Control Delay	85.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	135.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

Baseline +Proj(Office) AM peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	528	1984	12	10	1181	59	17	0	7	153	1	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.94		1.00	0.94	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.95	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3534		1770	3500		1719	1489		1685	1491	
Flt Permitted	0.95	1.00		0.95	1.00		0.32	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3534		1770	3500		577	1489		1335	1491	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	528	1984	12	10	1181	59	17	0	7	153	1	233
RTOR Reduction (vph)	0	0	0	0	3	0	0	6	0	0	193	0
Lane Group Flow (vph)	528	1996	0	10	1237	0	17	1	0	153	41	0
Confl. Peds. (#/hr)			36			36	36		36	36		36
Turn Type	Prot		Prot		Perm			Perm				
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	24.0	65.2		5.2	46.4		17.6	17.6		17.6	17.6	
Effective Green, g (s)	23.0	65.5		4.2	46.7		17.1	17.1		17.1	17.1	
Actuated g/C Ratio	0.23	0.66		0.04	0.47		0.17	0.17		0.17	0.17	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	2343		75	1654		100	258		231	258	
v/s Ratio Prot	c0.30	c0.56		0.01	0.35			0.00			0.03	
v/s Ratio Perm							0.03			c0.11		
v/c Ratio	1.28	0.85		0.13	0.75		0.17	0.00		0.66	0.16	
Uniform Delay, d1	37.9	12.9		45.5	21.2		34.8	33.8		38.2	34.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	144.2	4.2		0.3	3.1		0.3	0.0		5.4	0.1	
Delay (s)	182.1	17.0		45.8	24.4		35.1	33.8		43.6	34.8	
Level of Service	F	B		D	C		D	C		D	C	
Approach Delay (s)		51.6			24.6			34.7			38.3	
Approach LOS		D			C			C			D	

Intersection Summary

HCM Average Control Delay	42.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Richard Blvd & 7th Street

Baseline +Proj(Office) AM peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	588	1218	338	171	913	358	437	480	51	203	410	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	0.97		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3354		1770	3300		1681	1762	1495	1770	1794	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3354		1770	3300		1681	1762	1495	1770	1794	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	588	1218	338	171	913	358	437	480	51	203	410	135
RTOR Reduction (vph)	0	15	0	0	28	0	0	0	21	0	8	0
Lane Group Flow (vph)	588	1541	0	171	1243	0	393	524	30	203	537	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		8	8		7	7	
Permitted Phases									8			
Actuated Green, G (s)	32.0	53.1		18.9	40.0		32.0	32.0	32.0	32.0	32.0	
Effective Green, g (s)	31.0	53.1		17.9	40.0		31.5	31.5	31.5	31.5	31.5	
Actuated g/C Ratio	0.21	0.35		0.12	0.27		0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	366	1187		211	880		353	370	314	372	377	
v/s Ratio Prot	c0.33	0.46		0.10	c0.38		0.23	c0.30		0.11	c0.30	
v/s Ratio Perm									0.02			
v/c Ratio	1.61	1.30		0.81	1.41		1.11	1.42	0.09	0.55	1.42	
Uniform Delay, d1	59.5	48.4		64.4	55.0		59.2	59.2	47.8	52.9	59.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	285.4	140.6		19.5	192.4		82.1	202.6	0.0	0.9	206.0	
Delay (s)	344.9	189.0		83.9	247.4		141.4	261.9	47.8	53.7	265.2	
Level of Service	F	F		F	F		F	F	D	D	F	
Approach Delay (s)		231.8			228.1			201.7			207.8	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	221.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	138.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

Baseline +Proj(Office) AM peak

6: Richard Blvd & 10th St

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	175	1165	41	12	1319	87	14	20	11	13	11	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1431	1770	3485		1688	1863	1583	1770	1863	1446
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1431	1770	3485		1333	1863	1583	1386	1863	1446
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1165	41	12	1319	87	14	20	11	13	11	36
RTOR Reduction (vph)	0	0	4	0	3	0	0	0	9	0	0	31
Lane Group Flow (vph)	175	1165	37	12	1403	0	14	20	2	13	11	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	15.5	82.8	82.8	1.4	68.7		15.8	15.8	15.8	15.8	15.8	15.8
Effective Green, g (s)	15.0	83.3	83.3	0.9	69.2		15.3	15.3	15.3	15.3	15.3	15.3
Actuated g/C Ratio	0.13	0.75	0.75	0.01	0.62		0.14	0.14	0.14	0.14	0.14	0.14
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	238	2644	1069	14	2163		183	256	217	190	256	198
v/s Ratio Prot	c0.10	0.33		0.01	c0.40			c0.01			0.01	
v/s Ratio Perm			0.03				0.01		0.00	0.01		0.00
v/c Ratio	0.74	0.44	0.03	0.86	0.65		0.08	0.08	0.01	0.07	0.04	0.02
Uniform Delay, d1	46.3	5.3	3.7	55.2	13.4		41.9	41.9	41.5	41.9	41.7	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.7	0.5	0.1	160.8	1.5		0.1	0.0	0.0	0.1	0.0	0.0
Delay (s)	56.1	5.9	3.7	216.1	15.0		42.0	42.0	41.5	41.9	41.8	41.7
Level of Service	E	A	A	F	B		D	D	D	D	D	D
Approach Delay (s)		12.1			16.7			41.9			41.7	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline +Proj(Office) AM peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	1107	50	23	1342	32	35	22	24	17	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			0.98			0.98	
Frt	1.00	0.99		1.00	1.00			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3496		1746	3516			1687			1726	
Flt Permitted	0.13	1.00		0.13	1.00			0.90			0.93	
Satd. Flow (perm)	244	3496		241	3516			1554			1629	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	1107	50	23	1342	32	35	22	24	17	19	10
RTOR Reduction (vph)	0	5	0	0	2	0	0	14	0	0	6	0
Lane Group Flow (vph)	16	1152	0	23	1372	0	0	67	0	0	40	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	30.0	30.0		30.0	30.0			30.0			30.0	
Effective Green, g (s)	30.5	30.5		30.5	30.5			29.5			29.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.43			0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	109	1568		108	1577			674			707	
v/s Ratio Prot		0.33			c0.39							
v/s Ratio Perm	0.07			0.10				c0.04			0.02	
v/c Ratio	0.15	0.73		0.21	0.87			0.10			0.06	
Uniform Delay, d1	11.1	15.4		11.4	17.0			11.4			11.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.8	3.1		4.5	6.8			0.3			0.2	
Delay (s)	13.9	18.5		15.9	23.8			11.7			11.3	
Level of Service	B	B		B	C			B			B	
Approach Delay (s)		18.5			23.7			11.7			11.3	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	932	76	20	0	20	100	1181	50	2993	1368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		5.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Fr _t	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Fl _t Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Fl _t Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	932	76	20	0	20	100	1181	50	2993	1368
RTOR Reduction (vph)	0	63	0	18	0	0	0	33	0	586
Lane Group Flow (vph)	932	13	0	22	0	100	1181	17	2993	782
Confl. Peds. (#/hr)		36								36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	6 14
Permitted Phases								2		6
Actuated Green, G (s)	18.0	18.0		11.8		8.3	52.7	34.2	39.4	39.4
Effective Green, g (s)	18.0	17.0		10.8		8.3	52.7	34.2	39.4	39.4
Actuated g/C Ratio	0.18	0.17		0.11		0.08	0.53	0.34	0.39	0.39
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	618	269		183		147	3377	541	2525	624
v/s Ratio Prot	c0.27	0.01		c0.01		c0.06	0.18		0.47	c0.49
v/s Ratio Perm								0.01		
v/c Ratio	1.51	0.05		0.12		0.68	0.35	0.03	1.19	1.25
Uniform Delay, d1	41.0	34.7		40.3		44.6	13.7	21.9	30.3	30.3
Progression Factor	1.00	1.00		1.00		1.07	0.83	1.00	1.00	1.00
Incremental Delay, d2	237.0	0.0		0.1		11.6	0.1	0.1	87.7	126.8
Delay (s)	278.0	34.8		40.4		59.2	11.5	22.0	118.0	157.1
Level of Service	F	C		D		E	B	C	F	F
Approach Delay (s)				40.4			15.5			
Approach LOS				D			B			

Intersection Summary

HCM Average Control Delay	126.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 11: Bercut Dr & Bannon St

Baseline +Proj(Office) AM peak
 12/21/2006





















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	102	14	0	35	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	14	0	35	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	490					
pX, platoon unblocked						
vC, conflicting volume			116		144	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		144	109
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1473		849	945

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	116	35	1
Volume Left	0	0	0
Volume Right	14	0	1
cSH	1700	1473	945
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		16.2%	ICU Level of Service A
Analysis Period (min)		15	
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis
 15: Water St & 7th Street

Baseline +Proj(Office) AM peak
 12/19/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	47	21	171	36	527	9	412	13	214	697	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	47	21	171	36	527	9	412	13	214	697	9
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total (vph)	80	207	527	434	214	706						
Volume Left (vph)	12	171	0	9	214	0						
Volume Right (vph)	21	0	527	13	0	9						
Hadj (s)	-0.09	0.45	-0.67	0.02	0.53	0.03						
Departure Headway (s)	9.9	8.5	7.4	8.1	8.6	8.1						
Degree Utilization, x	0.22	0.49	1.08	0.98	0.51	1.59						
Capacity (veh/h)	357	416	496	434	406	449						
Control Delay (s)	15.7	18.2	91.0	65.8	19.0	293.9						
Approach Delay (s)	15.7	70.5		65.8	230.0							
Approach LOS	C	F		F	F							
Intersection Summary												
Delay			135.2									
HCM Level of Service			F									
Intersection Capacity Utilization			88.2%	ICU Level of Service	E							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
16: Water St & 12th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	40	204	35	548	29	23	2577	172	34	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	1.00		1.00	1.00			1.00		0.97		
Flpb, ped/bikes	1.00		0.97	1.00			1.00		1.00		
Frt	0.87		1.00	0.99			0.99		0.95		
Flt Protected	1.00		0.95	1.00			1.00		0.97		
Satd. Flow (prot)	3095		1717	1840			6313		1664		
Flt Permitted	1.00		0.56	1.00			1.00		0.97		
Satd. Flow (perm)	3095		1008	1840			6313		1664		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	204	35	548	29	23	2577	172	34	16	7
RTOR Reduction (vph)	153	0	0	0	0	0	0	0	5	0	0
Lane Group Flow (vph)	91	0	35	577	0	0	2772	0	52	0	0
Confl. Peds. (#/hr)			36		36	36		36			36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	25.0		25.0	25.0			42.8		13.2		
Effective Green, g (s)	25.0		25.0	25.0			45.8		13.2		
Actuated g/C Ratio	0.25		0.25	0.25			0.46		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	774		252	460			2891		220		
v/s Ratio Prot	0.03			c0.31							
v/s Ratio Perm			0.03				0.44		c0.03		
v/c Ratio	0.12		0.14	1.25			0.96		0.24		
Uniform Delay, d1	29.0		29.1	37.5			26.2		38.9		
Progression Factor	1.00		0.84	0.84			1.00		1.00		
Incremental Delay, d2	0.1		0.5	131.1			9.6		1.2		
Delay (s)	29.1		25.1	162.6			35.8		40.0		
Level of Service	C		C	F			D		D		
Approach Delay (s)	29.1			154.8			35.8		40.0		
Approach LOS	C			F			D		D		

Intersection Summary

HCM Average Control Delay	55.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
21: F Street & 7th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (veh/h)	0	0	0	48	19	124	25	339	3	188	618	47
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	48	19	124	25	339	3	188	618	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								417				
pX, platoon unblocked												
vC, conflicting volume	1542	1410	642	1408	1432	340	665			342		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1542	1410	642	1408	1432	340	665			342		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	52	83	82	97			85		
cM capacity (veh/h)	58	114	474	100	110	702	924			1217		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	0	48	143	367	853
Volume Left	0	48	0	25	188
Volume Right	0	0	124	3	47
cSH	1700	100	410	924	1217
Volume to Capacity	0.00	0.48	0.35	0.03	0.15
Queue Length 95th (ft)	0	52	38	2	14
Control Delay (s)	0.0	70.0	18.4	0.9	3.6
Lane LOS	A	F	C	A	A
Approach Delay (s)	0.0	31.4		0.9	3.6
Approach LOS	A	D			

Intersection Summary				
Average Delay			6.6	
Intersection Capacity Utilization		83.8%	ICU Level of Service	E
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
 23: G Street & 7th Street

Baseline +Proj(Office) AM peak
 12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔				↔
Volume (vph)	229	403	0	0	0	677
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	403	0	0	0	677
RTOR Reduction (vph)	133	234	0	0	0	0
Lane Group Flow (vph)	96	169	0	0	0	677
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.03	c0.11				c0.36
v/s Ratio Perm						
v/c Ratio	0.07	0.25				0.87
Uniform Delay, d1	8.7	9.4				13.2
Progression Factor	2.65	3.00				1.00
Incremental Delay, d2	0.1	0.9				12.3
Delay (s)	23.0	29.2				25.5
Level of Service	C	C				C
Approach Delay (s)	26.9		0.0			25.5
Approach LOS	C		A			C
Intersection Summary						
HCM Average Control Delay			26.2		HCM Level of Service	C
HCM Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	378	55	0	0	0	0	20	280	5	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.99						0.92			1.00	
Flpb, ped/bikes	0.93	1.00						1.00			0.99	
Frt	1.00	0.98						0.86			1.00	
Flt Protected	0.95	1.00						1.00			0.99	
Satd. Flow (prot)	1642	3435						2809			1827	
Flt Permitted	0.95	1.00						1.00			0.95	
Satd. Flow (perm)	1642	3435						2809			1752	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	378	55	0	0	0	0	20	280	5	20	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	140	0	0	0	0
Lane Group Flow (vph)	20	410	0	0	0	0	0	160	0	0	25	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)	22.5	22.5						20.5			20.5	
Effective Green, g (s)	22.0	22.0						20.0			20.0	
Actuated g/C Ratio	0.44	0.44						0.40			0.40	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	722	1511						1124			701	
v/s Ratio Prot		c0.12						c0.06				
v/s Ratio Perm	0.01										0.01	
v/c Ratio	0.03	0.27						0.14			0.04	
Uniform Delay, d1	7.9	8.9						9.5			9.1	
Progression Factor	0.31	0.32						0.23			1.00	
Incremental Delay, d2	0.1	0.4						0.3			0.1	
Delay (s)	2.6	3.3						2.5			9.2	
Level of Service	A	A						A			A	
Approach Delay (s)		3.2			0.0			2.5			9.2	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑								↘	↙↑	
Volume (vph)	0	631	32	0	0	0	0	0	0	140	704	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								0.91	0.91	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.93	1.00	
Frt		0.99								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		3500								1494	3382	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		3500								1494	3382	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	631	32	0	0	0	0	0	0	140	704	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	78	2	0
Lane Group Flow (vph)	0	656	0	0	0	0	0	0	0	48	716	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		23.5								19.5	19.5	
Effective Green, g (s)		23.0								19.0	19.0	
Actuated g/C Ratio		0.46								0.38	0.38	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1610								568	1285	
v/s Ratio Prot		0.19										
v/s Ratio Perm										0.03	0.21	
v/c Ratio		0.41								0.08	0.56	
Uniform Delay, d1		9.0								9.9	12.2	
Progression Factor		1.20								2.39	1.08	
Incremental Delay, d2		0.8								0.2	1.3	
Delay (s)		11.5								24.0	14.4	
Level of Service		B								C	B	
Approach Delay (s)		11.5			0.0			0.0			15.9	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
26: I St & 6th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	53	1007	73	34	239	0	0	20	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Fr t					0.99		1.00	1.00			0.93	0.85
Fl t Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4970		1610	3388			1640	1504
Fl t Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4970		1610	3388			1640	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	53	1007	73	34	239	0	0	20	55
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	16	31
Lane Group Flow (vph)	0	0	0	0	1117	0	31	242	0	0	23	5
Confl. Peds. (#/hr)				72		72						
Turn Type				Perm		custom						custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					16.5		15.5	15.5			7.5	7.5
Effective Green, g (s)					16.0		15.0	15.0			7.0	7.0
Actuated g/C Ratio					0.32		0.30	0.30			0.14	0.14
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1590		483	1016			230	211
v/s Ratio Prot							0.02	c0.07			c0.01	0.00
v/s Ratio Perm					0.22							
v/c Ratio					0.70		0.06	0.24			0.10	0.02
Uniform Delay, d1					14.9		12.5	13.2			18.7	18.6
Progression Factor					0.78		1.34	1.32			0.85	0.97
Incremental Delay, d2					2.5		0.2	0.5			0.8	0.2
Delay (s)					14.1		16.9	17.9			16.8	18.1
Level of Service					B		B	B			B	B
Approach Delay (s)		0.0			14.1			17.8			17.4	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I St & 7th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↘
Volume (vph)	0	0	0	253	808	0	0	0	0	0	479	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4788						3539	2787
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4788						3539	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	253	808	0	0	0	0	0	479	323
RTOR Reduction (vph)	0	0	0	113	6	0	0	0	0	0	0	117
Lane Group Flow (vph)	0	0	0	115	827	0	0	0	0	0	479	206
Confl. Peds. (#/hr)				72								
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				23.5	23.5						19.5	19.5
Effective Green, g (s)				23.0	23.0						19.0	19.0
Actuated g/C Ratio				0.46	0.46						0.38	0.38
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				650	2202						1345	1059
v/s Ratio Prot											c0.14	
v/s Ratio Perm				0.08	0.17							0.07
v/c Ratio				0.18	0.38						0.36	0.19
Uniform Delay, d1				7.9	8.8						11.1	10.4
Progression Factor				1.00	1.00						0.16	0.00
Incremental Delay, d2				0.6	0.5						0.6	0.4
Delay (s)				8.5	9.3						2.4	0.4
Level of Service				A	A						A	A
Approach Delay (s)		0.0			9.1			0.0			1.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 28: J St & 6th Street

Baseline +Proj(Office) AM peak
 12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.94		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.94		
Frt	1.00	1.00						0.89		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4796						1564		1669		
Flt Permitted	0.95	1.00						1.00		0.73		
Satd. Flow (perm)	1404	4796						1564		1282		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	351	2342	0	0	0	0	0	32	0	28	0	0
Confl. Peds. (#/hr)	36								36	36		
Turn Type	Perm									D.Pm		
Protected Phases	1									2		
Permitted Phases	1									2		2
Actuated Green, G (s)	71.5	71.5						21.5		21.5		
Effective Green, g (s)	71.0	71.0						21.0		21.0		
Actuated g/C Ratio	0.71	0.71						0.21		0.21		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	997	3405						328		269		
v/s Ratio Prot								0.02				
v/s Ratio Perm	0.25	0.49								c0.02		
v/c Ratio	0.35	0.69						0.10		0.10		
Uniform Delay, d1	5.6	8.2						31.9		31.9		
Progression Factor	1.34	1.18						1.00		0.77		
Incremental Delay, d2	0.8	0.9						0.6		0.7		
Delay (s)	8.3	10.6						32.4		25.1		
Level of Service	A	B						C		C		
Approach Delay (s)		10.3			0.0			32.4			25.1	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

Baseline +Proj(Office) AM peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↑								↑↑↑		
Volume (vph)	0	2194	357	0	0	0	0	0	0	265	358	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	4.0								4.0		
Lane Util. Factor		0.86	0.86								0.91		
Frbp, ped/bikes		1.00	0.93								1.00		
Flpb, ped/bikes		1.00	1.00								0.97		
Frt		1.00	0.85								1.00		
Flt Protected		1.00	1.00								0.98		
Satd. Flow (prot)		4789	1265								4852		
Flt Permitted		1.00	1.00								0.98		
Satd. Flow (perm)		4789	1265								4852		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	2194	357	0	0	0	0	0	0	265	358	0	
RTOR Reduction (vph)	0	2	94	0	0	0	0	0	0	0	6	0	
Lane Group Flow (vph)	0	2228	227	0	0	0	0	0	0	0	617	0	
Confl. Peds. (#/hr)			36								36		
Turn Type			Perm								Perm		
Protected Phases		1										2	
Permitted Phases			1								2		
Actuated Green, G (s)		61.5	61.5								31.5		
Effective Green, g (s)		61.0	61.0								31.0		
Actuated g/C Ratio		0.61	0.61								0.31		
Clearance Time (s)		3.5	3.5								3.5		
Lane Grp Cap (vph)		2921	772								1504		
v/s Ratio Prot		0.47											
v/s Ratio Perm			0.18								0.13		
v/c Ratio		0.76	0.29								0.41		
Uniform Delay, d1		14.2	9.3								27.3		
Progression Factor		0.36	0.06								0.87		
Incremental Delay, d2		1.5	0.8								0.8		
Delay (s)		6.7	1.3								24.5		
Level of Service		A	A								C		
Approach Delay (s)		6.0			0.0			0.0			24.5		
Approach LOS		A			A			A			C		
Intersection Summary													
HCM Average Control Delay			9.7									HCM Level of Service	A
HCM Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			66.5%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

Baseline +Proj(Office) AM peak
12/27/2006



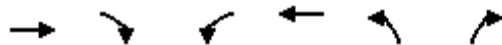
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	46	0	0	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	46	0	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		92	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		92	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1623		882	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	46	26
Volume Left	0	46	0
Volume Right	0	0	26
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.02
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
34: Riverside Dr & 7th Street

Baseline +Proj(Office) AM peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	0	0	68	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	68	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume				0	136	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				0	136	0
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				96	100	100
cM capacity (veh/h)				1623	822	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	68	0
Volume Left	0	68	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.00	0.04	0.00
Queue Length 95th (ft)	0	3	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	0.0
Approach LOS			A

Intersection Summary			
Average Delay		7.3	
Intersection Capacity Utilization		7.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
1: Richard Blvd & I-5 SB Off

Baseline+Proj(Off) PM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Volume (vph)	0	603	58	1265	440	0	0	0	0	808	3	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		0.95		0.97	1.00						1.00	1.00
Frbp, ped/bikes		0.98		1.00	1.00						1.00	0.81
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.99		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3439		3433	1863						1774	1285
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3439		3433	1863						1774	1285
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	603	58	1265	440	0	0	0	0	808	3	244
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	141
Lane Group Flow (vph)	0	653	0	1265	440	0	0	0	0	0	811	103
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Perm
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												4
Actuated Green, G (s)		16.0		50.5	69.5						23.0	23.0
Effective Green, g (s)		16.0		49.0	69.0						23.0	23.0
Actuated g/C Ratio		0.16		0.49	0.69						0.23	0.23
Clearance Time (s)		4.0									4.0	4.0
Vehicle Extension (s)		6.0									5.0	5.0
Lane Grp Cap (vph)		550		1682	1285						408	296
v/s Ratio Prot		c0.19		c0.37	0.24						c0.46	
v/s Ratio Perm												0.08
v/c Ratio		1.19		0.75	0.34						1.99	0.35
Uniform Delay, d1		42.0		20.6	6.3						38.5	32.2
Progression Factor		1.00		0.11	0.11						1.00	1.00
Incremental Delay, d2		101.8		1.0	0.1						453.2	1.5
Delay (s)		143.8		3.3	0.8						491.7	33.7
Level of Service		F		A	A						F	C
Approach Delay (s)		143.8			2.7			0.0			385.8	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	148.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	205.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗		↕	↗			
Volume (vph)	355	1057	0	0	1654	1707	51	9	806	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frpb, ped/bikes	1.00	1.00			1.00	0.88		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	1389		1532	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	1389		1532	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	1057	0	0	1654	1707	51	9	806	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	357	0	228	10	0	0	0
Lane Group Flow (vph)	355	1057	0	0	1654	1350	0	211	417	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	14.9	36.7			51.5	48.0		22.6	56.3			
Effective Green, g (s)	14.4	36.2			48.0	48.0		22.1	51.3			
Actuated g/C Ratio	0.14	0.36			0.48	0.48		0.22	0.51			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	255	1281			1699	667		339	772			
v/s Ratio Prot	c0.20	0.30			0.47	c0.60		c0.14	0.28			
v/s Ratio Perm						0.37						
v/c Ratio	1.39	0.83			0.97	2.02		0.62	0.54			
Uniform Delay, d1	42.8	29.0			25.4	26.0		35.2	16.4			
Progression Factor	1.14	0.14			0.88	1.06		1.00	1.00			
Incremental Delay, d2	178.7	0.5			10.2	463.3		5.0	1.4			
Delay (s)	227.6	4.6			32.6	490.9		40.1	17.8			
Level of Service	F	A			C	F		D	B			
Approach Delay (s)		60.7			265.3			29.1			0.0	
Approach LOS		E			F			C			A	

Intersection Summary

HCM Average Control Delay	177.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	205.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

Baseline+Proj(Off) PM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↖	↗		↖	↗
Volume (vph)	196	1624	61	20	2834	36	175	15	13	40	14	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	3508		1759	5066			1781	1487		1751	1583
Flt Permitted	0.06	1.00		0.12	1.00			0.70	1.00		0.66	1.00
Satd. Flow (perm)	116	3508		223	5066			1311	1487		1197	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	196	1624	61	20	2834	36	175	15	13	40	14	259
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	11	0	0	129
Lane Group Flow (vph)	196	1683	0	20	2869	0	0	190	2	0	54	130
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	72.8	72.8		60.9	60.9			19.1	19.1		19.1	19.1
Effective Green, g (s)	72.3	73.4		61.5	61.5			18.6	18.6		18.6	18.6
Actuated g/C Ratio	0.72	0.73		0.62	0.62			0.19	0.19		0.19	0.19
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	215	2575		137	3116			244	277		223	294
v/s Ratio Prot	c0.07	0.48			0.57							
v/s Ratio Perm	c0.59			0.09				c0.14	0.00		0.05	0.08
v/c Ratio	0.91	0.65		0.15	0.92			0.78	0.01		0.24	0.44
Uniform Delay, d1	31.7	6.8		8.1	17.1			38.7	33.2		34.7	36.1
Progression Factor	0.94	1.22		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	28.2	0.3		2.2	5.8			13.3	0.0		0.2	0.4
Delay (s)	58.1	8.6		10.4	22.9			52.0	33.2		34.9	36.5
Level of Service	E	A		B	C			D	C		C	D
Approach Delay (s)		13.7			22.8			50.8			36.2	
Approach LOS		B			C			D			D	

Intersection Summary

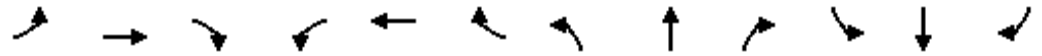
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

Baseline+Proj(Off) PM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
Volume (vph)	407	1498	21	9	2473	91	13	1	17	120	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.5	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3526		1770	3505		1660	1460		1770	1437	
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3526		1770	3505		1105	1460		1770	1437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	407	1498	21	9	2473	91	13	1	17	120	0	200
RTOR Reduction (vph)	0	1	0	0	2	0	0	15	0	0	105	0
Lane Group Flow (vph)	407	1518	0	9	2562	0	13	3	0	120	95	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Prot		
Protected Phases	1	6		5	2			8		7	4	
Permitted Phases		6			2		8					
Actuated Green, G (s)	15.0	106.8		1.6	93.4		18.8	18.8		8.0	30.8	
Effective Green, g (s)	14.0	107.1		0.6	93.7		18.3	18.3		7.5	30.3	
Actuated g/C Ratio	0.09	0.71		0.00	0.62		0.12	0.12		0.05	0.20	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		4.0	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	165	2518		7	2189		135	178		89	290	
v/s Ratio Prot	c0.23	0.43		0.01	c0.73			0.00		c0.07	c0.07	
v/s Ratio Perm							0.01					
v/c Ratio	2.47	0.60		1.29	1.17		0.10	0.02		1.35	0.33	
Uniform Delay, d1	68.0	10.8		74.7	28.2		58.5	57.9		71.2	51.2	
Progression Factor	1.00	1.00		0.88	1.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	677.9	1.1		196.7	77.3		0.1	0.0		214.1	0.2	
Delay (s)	745.9	11.9		262.2	107.5		58.6	58.0		285.3	51.4	
Level of Service	F	B		F	F		E	E		F	D	
Approach Delay (s)		167.0			108.1			58.2			139.1	
Approach LOS		F			F			E			F	

Intersection Summary

HCM Average Control Delay	133.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	121.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Volume (vph)	268	1033	333	84	1364	213	512	327	283	516	873	437
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3332		1770	3424		1681	1749	1495	1770	1770	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3332		1770	3424		1681	1749	1495	1770	1770	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	268	1033	333	84	1364	213	512	327	283	516	873	437
RTOR Reduction (vph)	0	17	0	0	8	0	0	0	142	0	12	0
Lane Group Flow (vph)	268	1349	0	84	1569	0	410	429	141	516	1298	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		8	8		7	7	
Permitted Phases									8			
Actuated Green, G (s)	26.3	60.5		11.5	45.7		32.0	32.0	32.0	32.0	32.0	
Effective Green, g (s)	25.3	60.5		10.5	45.7		31.5	31.5	31.5	31.5	31.5	
Actuated g/C Ratio	0.17	0.40		0.07	0.30		0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	299	1344		124	1043		353	367	314	372	372	
v/s Ratio Prot	c0.15	c0.40		0.05	c0.46		0.24	c0.25		0.29	c0.73	
v/s Ratio Perm									0.09			
v/c Ratio	0.90	1.00		0.68	1.50		1.16	1.17	0.45	1.39	3.49	
Uniform Delay, d1	61.1	44.8		68.1	52.2		59.2	59.2	51.7	59.2	59.2	
Progression Factor	1.14	0.81		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.7	22.4		10.9	232.1		99.5	101.5	0.4	190.1	1127.1	
Delay (s)	91.1	58.7		79.0	284.3		158.7	160.7	52.0	249.3	1186.3	
Level of Service	F	E		E	F		F	F	D	F	F	
Approach Delay (s)		64.0			273.9			132.6			921.6	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	383.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	168.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	26	1785	31	6	1390	15	17	13	28	70	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.96	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1431	1770	3530		1691	1863	1583	1770	1863	1458
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1770	3539	1431	1770	3530		1305	1863	1583	1395	1863	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1785	31	6	1390	15	17	13	28	70	37	170
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	24	0	0	144
Lane Group Flow (vph)	26	1785	29	6	1405	0	17	13	4	70	37	26
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	4.3	81.2	81.2	1.2	78.1		17.6	17.6	17.6	17.6	17.6	17.6
Effective Green, g (s)	3.8	81.7	81.7	0.7	78.6		17.1	17.1	17.1	17.1	17.1	17.1
Actuated g/C Ratio	0.03	0.73	0.73	0.01	0.70		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	60	2593	1049	11	2488		200	286	243	214	286	224
v/s Ratio Prot	c0.01	c0.50		0.00	0.40			0.01			0.02	
v/s Ratio Perm			0.02				0.01		0.00	c0.05		0.02
v/c Ratio	0.43	0.69	0.03	0.55	0.56		0.08	0.05	0.02	0.33	0.13	0.12
Uniform Delay, d1	52.8	8.0	4.1	55.2	8.1		40.5	40.2	40.1	42.1	40.8	40.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	1.5	0.0	26.4	0.9		0.1	0.0	0.0	0.3	0.1	0.1
Delay (s)	54.6	9.6	4.1	81.7	9.0		40.6	40.3	40.1	42.4	40.8	40.8
Level of Service	D	A	A	F	A		D	D	D	D	D	D
Approach Delay (s)		10.1			9.3			40.3			41.2	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1783	39	7	1270	4	42	13	54	24	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.98	
Frt	1.00	1.00		1.00	1.00			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3518		1770	3536			1629			1669	
Flt Permitted	0.13	1.00		0.13	1.00			0.90			0.90	
Satd. Flow (perm)	244	3518		244	3536			1495			1538	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	1783	39	7	1270	4	42	13	54	24	13	22
RTOR Reduction (vph)	0	2	0	0	1	0	0	2	0	0	9	0
Lane Group Flow (vph)	12	1820	0	7	1273	0	0	107	0	0	50	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	30.0	30.0		30.0	30.0			30.0			30.0	
Effective Green, g (s)	30.5	30.5		30.5	30.5			29.5			29.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.43			0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	109	1578		109	1586			649			667	
v/s Ratio Prot		c0.52			0.36							
v/s Ratio Perm	0.05			0.03				c0.07			0.03	
v/c Ratio	0.11	1.15		0.06	0.80			0.17			0.07	
Uniform Delay, d1	10.9	18.8		10.6	16.2			11.7			11.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	76.7		1.1	4.4			0.5			0.2	
Delay (s)	12.9	95.4		11.8	20.6			12.3			11.5	
Level of Service	B	F		B	C			B			B	
Approach Delay (s)		94.9			20.5			12.3			11.5	
Approach LOS		F			C			B			B	

Intersection Summary

HCM Average Control Delay	61.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1810	262	50	0	50	110	3898	20	1708	894
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1810	262	50	0	50	110	3898	20	1708	894
RTOR Reduction (vph)	0	112	0	0	0	0	0	8	0	515
Lane Group Flow (vph)	1810	150	0	100	0	110	3898	12	1708	379
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	
Permitted Phases								2		6 14
Actuated Green, G (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Effective Green, g (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Actuated g/C Ratio	0.18	0.18		0.12		0.05	0.52	0.34	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	618	285		205		89	3326	537	2717	671
v/s Ratio Prot	c0.53	0.10		c0.06		0.06	c0.61		0.27	
v/s Ratio Perm								0.01		0.24
v/c Ratio	2.93	0.53		0.49		1.24	1.17	0.02	0.63	0.56
Uniform Delay, d1	41.0	37.2		41.1		47.5	24.0	22.0	22.6	21.8
Progression Factor	1.00	1.00		1.00		0.96	1.41	0.55	1.00	1.00
Incremental Delay, d2	872.4	1.8		1.8		144.3	79.2	0.0	0.5	1.1
Delay (s)	913.4	38.9		42.9		189.7	113.1	12.1	23.1	22.9
Level of Service	F	D		D		F	F	B	C	C
Approach Delay (s)				42.9			114.7			
Approach LOS				D			F			

Intersection Summary		
HCM Average Control Delay	248.7	HCM Level of Service F
HCM Volume to Capacity ratio	1.46	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 18.0
Intersection Capacity Utilization	122.3%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		

HCM Unsignalized Intersection Capacity Analysis
 11: Bercut Dr & Bannon St

Baseline+Proj(Off) PM Peak
 12/19/2006





















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	41	13	0	87	13	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	13	0	87	13	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			54		134	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		134	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1551		859	1022

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	87	14
Volume Left	0	0	13
Volume Right	13	0	1
cSH	1700	1551	869
Volume to Capacity	0.03	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		14.6%	ICU Level of Service A
Analysis Period (min)		15	
Description: SB coded as EB			

HCM Unsignalized Intersection Capacity Analysis
 15: Water St & 7th Street

Baseline+Proj(Off) PM Peak
 12/19/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	21	11	63	43	309	62	597	182	402	888	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	21	11	63	43	309	62	597	182	402	888	6
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total (vph)	43	106	309	841	402	894						
Volume Left (vph)	11	63	0	62	402	0						
Volume Right (vph)	11	0	309	182	0	6						
Hadj (s)	-0.07	0.33	-0.67	-0.08	0.53	0.03						
Departure Headway (s)	9.2	8.3	7.3	7.1	7.6	7.1						
Degree Utilization, x	0.11	0.24	0.63	1.65	0.85	1.77						
Capacity (veh/h)	371	425	481	514	467	511						
Control Delay (s)	13.4	12.7	20.5	321.6	39.8	371.8						
Approach Delay (s)	13.4	18.5		321.6	268.8							
Approach LOS	B	C		F	F							
Intersection Summary												
Delay			241.7									
HCM Level of Service			F									
Intersection Capacity Utilization			117.2%	ICU Level of Service	H							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
16: Water St & 12th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2	
Lane Configurations	↑↑		↖		↑		↑↑↑↑			↘		
Volume (vph)	233	423	58	307	31	55	1935	62	18	27	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0			
Lane Util. Factor	0.95		1.00		1.00		0.86		1.00			
Frbp, ped/bikes	0.96		1.00		0.99		1.00		0.92			
Flpb, ped/bikes	1.00		0.99		1.00		1.00		1.00			
Frt	0.90		1.00		0.99		1.00		0.91			
Flt Protected	1.00		0.95		1.00		1.00		0.98			
Satd. Flow (prot)	3085		1747		1822		6370		1542			
Flt Permitted	1.00		0.17		1.00		1.00		0.98			
Satd. Flow (perm)	3085		307		1822		6370		1542			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	233	423	58	307	31	55	1935	62	18	27	4	
RTOR Reduction (vph)	236	0	0	0	0	0	0	0	3	0	0	
Lane Group Flow (vph)	420		0		58		338			0		
Confl. Peds. (#/hr)	36		36		36		2052			46		
Turn Type	Perm				Perm							
Protected Phases	4		4		4		2 3					
Permitted Phases			4				2 3		1			
Actuated Green, G (s)	24.0		24.0		24.0		43.8		13.2			
Effective Green, g (s)	24.0		24.0		24.0		46.8		13.2			
Actuated g/C Ratio	0.24		0.24		0.24		0.47		0.13			
Clearance Time (s)	4.0		4.0		4.0				4.0			
Vehicle Extension (s)	5.0		5.0		5.0				5.0			
Lane Grp Cap (vph)	740		74		437		2981		204			
v/s Ratio Prot	0.14				0.19							
v/s Ratio Perm			c0.19				0.32		c0.03			
v/c Ratio	0.57		0.78		0.77		0.69		0.22			
Uniform Delay, d1	33.4		35.6		35.5		20.9		38.8			
Progression Factor	1.00		1.04		1.05		1.00		1.00			
Incremental Delay, d2	1.6		44.7		9.4		1.3		1.2			
Delay (s)	35.1		81.7		46.7		22.2		40.0			
Level of Service	D		F		D		C		D			
Approach Delay (s)	35.1				51.8		22.2		40.0			
Approach LOS	D				D		C		D			

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
21: F Street & 7th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (veh/h)	34	25	23	88	0	164	0	477	23	179	772	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	34	25	23	88	0	164	0	477	23	179	772	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								439				
pX, platoon unblocked												
vC, conflicting volume	1784	1632	774	1656	1622	488	775			500		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1784	1632	774	1656	1622	488	775			500		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	14	70	94	0	100	72	100			83		
cM capacity (veh/h)	40	84	399	50	86	579	841			1064		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	82	88	164	500	954							
Volume Left	34	88	0	0	179							
Volume Right	23	0	164	23	3							
cSH	68	50	579	841	1064							
Volume to Capacity	1.21	1.77	0.28	0.00	0.17							
Queue Length 95th (ft)	163	215	29	0	15							
Control Delay (s)	282.9	545.3	13.6	0.0	4.0							
Lane LOS	F	F	B		A							
Approach Delay (s)	282.9	199.3		0.0	4.0							
Approach LOS	F	F										
Intersection Summary												
Average Delay				43.2								
Intersection Capacity Utilization			105.3%		ICU Level of Service				G			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	360	424	0	0	0	1003
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				1.00
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				1863
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	360	424	0	0	0	1003
RTOR Reduction (vph)	49	246	0	0	0	0
Lane Group Flow (vph)	311	178	0	0	0	1003
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				782
v/s Ratio Prot	0.09	c0.11				c0.54
v/s Ratio Perm						
v/c Ratio	0.22	0.27				1.28
Uniform Delay, d1	9.2	9.5				14.5
Progression Factor	0.87	1.22				1.00
Incremental Delay, d2	0.3	1.0				136.9
Delay (s)	8.4	12.6				151.4
Level of Service	A	B				F
Approach Delay (s)	10.6		0.0			151.4
Approach LOS	B		A			F
Intersection Summary						
HCM Average Control Delay			89.6		HCM Level of Service	F
HCM Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑						↑↑			↖	
Volume (vph)	4	322	79	0	0	0	0	14	193	2	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.98						0.92			1.00	
Flpb, ped/bikes	1.00	1.00						1.00			0.99	
Frt	1.00	0.97						0.86			1.00	
Flt Protected	0.95	1.00						1.00			1.00	
Satd. Flow (prot)	1770	3379						2810			1844	
Flt Permitted	0.95	1.00						1.00			0.98	
Satd. Flow (perm)	1770	3379						2810			1820	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	322	79	0	0	0	0	14	193	2	19	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	120	0	0	0	0
Lane Group Flow (vph)	4	358	0	0	0	0	0	87	0	0	21	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Split						Perm					
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)	23.5	23.5						19.5			19.5	
Effective Green, g (s)	23.0	23.0						19.0			19.0	
Actuated g/C Ratio	0.46	0.46						0.38			0.38	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	814	1554						1068			692	
v/s Ratio Prot	0.00	c0.11						c0.03				
v/s Ratio Perm											0.01	
v/c Ratio	0.00	0.23						0.08			0.03	
Uniform Delay, d1	7.3	8.2						9.9			9.7	
Progression Factor	1.41	2.02						0.12			1.00	
Incremental Delay, d2	0.0	0.3						0.1			0.1	
Delay (s)	10.3	16.7						1.4			9.8	
Level of Service	B	B						A			A	
Approach Delay (s)		16.7			0.0			1.4			9.8	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑								↘	↙↑		
Volume (vph)	0	456	60	0	0	0	0	0	0	145	1185	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								0.91	0.91		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								0.93	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		3444								1494	3385		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		3444								1494	3385		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	456	60	0	0	0	0	0	0	145	1185	0	
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	70	2	0	
Lane Group Flow (vph)	0	496	0	0	0	0	0	0	0	60	1198	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		19.5								23.5	23.5		
Effective Green, g (s)		19.0								23.0	23.0		
Actuated g/C Ratio		0.38								0.46	0.46		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1309								687	1557		
v/s Ratio Prot		0.14											
v/s Ratio Perm										0.04	0.35		
v/c Ratio		0.38								0.09	0.77		
Uniform Delay, d1		11.2								7.6	11.3		
Progression Factor		0.98								1.12	0.88		
Incremental Delay, d2		0.8								0.0	0.3		
Delay (s)		11.8								8.5	10.3		
Level of Service		B								A	B		
Approach Delay (s)		11.8			0.0			0.0			10.1		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM Average Control Delay			10.6		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			77.0%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
26: I St & 6th Street

Baseline+Proj(Off) PM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	41	2308	65	292	106	0	0	13	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					1.00		1.00	1.00			0.86	0.85
Flt Protected					1.00		0.95	0.97			1.00	1.00
Satd. Flow (prot)					5049		1610	3295			1527	1504
Flt Permitted					1.00		0.95	0.97			1.00	1.00
Satd. Flow (perm)					5049		1610	3295			1527	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	41	2308	65	292	106	0	0	13	288
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	14	14
Lane Group Flow (vph)	0	0	0	0	2411	0	146	252	0	0	137	136
Confl. Peds. (#/hr)							36					
Turn Type				Perm			custom					custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					66.5		13.5	13.5			9.5	9.5
Effective Green, g (s)					66.0		13.0	13.0			9.0	9.0
Actuated g/C Ratio					0.66		0.13	0.13			0.09	0.09
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					3332		209	428			137	135
v/s Ratio Prot							c0.09	0.08			0.09	c0.09
v/s Ratio Perm					0.48							
v/c Ratio					0.72		0.70	0.59			1.00	1.01
Uniform Delay, d1					11.1		41.6	41.0			45.5	45.5
Progression Factor					1.24		0.98	0.98			0.97	0.97
Incremental Delay, d2					1.0		17.2	5.7			77.5	80.1
Delay (s)					14.7		57.8	45.6			121.7	124.2
Level of Service					B		E	D			F	F
Approach Delay (s)		0.0			14.7			50.1			122.9	
Approach LOS		A			B			D			F	

Intersection Summary

HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I St & 7th Street

Baseline+Proj(Off) PM Peak

12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	191	1731	0	0	0	0	0	782	694
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4800						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4800						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	191	1731	0	0	0	0	0	782	694
RTOR Reduction (vph)	0	0	0	12	1	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	160	1749	0	0	0	0	0	782	664
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				62.5	62.5						30.5	30.5
Effective Green, g (s)				62.0	62.0						30.0	30.0
Actuated g/C Ratio				0.62	0.62						0.30	0.30
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				875	2976						1062	767
v/s Ratio Prot											0.22	
v/s Ratio Perm				0.11	0.36							c0.26
v/c Ratio				0.18	0.59						0.74	0.87
Uniform Delay, d1				8.1	11.4						31.4	33.1
Progression Factor				1.00	1.00						0.74	0.73
Incremental Delay, d2				0.5	0.9						3.5	10.0
Delay (s)				8.6	12.2						26.7	34.3
Level of Service				A	B						C	C
Approach Delay (s)		0.0			11.9			0.0			30.3	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↔↗↗						↖		↘		
Volume (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.95		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.97		
Frt	1.00	1.00						0.91		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4801						1617		1720		
Flt Permitted	0.95	1.00						1.00		0.35		
Satd. Flow (perm)	1404	4801						1617		637		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	94	1427	0	0	0	0	0	407	0	67	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	24.5	24.5						18.5		18.5		
Effective Green, g (s)	24.0	24.0						18.0		18.0		
Actuated g/C Ratio	0.48	0.48						0.36		0.36		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	674	2304						582		229		
v/s Ratio Prot							c0.25					
v/s Ratio Perm	0.07	0.30								0.11		
v/c Ratio	0.14	0.62						0.70		0.29		
Uniform Delay, d1	7.2	9.6						13.7		11.4		
Progression Factor	1.58	1.64						1.00		0.76		
Incremental Delay, d2	0.4	1.1						6.9		2.5		
Delay (s)	11.8	16.9						20.5		11.1		
Level of Service	B						C		B			
Approach Delay (s)	16.5				0.0		20.5				11.1	
Approach LOS	B				A		C				B	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

Baseline+Proj(Off) PM Peak
12/19/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	1515	332	0	0	0	0	0	0	284	684	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frbp, ped/bikes		1.00	0.93								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4783	1265								4924	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4783	1265								4924	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1515	332	0	0	0	0	0	0	284	684	0
RTOR Reduction (vph)	0	4	44	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	1544	255	0	0	0	0	0	0	0	958	0
Confl. Peds. (#/hr)			72								72	
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		24.5	24.5								18.5	
Effective Green, g (s)		24.0	24.5								18.0	
Actuated g/C Ratio		0.48	0.49								0.36	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		2296	620								1773	
v/s Ratio Prot		c0.32										
v/s Ratio Perm			0.20								0.19	
v/c Ratio		0.67	0.41								0.54	
Uniform Delay, d1		10.0	8.1								12.7	
Progression Factor		0.53	0.30								1.09	
Incremental Delay, d2		1.3	1.6								0.9	
Delay (s)		6.6	4.1								14.7	
Level of Service		A	A								B	
Approach Delay (s)		6.2			0.0			0.0			14.7	
Approach LOS		A			A			A			B	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

Baseline+Proj(Off) PM Peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	37	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	37	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		74	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		74	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	94
cM capacity (veh/h)			1623		908	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	37	60
Volume Left	0	37	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		13.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
34: Riverfront Dr & 7th Street

Baseline+Proj(Off) PM Peak
12/27/2006



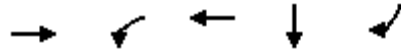
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	37	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	37	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		74	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		74	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	94
cM capacity (veh/h)			1623		908	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	37	60
Volume Left	0	37	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		13.7%	ICU Level of Service A
Analysis Period (min)		15	

Queues

1: Richard Blvd & I-5 SB Off



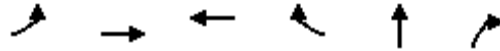
Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	577	493	243	1476	344
v/c Ratio	0.92	0.41	0.22	2.78	0.61
Control Delay	50.5	5.5	3.3	823.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	5.5	3.3	823.1	12.9
Queue Length 50th (ft)	126	6	2	~1110	40
Queue Length 95th (ft)	#221	m8	m3	#1349	120
Internal Link Dist (ft)	205		308	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	627	1202	1091	531	566
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.92	0.41	0.22	2.78	0.61

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	183	1811	692	554	850	838
v/c Ratio	0.60	1.06	0.51	0.71	1.51	1.38
Control Delay	38.5	40.1	18.0	7.6	260.2	202.4
Queue Delay	0.0	81.9	0.7	0.0	0.0	0.0
Total Delay	38.5	121.9	18.7	7.6	260.2	202.4
Queue Length 50th (ft)	71	~230	116	0	-480	~520
Queue Length 95th (ft)	m36	m10	164	57	#704	#741
Internal Link Dist (ft)		308	235		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	303	1709	1365	781	562	609
Starvation Cap Reductn	0	258	344	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	1.25	0.68	0.71	1.51	1.38

Intersection Summary

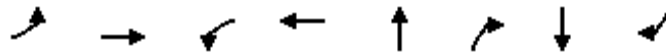
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak

3: Richard Blvd & Bercut Dr

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	206	3273	19	1061	93	7	44	110
v/c Ratio	0.52	1.23	0.26	0.32	0.42	0.03	0.18	0.32
Control Delay	9.4	124.5	22.6	9.1	41.4	26.9	34.6	8.8
Queue Delay	0.2	16.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	140.5	22.6	9.1	41.4	26.9	34.6	8.8
Queue Length 50th (ft)	41	~1485	6	121	50	3	23	0
Queue Length 95th (ft)	67	#1614	30	160	96	14	53	43
Internal Link Dist (ft)		235		1336	410		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	602	2659	74	3360	317	347	341	451
Starvation Cap Reductn	88	75	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	1.27	0.26	0.32	0.29	0.02	0.13	0.24

Intersection Summary

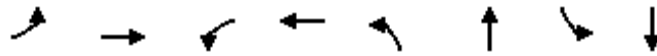
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

Baseline +Proj(Office) AM peak

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	528	1996	10	1240	17	7	153	234
v/c Ratio	1.28	0.85	0.13	0.75	0.17	0.01	0.66	0.52
Control Delay	177.7	19.3	49.0	25.9	36.0	0.0	50.9	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	177.7	19.3	49.0	25.9	36.0	0.0	50.9	8.9
Queue Length 50th (ft)	~424	527	6	352	9	0	86	1
Queue Length 95th (ft)	#624	#786	23	450	28	0	150	61
Internal Link Dist (ft)		684		1047		442		321
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	412	2345	412	1658	137	667	318	532
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.28	0.85	0.02	0.75	0.12	0.01	0.48	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

Baseline +Proj(Office) AM peak

1/9/2007

5: Richard Blvd & 7th Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	588	1556	171	1271	393	524	51	203	545
v/c Ratio	1.61	1.29	0.81	1.40	1.11	1.42	0.15	0.55	1.42
Control Delay	322.6	177.6	91.0	225.7	134.9	244.6	27.8	59.2	243.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	322.6	177.6	91.0	225.7	134.9	244.6	27.8	59.2	243.0
Queue Length 50th (ft)	~822	~1016	166	~862	~462	~723	19	179	~712
Queue Length 95th (ft)	#1059	#1241	239	#1003	#686	#965	58	267	#948
Internal Link Dist (ft)		1047		1171		1313			344
Turn Bay Length (ft)	200		200		200		200	150	
Base Capacity (vph)	366	1202	366	908	353	370	335	372	385
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.61	1.29	0.47	1.40	1.11	1.42	0.15	0.55	1.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

6: Richard Blvd & 10th St

1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1165	41	12	1406	14	20	11	13	11	36
v/c Ratio	0.74	0.42	0.04	0.16	0.64	0.07	0.07	0.05	0.06	0.04	0.14
Control Delay	64.0	7.0	4.5	55.2	18.5	36.1	36.3	17.5	35.8	34.9	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	7.0	4.5	55.2	18.5	36.1	36.3	17.5	35.8	34.9	12.7
Queue Length 50th (ft)	122	168	5	8	390	8	11	0	7	6	0
Queue Length 95th (ft)	186	288	20	28	541	26	32	16	24	22	27
Internal Link Dist (ft)		1171			827		1430			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	468	2782	1128	468	2189	353	493	427	367	493	424
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.42	0.04	0.03	0.64	0.04	0.04	0.03	0.04	0.02	0.08

Intersection Summary

Queues

Baseline +Proj(Office) AM peak

7: Richard Blvd & Dos Rios St

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	1157	23	1374	81	46
v/c Ratio	0.15	0.74	0.21	0.87	0.12	0.06
Control Delay	15.2	18.8	17.6	24.7	9.3	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	18.8	17.6	24.7	9.3	9.7
Queue Length 50th (ft)	4	197	6	258	13	8
Queue Length 95th (ft)	17	270	23	#396	36	25
Internal Link Dist (ft)		827		1230	1822	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	109	1574	108	1580	687	713
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.74	0.21	0.87	0.12	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
8: Richard Blvd & 12th Street

Baseline +Proj(Office) AM peak
1/9/2007



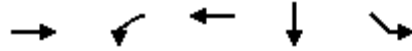
Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	932	76	40	100	1181	50	2993	1368
v/c Ratio	1.51	0.23	0.18	0.68	0.34	0.09	1.13	1.12
Control Delay	268.4	10.4	23.8	72.7	6.7	8.3	88.9	75.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	268.4	10.4	23.8	72.7	6.7	8.3	88.9	75.7
Queue Length 50th (ft)	~428	0	11	~77	52	0	~467	~854
Queue Length 95th (ft)	#551	39	40	#183	57	m15	#537	#1115
Internal Link Dist (ft)			320		814			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	332	305	148	3461	587	2638	1221
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.51	0.23	0.13	0.68	0.34	0.09	1.13	1.12

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: Water St & 12th Street

Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	244	35	577	2772	57
v/c Ratio	0.26	0.14	1.25	0.93	0.23
Control Delay	7.6	26.3	161.2	24.9	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	26.3	161.2	24.9	34.5
Queue Length 50th (ft)	10	16	~470	~327	27
Queue Length 95th (ft)	41	41	#670	#398	63
Internal Link Dist (ft)	289		1610	1439	1822
Turn Bay Length (ft)		125			
Base Capacity (vph)	927	252	460	2995	321
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.14	1.25	0.93	0.18

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
23: G Street & 7th Street

Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	229	403	677
v/c Ratio	0.14	0.45	0.87
Control Delay	2.5	4.6	28.2
Queue Delay	0.0	0.0	0.0
Total Delay	2.5	4.6	28.2
Queue Length 50th (ft)	0	0	170
Queue Length 95th (ft)	0	2	#348
Internal Link Dist (ft)	295		93
Turn Bay Length (ft)			
Base Capacity (vph)	1588	899	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.14	0.45	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
24: H Street & 6th Street

Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	20	433	300	25
v/c Ratio	0.03	0.28	0.24	0.04
Control Delay	2.6	3.0	1.0	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.6	3.0	1.0	9.4
Queue Length 50th (ft)	1	1	1	4
Queue Length 95th (ft)	m1	3	3	15
Internal Link Dist (ft)		321	377	99
Turn Bay Length (ft)				
Base Capacity (vph)	722	1535	1264	701
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.28	0.24	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	663	126	718
v/c Ratio	0.41	0.20	0.56
Control Delay	11.4	5.1	14.5
Queue Delay	0.0	0.0	0.0
Total Delay	11.4	5.1	14.5
Queue Length 50th (ft)	103	16	123
Queue Length 95th (ft)	123	m20	m137
Internal Link Dist (ft)	341		341
Turn Bay Length (ft)			
Base Capacity (vph)	1617	646	1288
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.20	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I St & 6th Street

Baseline +Proj(Office) AM peak
1/9/2007



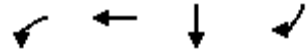
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1133	31	242	39	36
v/c Ratio	0.71	0.06	0.24	0.16	0.15
Control Delay	14.1	17.1	18.0	11.5	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	17.1	18.0	11.5	7.5
Queue Length 50th (ft)	114	10	43	1	0
Queue Length 95th (ft)	154	m26	m65	20	7
Internal Link Dist (ft)	333		319	377	
Turn Bay Length (ft)					
Base Capacity (vph)	1606	483	1016	246	242
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.06	0.24	0.16	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I St & 7th Street

Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	228	833	479	323
v/c Ratio	0.30	0.38	0.36	0.27
Control Delay	3.1	9.3	2.4	0.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.1	9.3	2.4	0.5
Queue Length 50th (ft)	3	56	7	0
Queue Length 95th (ft)	36	80	10	0
Internal Link Dist (ft)		1246	403	
Turn Bay Length (ft)				100
Base Capacity (vph)	763	2210	1345	1176
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.36	0.27

Intersection Summary

Queues
28: J St & 6th Street

Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	351	2342	42	28
v/c Ratio	0.35	0.69	0.12	0.10
Control Delay	8.5	10.9	25.4	25.6
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.9	10.9	25.4	25.6
Queue Length 50th (ft)	104	287	15	10
Queue Length 95th (ft)	156	311	44	m18
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	997	3404	339	269
Starvation Cap Reductn	237	35	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.70	0.12	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

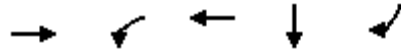
Baseline +Proj(Office) AM peak
1/9/2007



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2230	321	623
v/c Ratio	0.76	0.37	0.41
Control Delay	6.8	1.1	24.4
Queue Delay	0.2	0.0	0.0
Total Delay	7.0	1.1	24.4
Queue Length 50th (ft)	68	0	90
Queue Length 95th (ft)	65	0	122
Internal Link Dist (ft)	373		299
Turn Bay Length (ft)		200	
Base Capacity (vph)	2924	866	1509
Starvation Cap Reductn	144	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.37	0.41
Intersection Summary			

Queues

1: Richard Blvd & I-5 SB Off



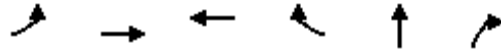
Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	661	1265	440	811	244
v/c Ratio	1.18	0.75	0.34	1.99	0.56
Control Delay	137.8	3.7	1.0	477.9	15.2
Queue Delay	0.0	1.8	1.3	27.1	0.0
Total Delay	137.8	5.5	2.4	505.0	15.2
Queue Length 50th (ft)	~266	8	2	~810	32
Queue Length 95th (ft)	#383	m13	m2	#1039	109
Internal Link Dist (ft)	205		310	611	
Turn Bay Length (ft)		100			300
Base Capacity (vph)	558	1682	1285	408	436
Starvation Cap Reductn	0	250	619	0	0
Spillback Cap Reductn	0	0	0	12	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.18	0.88	0.66	2.05	0.56

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

Baseline+Proj(Off) PM Peak
1/9/2007



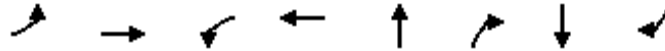
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	355	1057	1654	1707	439	427
v/c Ratio	1.39	0.82	0.91	1.67	0.77	0.50
Control Delay	214.4	5.2	24.6	321.9	22.6	15.3
Queue Delay	0.0	224.1	63.5	16.5	1.9	0.0
Total Delay	214.4	229.3	88.1	338.4	24.5	15.4
Queue Length 50th (ft)	~319	62	309	~1467	89	155
Queue Length 95th (ft)	m141	m17	m343	m#1678	#232	242
Internal Link Dist (ft)		310	238		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	256	1283	1823	1022	572	854
Starvation Cap Reductn	0	252	373	22	0	0
Spillback Cap Reductn	0	577	22	0	47	3
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.39	1.50	1.14	1.71	0.84	0.50

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
3: Richard Blvd & Bercut Dr

Baseline+Proj(Off) PM Peak
1/9/2007



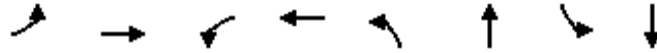
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	1685	20	2870	190	13	54	259
v/c Ratio	0.91	0.65	0.15	0.92	0.78	0.05	0.24	0.61
Control Delay	54.5	10.6	14.1	25.3	59.2	14.7	34.8	20.1
Queue Delay	0.0	9.8	0.0	2.7	380.6	0.0	0.0	79.8
Total Delay	54.5	20.4	14.1	28.0	439.8	14.7	34.8	99.9
Queue Length 50th (ft)	68	443	6	~672	109	0	28	52
Queue Length 95th (ft)	m#140	549	21	#810	184	16	62	130
Internal Link Dist (ft)		238		1267	432		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	230	2578	137	3117	312	364	285	498
Starvation Cap Reductn	0	879	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	164	208	0	0	272
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.99	0.15	0.97	1.83	0.04	0.19	1.15

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
4: Richard Blvd & 5th Street

Baseline+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	407	1519	9	2564	13	18	120	200
v/c Ratio	2.47	0.59	0.26	1.17	0.10	0.09	1.35	0.51
Control Delay	703.5	12.1	65.6	106.2	57.8	24.1	264.1	22.7
Queue Delay	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0
Total Delay	703.5	12.1	65.6	109.3	57.8	24.1	264.1	22.7
Queue Length 50th (ft)	~658	345	9	~1580	11	1	~154	56
Queue Length 95th (ft)	#873	481	m7	m552	34	26	#290	138
Internal Link Dist (ft)		708		1043		442		361
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	165	2561	35	2192	158	224	89	423
Starvation Cap Reductn	0	0	0	13	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.47	0.59	0.26	1.18	0.08	0.08	1.35	0.47

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

Baseline+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	268	1366	84	1577	410	429	283	516	1310
v/c Ratio	0.90	1.00	0.68	1.50	1.16	1.17	0.62	1.39	3.41
Control Delay	94.2	58.3	93.0	266.8	150.2	151.9	25.6	233.0	1109.1
Queue Delay	0.0	0.0	0.0	10.4	34.5	35.1	0.0	0.0	0.0
Total Delay	94.2	58.3	93.0	277.2	184.7	187.0	25.6	233.0	1109.1
Queue Length 50th (ft)	224	~701	82	~1135	~498	~524	90	~670	~2281
Queue Length 95th (ft)	m309	m#886	138	#1337	#725	#752	196	#899	#2553
Internal Link Dist (ft)		1043		1130		1403			382
Turn Bay Length (ft)	200		200		200		200	150	
Base Capacity (vph)	366	1360	366	1050	353	367	456	372	384
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	16	23	24	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.00	0.23	1.53	1.24	1.25	0.62	1.39	3.42

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richard Blvd & 10th St

Baseline+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1785	31	6	1405	17	13	28	70	37	170
v/c Ratio	0.29	0.67	0.03	0.08	0.56	0.09	0.05	0.11	0.33	0.13	0.45
Control Delay	58.2	10.5	5.1	53.7	11.2	36.4	35.2	13.4	42.8	37.4	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	10.5	5.1	53.7	11.2	36.4	35.2	13.4	42.8	37.4	9.6
Queue Length 50th (ft)	18	349	4	4	308	10	7	0	41	21	0
Queue Length 95th (ft)	47	578	18	18	401	29	24	24	83	50	56
Internal Link Dist (ft)		1130			996		1466			413	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	468	2681	1086	468	2530	345	493	439	369	493	523
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.67	0.03	0.01	0.56	0.05	0.03	0.06	0.19	0.08	0.33

Intersection Summary

Queues

Baseline+Proj(Off) PM Peak

7: Richard Blvd & Dos Rios St

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	1822	7	1274	109	59
v/c Ratio	0.11	1.15	0.06	0.80	0.17	0.09
Control Delay	14.0	97.7	12.6	21.1	12.3	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	97.7	12.6	21.1	12.3	9.4
Queue Length 50th (ft)	3	-485	2	228	26	10
Queue Length 95th (ft)	13	#620	9	310	55	29
Internal Link Dist (ft)		996		1190	1946	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	109	1581	109	1587	650	676
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	1.15	0.06	0.80	0.17	0.09

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Richard Blvd & 12th Street

Baseline+Proj(Off) PM Peak
1/9/2007



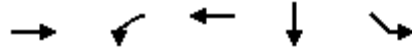
Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1810	262	100	110	3898	20	1708	894
v/c Ratio	2.93	0.66	0.44	1.24	1.13	0.04	0.60	0.75
Control Delay	890.6	27.0	44.7	184.8	85.4	9.0	13.6	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	890.6	27.0	44.7	184.8	85.4	9.0	13.6	5.3
Queue Length 50th (ft)	~1031	73	57	~86	~705	0	143	0
Queue Length 95th (ft)	#1167	162	107	m#111	#990	m4	167	42
Internal Link Dist (ft)			200		288			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	396	288	89	3443	558	2834	1199
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.93	0.66	0.35	1.24	1.13	0.04	0.60	0.75

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: Water St & 12th Street

Baseline+Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	656	58	338	2052	49
v/c Ratio	0.67	0.78	0.78	0.67	0.21
Control Delay	21.2	96.3	50.0	12.9	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	96.3	50.0	12.9	35.1
Queue Length 50th (ft)	102	36	209	165	24
Queue Length 95th (ft)	165	m#88	m293	190	57
Internal Link Dist (ft)	785		1656	1565	1946
Turn Bay Length (ft)		125			
Base Capacity (vph)	1004	77	455	3085	296
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.75	0.74	0.67	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	360	424	1003
v/c Ratio	0.24	0.47	1.28
Control Delay	6.6	3.5	156.7
Queue Delay	0.0	0.0	0.0
Total Delay	6.6	3.5	156.7
Queue Length 50th (ft)	15	0	~391
Queue Length 95th (ft)	29	0	#582
Internal Link Dist (ft)	344		141
Turn Bay Length (ft)			
Base Capacity (vph)	1491	911	782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.47	1.28

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
24: H Street & 6th Street

Baseline+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	4	401	207	21
v/c Ratio	0.00	0.25	0.17	0.03
Control Delay	10.2	13.6	0.5	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.2	13.6	0.5	10.0
Queue Length 50th (ft)	2	97	0	4
Queue Length 95th (ft)	m0	164	m3	14
Internal Link Dist (ft)		322	349	99
Turn Bay Length (ft)				
Base Capacity (vph)	814	1596	1187	692
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.00	0.25	0.17	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline+Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	516	130	1200
v/c Ratio	0.39	0.17	0.77
Control Delay	11.2	2.4	10.8
Queue Delay	0.0	0.0	0.0
Total Delay	11.2	2.4	10.8
Queue Length 50th (ft)	112	6	183
Queue Length 95th (ft)	109	m8	m158
Internal Link Dist (ft)	333		360
Turn Bay Length (ft)			
Base Capacity (vph)	1330	757	1558
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.17	0.77

Intersection Summary

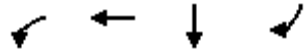
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2414	146	252	151	150
v/c Ratio	0.72	0.70	0.59	1.00	1.01
Control Delay	14.9	59.0	46.0	115.5	117.4
Queue Delay	0.3	0.0	0.0	0.0	0.0
Total Delay	15.2	59.0	46.0	115.5	117.4
Queue Length 50th (ft)	471	93	79	-94	-93
Queue Length 95th (ft)	534	m#179	m121	#230	#231
Internal Link Dist (ft)	345		362	349	
Turn Bay Length (ft)					
Base Capacity (vph)	3335	209	428	151	149
Starvation Cap Reductn	316	0	0	0	0
Spillback Cap Reductn	185	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.80	0.70	0.59	1.00	1.01

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	172	1750	782	694
v/c Ratio	0.19	0.59	0.74	0.87
Control Delay	7.2	12.4	27.0	33.9
Queue Delay	0.0	0.4	0.3	0.2
Total Delay	7.2	12.8	27.4	34.1
Queue Length 50th (ft)	40	236	169	186
Queue Length 95th (ft)	74	282	240	#332
Internal Link Dist (ft)		1246	351	
Turn Bay Length (ft)				100
Base Capacity (vph)	888	2975	1062	797
Starvation Cap Reductn	0	0	45	0
Spillback Cap Reductn	0	625	0	5
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.74	0.77	0.88

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	94	1427	420	67
v/c Ratio	0.14	0.62	0.71	0.29
Control Delay	12.3	17.2	21.5	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.3	17.2	21.5	11.6
Queue Length 50th (ft)	26	156	96	13
Queue Length 95th (ft)	m55	201	#213	m23
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	674	2305	595	229
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.62	0.71	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

Baseline+Proj(Off) PM Peak
1/9/2007



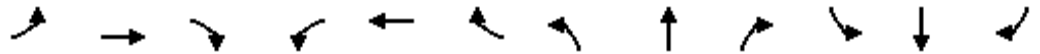
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	1548	299	968
v/c Ratio	0.67	0.45	0.54
Control Delay	6.7	3.6	14.6
Queue Delay	0.0	0.0	0.0
Total Delay	6.7	3.6	14.6
Queue Length 50th (ft)	42	6	202
Queue Length 95th (ft)	49	17	237
Internal Link Dist (ft)	341		371
Turn Bay Length (ft)		200	
Base Capacity (vph)	2300	664	1783
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.67	0.45	0.54

Intersection Summary

Year 2013 Near Term

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013 No Proj AM Peak
 12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	273	172	360	193	0	0	0	0	1565	0	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.92		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.94		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3069		3433	1863					1681	1681	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3069		3433	1863					1681	1681	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	273	172	360	193	0	0	0	0	1565	0	686
RTOR Reduction (vph)	0	83	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	362	0	360	193	0	0	0	0	782	783	686
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		35.0		26.5	64.5					48.0	48.0	120.0
Effective Green, g (s)		35.0		25.0	64.0					48.0	48.0	120.0
Actuated g/C Ratio		0.29		0.21	0.53					0.40	0.40	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		895		715	994					672	672	1539
v/s Ratio Prot		0.12		c0.10	0.10					0.47	c0.47	
v/s Ratio Perm												c0.45
v/c Ratio		0.40		0.50	0.19					1.16	1.17	0.45
Uniform Delay, d1		34.1		42.0	14.6					36.0	36.0	0.0
Progression Factor		1.00		0.81	1.80					1.00	1.00	1.00
Incremental Delay, d2		0.8		1.0	0.2					89.4	89.9	0.9
Delay (s)		35.0		35.0	26.4					125.4	125.9	0.9
Level of Service		C		D	C					F	F	A
Approach Delay (s)		35.0			32.0			0.0			87.6	
Approach LOS		C			C			A			F	

Intersection Summary

HCM Average Control Delay	71.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	147	1691	0	0	488	666	65	0	1356	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1521	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1521	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	1691	0	0	488	666	65	0	1356	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	80	7	0	0	0
Lane Group Flow (vph)	147	1691	0	0	488	666	0	636	698	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	18.0	61.3			41.5	120.0		42.0	51.7			
Effective Green, g (s)	17.0	60.8			38.0	120.0		41.5	46.7			
Actuated g/C Ratio	0.14	0.51			0.32	1.00		0.35	0.39			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	251	1793			1121	2708		526	585			
v/s Ratio Prot	0.08	c0.48			0.14			c0.42	c0.46			
v/s Ratio Perm						0.25						
v/c Ratio	0.59	0.94			0.44	0.25		1.21	1.19			
Uniform Delay, d1	48.2	28.0			32.5	0.0		39.2	36.6			
Progression Factor	0.57	0.25			1.05	1.00		1.00	1.00			
Incremental Delay, d2	0.5	1.3			0.5	0.2		110.5	103.2			
Delay (s)	28.0	8.3			34.5	0.2		149.8	139.8			
Level of Service	C	A			C	A		F	F			
Approach Delay (s)		9.8			14.7			144.8			0.0	
Approach LOS		A			B			F			A	

Intersection Summary

HCM Average Control Delay	54.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

2013 No Proj AM Peak

12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘↗	↗			↘	↗
Volume (vph)	205	2079	763	26	570	45	505	65	14	21	81	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2	4.6	5.2	5.2		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	0.98	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1737	3539	1408	1770	4964		3433	1790			1844	1583
Flt Permitted	0.37	1.00	1.00	0.06	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	683	3539	1408	108	4964		3433	1790			1844	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	2079	763	26	570	45	505	65	14	21	81	79
RTOR Reduction (vph)	0	0	135	0	7	0	0	7	0	0	0	74
Lane Group Flow (vph)	205	2079	628	26	608	0	505	72	0	0	102	5
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	79.4	79.4	79.4	69.3	69.3		21.0	21.0			8.0	8.0
Effective Green, g (s)	78.9	78.8	79.4	68.7	68.7		20.5	20.5			7.5	7.5
Actuated g/C Ratio	0.66	0.66	0.66	0.57	0.57		0.17	0.17			0.06	0.06
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	503	2324	932	62	2842		586	306			115	99
v/s Ratio Prot	0.02	c0.59			0.12		c0.15	0.04			c0.06	
v/s Ratio Perm	0.25		0.45	0.24								0.00
v/c Ratio	0.41	0.89	0.67	0.42	0.21		0.86	0.24			0.89	0.05
Uniform Delay, d1	8.2	17.1	12.4	14.4	12.5		48.4	43.0			55.8	52.9
Progression Factor	0.87	0.87	0.78	0.42	0.33		0.92	0.87			1.00	1.00
Incremental Delay, d2	0.0	0.6	0.4	18.7	0.2		11.7	0.1			49.0	0.1
Delay (s)	7.1	15.5	10.1	24.8	4.3		56.0	37.4			104.9	53.0
Level of Service	A	B	B	C	A		E	D			F	D
Approach Delay (s)		13.6			5.1			53.5			82.2	
Approach LOS		B			A			D			F	

Intersection Summary

HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Richard Blvd & 5th Street

2013 No Proj AM Peak

12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	1758	12	10	886	27	17	0	7	19	1	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.92		1.00	0.93	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		0.94	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3533		1770	3513		1662	1463		1655	1470	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3533		1770	3513		1264	1463		1312	1470	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	1758	12	10	886	27	17	0	7	19	1	52
RTOR Reduction (vph)	0	0	0	0	1	0	0	6	0	0	45	0
Lane Group Flow (vph)	27	1770	0	10	912	0	17	1	0	19	8	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot		Prot		Perm		Perm					
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	6.0	89.6		4.0	87.6		15.6	15.6		15.6	15.6	
Effective Green, g (s)	5.0	89.3		3.0	87.3		15.1	15.1		15.1	15.1	
Actuated g/C Ratio	0.04	0.74		0.02	0.73		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	74	2629		44	2556		159	184		165	185	
v/s Ratio Prot	0.02	c0.50		0.01	c0.26			0.00			0.01	
v/s Ratio Perm							0.01			c0.01		
v/c Ratio	0.36	0.67		0.23	0.36		0.11	0.00		0.12	0.04	
Uniform Delay, d1	56.0	7.9		57.4	6.0		46.5	45.9		46.5	46.1	
Progression Factor	1.36	0.25		0.64	0.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		0.6	0.3		0.1	0.0		0.1	0.0	
Delay (s)	76.6	2.6		37.6	0.4		46.6	45.9		46.6	46.1	
Level of Service	E	A		D	A		D	D		D	D	
Approach Delay (s)		3.7			0.8			46.4			46.3	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	4.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.6
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Volume (vph)	468	1149	261	604	651	224	229	305	525	34	118	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3411		1770	3335		1681	1763	1550	1770	3388	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3411		1770	3335		1681	1763	1550	1770	3388	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	468	1149	261	604	651	224	229	305	525	34	118	47
RTOR Reduction (vph)	0	15	0	0	27	0	0	0	90	0	35	0
Lane Group Flow (vph)	468	1395	0	604	848	0	206	328	435	34	130	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		pm+ov	Split		
Protected Phases	1	6		5	2		8	8	5	7	7	
Permitted Phases									8			
Actuated Green, G (s)	36.2	47.3		29.0	40.1		23.7	23.7	52.7	6.0	6.0	
Effective Green, g (s)	35.2	47.3		28.0	40.1		23.2	23.2	51.7	5.5	5.5	
Actuated g/C Ratio	0.29	0.39		0.23	0.33		0.19	0.19	0.43	0.05	0.05	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.0	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	519	1345		413	1114		325	341	668	81	155	
v/s Ratio Prot	0.26	c0.41		c0.34	0.25		0.12	c0.19	0.15	0.02	c0.04	
v/s Ratio Perm									0.13			
v/c Ratio	0.90	1.04		1.46	0.76		0.63	0.96	0.65	0.42	0.84	
Uniform Delay, d1	40.7	36.4		46.0	35.7		44.5	48.0	27.0	55.7	56.8	
Progression Factor	0.72	0.71		1.09	0.94		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.1	32.0		220.3	4.6		3.0	38.3	1.7	1.3	29.5	
Delay (s)	44.5	57.9		270.7	38.3		47.5	86.2	28.8	57.0	86.3	
Level of Service	D	E		F	D		D	F	C	E	F	
Approach Delay (s)		54.6			133.2			50.2			81.3	
Approach LOS		D			F			D			F	

Intersection Summary

HCM Average Control Delay	79.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	110.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	1237	195	206	1077	84	55	38	63	21	28	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3475		1684	1863	1583	1770	1863	1440
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.74	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3475		1310	1863	1583	1364	1863	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1237	195	206	1077	84	55	38	63	21	28	36
RTOR Reduction (vph)	0	0	35	0	4	0	0	0	55	0	0	31
Lane Group Flow (vph)	175	1237	160	206	1157	0	55	38	8	21	28	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	16.2	72.4	72.4	19.9	76.1		16.2	16.2	16.2	16.2	16.2	16.2
Effective Green, g (s)	15.7	71.9	71.9	19.4	75.6		15.7	15.7	15.7	15.7	15.7	15.7
Actuated g/C Ratio	0.13	0.60	0.60	0.16	0.63		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	232	2120	890	286	2189		171	244	207	178	244	188
v/s Ratio Prot	c0.10	c0.35		c0.12	0.33			0.02				0.02
v/s Ratio Perm			0.11				c0.04		0.01	0.02		0.00
v/c Ratio	0.75	0.58	0.18	0.72	0.53		0.32	0.16	0.04	0.12	0.11	0.03
Uniform Delay, d1	50.3	14.8	10.8	47.7	12.3		47.3	46.3	45.6	46.0	46.0	45.5
Progression Factor	1.10	0.66	0.47	1.03	1.15		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	0.5	0.2	6.4	0.8		0.4	0.1	0.0	0.1	0.1	0.0
Delay (s)	59.8	10.2	5.3	55.4	15.0		47.7	46.4	45.6	46.1	46.1	45.5
Level of Service	E	B	A	E	B		D	D	D	D	D	D
Approach Delay (s)		15.0			21.1			46.5			45.9	
Approach LOS		B			C			D			D	

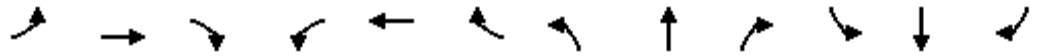
Intersection Summary

HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1212	50	24	1233	32	35	22	24	17	45	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.97			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Frt	1.00	0.99		1.00	1.00			0.96			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	3488		1770	3507			1657			1624	
Flt Permitted	0.16	1.00		0.16	1.00			0.86			0.97	
Satd. Flow (perm)	302	3488		303	3507			1449			1577	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	1212	50	24	1233	32	35	22	24	17	45	66
RTOR Reduction (vph)	0	3	0	0	1	0	0	13	0	0	32	0
Lane Group Flow (vph)	43	1259	0	24	1264	0	0	68	0	0	96	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	77.5	77.5		77.5	77.5			34.5			34.5	
Effective Green, g (s)	77.0	77.0		77.0	77.0			34.0			34.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64			0.28			0.28	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	194	2238		194	2250			411			447	
v/s Ratio Prot		c0.36			0.36							
v/s Ratio Perm	0.14			0.08				0.05			c0.06	
v/c Ratio	0.22	0.56		0.12	0.56			0.17			0.21	
Uniform Delay, d1	9.0	12.1		8.4	12.0			32.3			32.8	
Progression Factor	0.63	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	0.9		1.3	1.0			0.9			1.1	
Delay (s)	7.8	12.9		9.7	13.1			33.2			33.9	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		12.7			13.0			33.2			33.9	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1073	76	20	0	20	106	1395	50	3860	1233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.90		1.00		1.00	1.00	0.83	1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1425		1695		1770	6408	1319	6408	1425
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1425		1695		1770	6408	1319	6408	1425
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1073	76	20	0	20	106	1395	50	3860	1233
RTOR Reduction (vph)	0	36	0	16	0	0	0	28	0	328
Lane Group Flow (vph)	1073	40	0	24	0	106	1395	22	3860	905
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	35.0	35.0		14.4		7.0	82.6	64.6	71.6	71.6
Effective Green, g (s)	35.0	35.0		14.4		7.0	82.6	64.6	71.6	71.6
Actuated g/C Ratio	0.23	0.23		0.10		0.05	0.55	0.43	0.48	0.48
Clearance Time (s)	4.0	4.0		4.0		4.0		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	801	333		163		83	3529	568	3059	680
v/s Ratio Prot	c0.31			c0.01		c0.06	0.22		0.60	
v/s Ratio Perm		0.03						0.02		c0.64
v/c Ratio	1.34	0.12		0.15		1.28	0.40	0.04	1.26	1.33
Uniform Delay, d1	57.5	45.4		62.2		71.5	19.4	24.7	39.2	39.2
Progression Factor	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	161.2	0.1		0.2		190.2	0.1	0.1	120.6	159.1
Delay (s)	218.7	45.4		62.3		261.7	19.4	24.8	159.8	198.3
Level of Service	F	D		E		F	B	C	F	F
Approach Delay (s)				62.3			36.2			
Approach LOS				E			D			

Intersection Summary

HCM Average Control Delay	147.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013 No Proj AM Peak
 12/20/2006

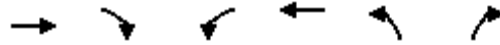


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		L	R
Volume (vph)	0	167	367	1	212	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	167	367	1	212	601
RTOR Reduction (vph)	155	0	0	0	0	0
Lane Group Flow (vph)	12	0	368	0	212	601
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	4.4		31.4		12.2	47.6
Effective Green, g (s)	4.4		31.4		12.2	47.6
Actuated g/C Ratio	0.07		0.52		0.20	0.79
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	118		974		360	1478
v/s Ratio Prot	c0.01		0.20		c0.12	c0.32
v/s Ratio Perm						
v/c Ratio	0.10		0.38		0.59	0.41
Uniform Delay, d1	26.0		8.5		21.6	1.9
Progression Factor	1.00		1.00		1.04	0.96
Incremental Delay, d2	0.4		1.1		1.7	0.6
Delay (s)	26.3		9.6		24.2	2.4
Level of Service	C		A		C	A
Approach Delay (s)	26.3		9.6			8.1
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th Street

2013 No Proj AM Peak
 12/20/2006

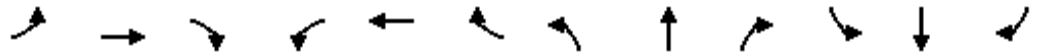


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↗	↖
Volume (vph)	110	163	182	212	134	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1591
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1591
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	163	182	212	134	177
RTOR Reduction (vph)	0	69	0	0	0	126
Lane Group Flow (vph)	110	94	182	212	134	51
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot		pm+ov	
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	57.6	57.6	15.6	77.7	13.3	28.9
Effective Green, g (s)	57.6	57.6	15.6	77.7	13.3	28.9
Actuated g/C Ratio	0.58	0.58	0.16	0.78	0.13	0.29
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1073	837	276	1448	235	531
v/s Ratio Prot	0.06		c0.10	c0.11	c0.08	0.02
v/s Ratio Perm		0.06				0.02
v/c Ratio	0.10	0.11	0.66	0.15	0.57	0.10
Uniform Delay, d1	9.6	9.6	39.7	2.8	40.7	26.0
Progression Factor	1.00	1.00	0.89	0.60	0.85	2.63
Incremental Delay, d2	0.0	0.1	5.2	0.2	3.3	0.1
Delay (s)	9.6	9.7	40.6	1.9	37.8	68.5
Level of Service	A	A	D	A	D	E
Approach Delay (s)	9.6			19.7	55.3	
Approach LOS	A			B	E	

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: North B Street & 7th Street

2013 No Proj AM Peak
 12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↑	↗	↖	↗	↗	↖	↗	
Volume (vph)	106	121	13	988	206	336	4	697	328	63	804	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3457		3433	1863	1437	1770	3539	1498	1770	3383	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3457		3433	1863	1437	1770	3539	1498	1770	3383	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	106	121	13	988	206	336	4	697	328	63	804	102
RTOR Reduction (vph)	0	8	0	0	0	254	0	0	134	0	8	0
Lane Group Flow (vph)	106	126	0	988	206	82	4	697	194	63	898	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	19.0	18.9		24.5	24.4	24.4	1.0	34.6	59.1	4.0	37.6	
Effective Green, g (s)	19.0	18.9		24.5	24.4	24.4	1.0	34.6	59.1	4.0	37.6	
Actuated g/C Ratio	0.19	0.19		0.24	0.24	0.24	0.01	0.35	0.59	0.04	0.38	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	336	653		841	455	351	18	1224	953	71	1272	
v/s Ratio Prot	0.06	0.04		c0.29	c0.11		0.00	0.20	0.05	c0.04	c0.27	
v/s Ratio Perm						0.06			0.08			
v/c Ratio	0.32	0.19		1.17	0.45	0.23	0.22	0.57	0.20	0.89	0.71	
Uniform Delay, d1	34.9	34.1		37.8	32.1	30.3	49.1	26.6	9.5	47.8	26.5	
Progression Factor	1.00	1.02		0.76	0.78	1.72	1.50	0.51	0.26	1.00	1.00	
Incremental Delay, d2	0.5	0.1		88.7	0.6	0.3	6.0	1.9	0.1	68.6	3.3	
Delay (s)	35.4	34.9		117.6	25.7	52.3	79.7	15.5	2.6	116.3	29.8	
Level of Service	D	C		F	C	D	E	B	A	F	C	
Approach Delay (s)		35.1			90.9			11.6			35.4	
Approach LOS		D			F			B			D	

Intersection Summary

HCM Average Control Delay	51.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013 No Proj AM Peak
 12/20/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑↑		↘		
Volume (vph)	425	98	20	367	29	22	2736	1140	34	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.99		1.00	0.99			1.00		0.89		
Flpb, ped/bikes	1.00		0.98	1.00			1.00		1.00		
Frt	0.97		1.00	0.99			0.96		0.92		
Flt Protected	1.00		0.95	1.00			1.00		0.98		
Satd. Flow (prot)	3391		1734	1825			6125		1500		
Flt Permitted	1.00		0.18	1.00			1.00		0.98		
Satd. Flow (perm)	3391		322	1825			6125		1500		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	98	20	367	29	22	2736	1140	34	43	7
RTOR Reduction (vph)	13	0	0	0	0	0	0	0	2	0	0
Lane Group Flow (vph)	510	0	20	396	0	0	3898	0	82	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	29.0		29.0	29.0			84.8		17.2		
Effective Green, g (s)	29.0		29.0	29.0			87.8		17.2		
Actuated g/C Ratio	0.19		0.19	0.19			0.59		0.11		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	656		62	353			3585		172		
v/s Ratio Prot	0.15			c0.22							
v/s Ratio Perm			0.06				0.64		c0.05		
v/c Ratio	0.78		0.32	1.12			1.21dr		0.48		
Uniform Delay, d1	57.4		52.0	60.5			31.1		62.2		
Progression Factor	1.00		1.00	1.00			1.00		1.00		
Incremental Delay, d2	6.7		6.2	85.1			44.8		4.3		
Delay (s)	64.2		58.3	145.6			75.9		66.5		
Level of Service	E		E	F			E		E		
Approach Delay (s)	64.2			141.4			75.9		66.5		
Approach LOS	E			F			E		E		

Intersection Summary

HCM Average Control Delay	80.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th Street

2013 No Proj AM Peak
 12/20/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	46	210	199	266	305	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3396	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3396	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	210	199	266	305	40
RTOR Reduction (vph)	0	171	0	0	9	0
Lane Group Flow (vph)	46	39	199	266	336	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.7	18.7	29.5	72.3	38.3	
Effective Green, g (s)	18.7	18.7	29.5	72.3	38.3	
Actuated g/C Ratio	0.19	0.19	0.30	0.72	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	331	269	522	2559	1301	
v/s Ratio Prot	0.03		c0.11	0.08	c0.10	
v/s Ratio Perm		c0.03				
v/c Ratio	0.14	0.15	0.38	0.10	0.26	
Uniform Delay, d1	33.9	34.0	28.0	4.1	21.1	
Progression Factor	1.00	1.00	0.68	0.35	0.62	
Incremental Delay, d2	0.2	0.3	0.5	0.1	0.5	
Delay (s)	34.1	34.2	19.4	1.5	13.5	
Level of Service	C	C	B	A	B	
Approach Delay (s)	34.2			9.2	13.5	
Approach LOS	C			A	B	

























Intersection Summary

HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013 No Proj AM Peak
 12/20/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	129	389	434	234	245	32	388	281	221	8	335	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	129	389	434	234	245	32	388	281	221	8	335	74
RTOR Reduction (vph)	0	0	278	0	0	24	0	0	127	0	0	53
Lane Group Flow (vph)	129	389	157	234	245	8	388	281	94	8	335	21
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.4	25.0	25.0	13.6	24.2	24.2	15.3	42.4	42.4	1.0	28.1	28.1
Effective Green, g (s)	14.4	25.0	25.0	13.6	24.2	24.2	15.3	42.4	42.4	1.0	28.1	28.1
Actuated g/C Ratio	0.14	0.25	0.25	0.14	0.24	0.24	0.15	0.42	0.42	0.01	0.28	0.28
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	255	885	366	241	856	355	525	1501	616	34	994	412
v/s Ratio Prot	0.07	c0.11		c0.13	0.07		c0.11	0.08		0.00	c0.09	
v/s Ratio Perm			0.11			0.01			0.06			0.01
v/c Ratio	0.51	0.44	0.43	0.97	0.29	0.02	0.74	0.19	0.15	0.24	0.34	0.05
Uniform Delay, d1	39.5	31.6	31.5	43.0	30.9	28.9	40.4	18.0	17.7	49.1	28.6	26.2
Progression Factor	1.00	1.00	1.00	0.80	0.69	0.45	1.00	1.00	1.00	0.69	0.53	0.26
Incremental Delay, d2	1.6	0.4	0.8	41.6	0.1	0.0	5.4	0.3	0.5	3.4	0.9	0.2
Delay (s)	41.1	31.9	32.3	75.9	21.4	12.9	45.8	18.3	18.3	37.4	15.9	7.0
Level of Service	D	C	C	E	C	B	D	B	B	D	B	A
Approach Delay (s)		33.3			45.8			30.3			14.7	
Approach LOS		C			D			C			B	

Intersection Summary

HCM Average Control Delay	31.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	404	219	80	573	867	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.92	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3271	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3271	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	404	219	80	573	867	451
RTOR Reduction (vph)	0	164	0	0	60	0
Lane Group Flow (vph)	404	55	80	573	1258	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.9	24.9	7.4	66.1	54.2	
Effective Green, g (s)	24.9	24.9	7.4	66.1	54.2	
Actuated g/C Ratio	0.25	0.25	0.07	0.66	0.54	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	855	365	131	2339	1773	
v/s Ratio Prot	c0.12		c0.05	0.16	c0.38	
v/s Ratio Perm		0.04				
v/c Ratio	0.47	0.15	0.61	0.24	0.71	
Uniform Delay, d1	32.0	29.3	44.9	6.9	17.0	
Progression Factor	0.57	0.34	0.30	0.36	0.54	
Incremental Delay, d2	0.4	0.2	0.8	0.0	0.9	
Delay (s)	18.8	10.0	14.3	2.5	10.2	
Level of Service	B	B	B	A	B	
Approach Delay (s)	15.7			3.9	10.2	
Approach LOS	B			A	B	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	40	0	55	137	34	25	779	39	321	968	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1770			3481			3318	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1770			3481			3318	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	40	0	55	137	34	25	779	39	321	968	228
RTOR Reduction (vph)	0	0	0	0	9	0	0	3	0	0	14	0
Lane Group Flow (vph)	56	40	0	55	162	0	0	840	0	0	1503	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	4.0	18.0		5.0	19.0			19.0			41.0	
Effective Green, g (s)	4.0	18.0		5.0	19.0			19.0			41.0	
Actuated g/C Ratio	0.04	0.18		0.05	0.19			0.19			0.41	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	71	335		89	336			661			1360	
v/s Ratio Prot	c0.03	0.02		0.03	c0.09			c0.24			c0.45	
v/s Ratio Perm												
v/c Ratio	0.79	0.12		0.62	0.48			1.27			1.11	
Uniform Delay, d1	47.6	34.4		46.6	36.1			40.5			29.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.89	
Incremental Delay, d2	58.6	0.7		28.1	4.9			133.4			57.6	
Delay (s)	106.1	35.1		74.7	41.0			173.9			83.8	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		76.5			49.2			173.9			83.8	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	108.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↖	↗	↖	↖↗		↖	↖↗	
Volume (vph)	37	199	52	118	264	621	67	639	104	127	1185	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.87	1.00	1.00	0.87	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		0.99	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1378	1770	1863	1378	1770	3360		1770	3479	
Flt Permitted		0.91	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1678	1378	1770	1863	1378	1770	3360		1770	3479	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	199	52	118	264	621	67	639	104	127	1185	77
RTOR Reduction (vph)	0	0	44	0	0	332	0	13	0	0	5	0
Lane Group Flow (vph)	0	236	8	118	264	289	67	730	0	127	1257	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		16.0	16.0	26.0	26.0	26.0	4.0	34.0		10.0	41.0	
Effective Green, g (s)		16.0	16.0	26.0	26.0	26.0	4.0	34.0		10.0	41.0	
Actuated g/C Ratio		0.16	0.16	0.26	0.26	0.26	0.04	0.34		0.10	0.41	
Clearance Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		268	220	460	484	358	71	1142		177	1426	
v/s Ratio Prot				0.07	0.14		c0.04	0.22		0.07	c0.36	
v/s Ratio Perm		c0.14	0.01			c0.21						
v/c Ratio		0.88	0.04	0.26	0.55	0.81	0.94	0.64		0.72	0.88	
Uniform Delay, d1		41.1	35.5	29.3	31.9	34.6	47.9	27.8		43.6	27.3	
Progression Factor		1.00	1.00	0.87	0.87	1.43	0.65	0.82		1.00	1.00	
Incremental Delay, d2		31.3	0.3	1.1	3.7	15.1	41.1	0.7		22.0	8.2	
Delay (s)		72.4	35.8	26.8	31.4	64.8	72.1	23.6		65.6	35.4	
Level of Service		E	D	C	C	E	E	C		E	D	
Approach Delay (s)		65.8			51.6			27.6			38.2	
Approach LOS		E			D			C			D	

Intersection Summary

HCM Average Control Delay	41.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	63	0	22	224	540	333	237	559	0	0	826	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	0	22	224	540	333	237	559	0	0	826	197
RTOR Reduction (vph)	0	0	18	0	0	220	0	0	0	0	0	114
Lane Group Flow (vph)	63	0	4	224	540	113	237	559	0	0	826	83
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2				6
Permitted Phases			4			8						6
Actuated Green, G (s)	9.0		18.0	18.0	27.0	27.0	18.0	52.5			30.5	30.5
Effective Green, g (s)	9.0		18.0	17.5	27.0	26.5	18.0	52.5			30.0	30.5
Actuated g/C Ratio	0.09		0.18	0.18	0.27	0.26	0.18	0.52			0.30	0.30
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	159		285	310	956	365	319	978			1062	483
v/s Ratio Prot	0.04			c0.13	c0.15		c0.13	0.30			c0.23	
v/s Ratio Perm			0.00			0.08						0.05
v/c Ratio	0.40		0.01	0.72	0.56	0.31	0.74	0.57			0.78	0.17
Uniform Delay, d1	42.9		33.7	39.0	31.4	29.4	38.8	16.1			32.0	25.5
Progression Factor	0.75		1.02	1.02	0.83	0.97	1.15	0.84			0.72	0.27
Incremental Delay, d2	4.5		0.1	12.6	2.2	2.0	13.1	2.2			5.2	0.7
Delay (s)	36.8		34.3	52.5	28.2	30.5	58.0	15.7			28.2	7.5
Level of Service	D		C	D	C	C	E	B			C	A
Approach Delay (s)		36.2			33.8			28.2			24.2	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	29.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↔						↕		↖	↕	
Volume (vph)	177	183	55	0	0	0	0	548	517	1057	400	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.97						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3173						3038		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3173						3038		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	177	183	55	0	0	0	0	548	517	1057	400	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	41	0	0	0	0
Lane Group Flow (vph)	138	257	0	0	0	0	0	1024	0	1057	400	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.0	16.0						26.5		46.5	76.5	
Effective Green, g (s)	16.0	15.5						26.0		46.0	76.0	
Actuated g/C Ratio	0.16	0.16						0.26		0.46	0.76	
Clearance Time (s)	4.0	4.0						3.5		3.5	3.5	
Lane Grp Cap (vph)	258	492						790		814	2690	
v/s Ratio Prot	c0.09	0.08						c0.34		c0.60	0.11	
v/s Ratio Perm												
v/c Ratio	0.53	0.52						1.30		1.30	0.15	
Uniform Delay, d1	38.6	38.8						37.0		27.0	3.2	
Progression Factor	0.98	0.98						0.77		0.31	0.14	
Incremental Delay, d2	4.6	2.3						139.5		140.3	0.1	
Delay (s)	42.3	40.5						168.0		148.7	0.5	
Level of Service	D	D						F		F	A	
Approach Delay (s)		41.1			0.0			168.0			108.0	
Approach LOS		D			A			F			F	

Intersection Summary

HCM Average Control Delay	120.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↙	↕↕	
Volume (vph)	449	892	209	0	0	0	0	0	0	166	657	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3380								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3380								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	449	892	209	0	0	0	0	0	0	166	657	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1525	0	0	0	0	0	0	0	166	657	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		27.7								15.3	15.3	
Effective Green, g (s)		27.2								14.8	14.8	
Actuated g/C Ratio		0.54								0.30	0.30	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1839								524	1048	
v/s Ratio Prot		c0.45								0.09	c0.19	
v/s Ratio Perm												
v/c Ratio		0.83								0.32	0.63	
Uniform Delay, d1		9.5								13.7	15.2	
Progression Factor		0.91								0.39	0.57	
Incremental Delay, d2		0.4								1.0	1.8	
Delay (s)		9.0								6.3	10.6	
Level of Service		A								A	B	
Approach Delay (s)		9.0			0.0			0.0			9.7	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			9.3		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			69.9%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↖	↑↑			↗	↖
Volume (vph)	0	0	0	57	1001	290	40	765	0	0	176	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			0.96	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6125		1770	3539			1699	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6125		1770	3539			1699	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	57	1001	290	40	765	0	0	176	279
RTOR Reduction (vph)	0	0	0	0	99	0	0	0	0	0	26	175
Lane Group Flow (vph)	0	0	0	0	1249	0	40	765	0	0	214	40
Confl. Peds. (#/hr)							36					
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					15.2		14.4	14.4			9.9	9.9
Effective Green, g (s)					14.7		13.9	13.9			9.4	9.4
Actuated g/C Ratio					0.29		0.28	0.28			0.19	0.19
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1801		492	984			319	283
v/s Ratio Prot							0.02	c0.22			c0.13	0.03
v/s Ratio Perm					0.20							
v/c Ratio					0.69		0.08	0.78			0.67	0.14
Uniform Delay, d1					15.7		13.3	16.6			18.9	16.9
Progression Factor					0.52		1.05	1.15			1.29	3.01
Incremental Delay, d2					2.0		0.0	0.6			10.6	1.0
Delay (s)					10.2		14.1	19.7			35.0	52.0
Level of Service					B		B	B			D	D
Approach Delay (s)		0.0			10.2			19.5			43.0	
Approach LOS		A			B			B			D	

Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔↔↔						↕↕	↗↗
Volume (vph)	0	0	0	272	1075	0	0	0	0	0	615	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.95
Flpb, ped/bikes				0.96	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1467	4796						3539	2655
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1467	4796						3539	2655
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	272	1075	0	0	0	0	0	615	316
RTOR Reduction (vph)	0	0	0	70	5	0	0	0	0	0	0	51
Lane Group Flow (vph)	0	0	0	175	1097	0	0	0	0	0	615	265
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				23.5	23.5						19.5	19.5
Effective Green, g (s)				23.0	23.0						19.0	19.0
Actuated g/C Ratio				0.46	0.46						0.38	0.38
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				675	2206						1345	1009
v/s Ratio Prot											c0.17	
v/s Ratio Perm				0.12	0.23							0.10
v/c Ratio				0.26	0.50						0.46	0.26
Uniform Delay, d1				8.3	9.5						11.6	10.7
Progression Factor				1.00	1.00						0.37	0.25
Incremental Delay, d2				0.9	0.8						0.9	0.5
Delay (s)				9.2	10.3						5.2	3.1
Level of Service				A	B						A	A
Approach Delay (s)		0.0			10.1			0.0			4.5	
Approach LOS		A			B			A			A	
Intersection Summary												
HCM Average Control Delay			7.8		HCM Level of Service			A				
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			44.4%		ICU Level of Service			A				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↙↙						↕		↘		
Volume (vph)	849	2454	0	0	0	0	0	39	8	179	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.99		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.94		
Frt	1.00	1.00						0.98		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4788						1798		1670		
Flt Permitted	0.95	1.00						1.00		0.73		
Satd. Flow (perm)	1431	4788						1798		1277		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	849	2454	0	0	0	0	0	39	8	179	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	764	2539	0	0	0	0	0	46	0	179	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	25.0	25.0						18.0		18.0		
Effective Green, g (s)	24.5	24.5						17.5		17.5		
Actuated g/C Ratio	0.49	0.49						0.35		0.35		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	701	2346						629		447		
v/s Ratio Prot								0.03				
v/s Ratio Perm	c0.53	0.53								c0.14		
v/c Ratio	1.09	1.08						0.07		0.40		
Uniform Delay, d1	12.8	12.8						10.8		12.3		
Progression Factor	1.04	1.05						1.00		1.06		
Incremental Delay, d2	53.0	41.8						0.2		1.9		
Delay (s)	66.3	55.2						11.1		14.9		
Level of Service	E	E						B		B		
Approach Delay (s)		57.8			0.0			11.1			14.9	
Approach LOS		E			A			B			B	
Intersection Summary												
HCM Average Control Delay			55.0		HCM Level of Service					D		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			98.2%		ICU Level of Service					F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013 No Proj AM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2436	404	0	0	0	0	0	0	175	569	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									0.97	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4885									4884	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4885									4884	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2436	404	0	0	0	0	0	0	175	569	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	2830	0	0	0	0	0	0	0	0	737	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		70.5									22.5	
Effective Green, g (s)		70.0									22.0	
Actuated g/C Ratio		0.70									0.22	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3420									1074	
v/s Ratio Prot		0.58										
v/s Ratio Perm											0.15	
v/c Ratio		0.83									0.69	
Uniform Delay, d1		10.7									35.8	
Progression Factor		1.14									0.85	
Incremental Delay, d2		0.8									3.3	
Delay (s)		13.0									33.6	
Level of Service		B									C	
Approach Delay (s)		13.0			0.0			0.0			33.6	
Approach LOS		B			A			A			C	
Intersection Summary												
HCM Average Control Delay			17.3									HCM Level of Service B
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			100.0								8.0	Sum of lost time (s)
Intersection Capacity Utilization			78.0%									ICU Level of Service D
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 35: New Street A & 7th Street

2013 No Proj AM Peak
 12/20/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	100	0	0	499	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	0	0	499	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	250	250			499	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	250	250			499	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	100			100	
cM capacity (veh/h)	739	789			1065	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	100	499	0
Volume Left	100	0	0
Volume Right	0	499	0
cSH	739	1700	1700
Volume to Capacity	0.14	0.29	0.00
Queue Length 95th (ft)	12	0	0
Control Delay (s)	10.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		43.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 36: Signature St & 7th Street

2013 No Proj AM Peak
 12/20/2006



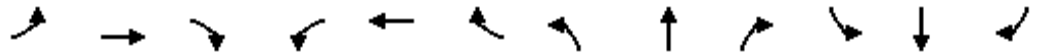
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	100	0	499	499	0	100
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	0	499	499	0	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			451			
pX, platoon unblocked	0.83	0.83			0.83	
vC, conflicting volume	848	748			998	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	714	594			895	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	100			100	
cM capacity (veh/h)	330	419			629	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	100	998	100
Volume Left	100	0	0
Volume Right	0	499	0
cSH	330	1700	629
Volume to Capacity	0.30	0.59	0.00
Queue Length 95th (ft)	31	0	0
Control Delay (s)	20.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	20.6	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization		69.0%	ICU Level of Service C
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013 No Proj PM Peak
 12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	407	652	1032	329	0	0	0	0	1222	3	556
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.87		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.91		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		2805		3433	1863					1681	1686	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		2805		3433	1863					1681	1686	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	407	652	1032	329	0	0	0	0	1222	3	556
RTOR Reduction (vph)	0	242	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	818	0	1032	329	0	0	0	0	611	614	556
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		28.0		36.1	67.1					45.4	45.4	120.0
Effective Green, g (s)		28.0		34.6	66.6					45.4	45.4	120.0
Actuated g/C Ratio		0.23		0.29	0.55					0.38	0.38	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		655		990	1034					636	638	1539
v/s Ratio Prot		c0.29		c0.30	0.18					0.36	c0.36	
v/s Ratio Perm												0.36
v/c Ratio		1.25		1.04	0.32					0.96	0.96	0.36
Uniform Delay, d1		46.0		42.7	14.4					36.4	36.5	0.0
Progression Factor		1.00		0.59	1.12					1.00	1.00	1.00
Incremental Delay, d2		124.1		22.5	0.0					26.6	26.8	0.7
Delay (s)		170.1		47.8	16.2					63.0	63.3	0.7
Level of Service		F		D	B					E	E	A
Approach Delay (s)		170.1			40.2			0.0			43.6	
Approach LOS		F			D			A			D	

Intersection Summary

HCM Average Control Delay	74.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	139.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	425	1204	0	0	1263	2458	98	9	863	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1546	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1546	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	1204	0	0	1263	2458	98	9	863	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	110	18	0	0	0
Lane Group Flow (vph)	425	1204	0	0	1263	2458	0	385	457	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	25.7	55.9			42.0	120.0		34.3	49.6			
Effective Green, g (s)	24.7	54.9			42.0	120.0		33.8	48.6			
Actuated g/C Ratio	0.21	0.46			0.35	1.00		0.28	0.40			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	364	1619			1239	2708		435	609			
v/s Ratio Prot	c0.24	0.34			0.36			0.25	0.30			
v/s Ratio Perm						c0.91						
v/c Ratio	1.17	0.74			1.02	0.91		0.89	0.75			
Uniform Delay, d1	47.6	26.8			39.0	0.0		41.2	30.5			
Progression Factor	0.52	0.29			1.05	1.00		1.00	1.00			
Incremental Delay, d2	78.4	0.2			13.2	0.6		20.1	6.2			
Delay (s)	103.2	8.0			54.1	0.6		61.4	36.7			
Level of Service	F	A			D	A		E	D			
Approach Delay (s)		32.8			18.7			49.3			0.0	
Approach LOS		C			B			D			A	

Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	139.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗			↖	↗
Volume (vph)	164	1217	686	29	2357	35	1181	61	26	54	137	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.6	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	1.00		1.00	0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1770	3539	1408	1770	5061		3433	1742			1837	1583
Flt Permitted	0.07	1.00	1.00	0.10	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	135	3539	1408	189	5061		3433	1742			1837	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	1217	686	29	2357	35	1181	61	26	54	137	183
RTOR Reduction (vph)	0	0	225	0	1	0	0	13	0	0	0	60
Lane Group Flow (vph)	164	1217	461	29	2391	0	1181	74	0	0	191	123
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	61.5	60.4	60.4	50.4	50.4		36.5	36.5			11.5	11.5
Effective Green, g (s)	61.0	61.0	60.4	51.0	51.0		36.0	36.0			11.0	11.0
Actuated g/C Ratio	0.51	0.51	0.50	0.42	0.42		0.30	0.30			0.09	0.09
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	150	1799	709	80	2151		1030	523			168	145
v/s Ratio Prot	c0.05	0.34			0.47		c0.34	0.04			c0.10	
v/s Ratio Perm	c0.50		0.33	0.15								0.08
v/c Ratio	1.09	0.68	0.65	0.36	1.11		1.15	0.14			1.14	0.85
Uniform Delay, d1	53.9	22.1	22.0	23.5	34.5		42.0	30.7			54.5	53.7
Progression Factor	0.85	0.75	0.46	0.56	0.63		0.90	0.89			1.00	1.00
Incremental Delay, d2	84.7	1.3	2.8	10.0	56.2		74.6	0.0			111.0	33.3
Delay (s)	130.7	17.9	12.9	23.1	77.8		112.2	27.2			165.5	87.0
Level of Service	F	B	B	C	E		F	C			F	F
Approach Delay (s)		25.2			77.1			106.3			127.1	
Approach LOS		C			E			F			F	

Intersection Summary

HCM Average Control Delay	68.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Richard Blvd & 5th Street

2013 No Proj PM Peak

12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	1057	21	9	1923	13	13	1	17	16	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		0.94	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3522		1770	3533		1656	1484		1657	1463	
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3522		1770	3533		1302	1484		1300	1463	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	34	1057	21	9	1923	13	13	1	17	16	0	16
RTOR Reduction (vph)	0	1	0	0	0	0	0	14	0	0	14	0
Lane Group Flow (vph)	34	1077	0	9	1936	0	13	4	0	16	2	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	4.2	85.2		5.2	86.2		18.8	18.8		18.8	18.8	
Effective Green, g (s)	3.2	85.5		4.2	86.5		18.3	18.3		18.3	18.3	
Actuated g/C Ratio	0.03	0.71		0.04	0.72		0.15	0.15		0.15	0.15	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	47	2509		62	2547		199	226		198	223	
v/s Ratio Prot	c0.02	0.31		0.01	c0.55			0.00			0.00	
v/s Ratio Perm							0.01			c0.01		
v/c Ratio	0.72	0.43		0.15	0.76		0.07	0.02		0.08	0.01	
Uniform Delay, d1	58.0	7.1		56.2	10.3		43.5	43.2		43.6	43.2	
Progression Factor	1.04	0.02		0.87	0.36		1.00	1.00		1.00	1.00	
Incremental Delay, d2	28.1	0.4		0.2	1.0		0.1	0.0		0.1	0.0	
Delay (s)	88.7	0.6		49.3	4.7		43.6	43.2		43.7	43.2	
Level of Service	F	A		D	A		D	D		D	D	
Approach Delay (s)		3.3			4.9			43.4			43.4	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Volume (vph)	65	763	282	332	1239	45	387	158	800	209	412	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3353		1770	3511		1681	1732	1546	1770	3289	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3353		1770	3511		1681	1732	1546	1770	3289	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	763	282	332	1239	45	387	158	800	209	412	367
RTOR Reduction (vph)	0	28	0	0	2	0	0	0	102	0	133	0
Lane Group Flow (vph)	65	1017	0	332	1282	0	267	278	698	209	646	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		pm+ov		Split	
Protected Phases	1	6		5	2		8	8	5		7	7
Permitted Phases									8			
Actuated Green, G (s)	11.5	43.6		22.0	54.1		21.9	21.9	43.9		18.5	18.5
Effective Green, g (s)	10.5	43.6		21.0	54.1		21.4	21.4	42.9		18.0	18.0
Actuated g/C Ratio	0.09	0.36		0.18	0.45		0.18	0.18	0.36		0.15	0.15
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.0		3.5	3.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	155	1218		310	1583		300	309	553		266	493
v/s Ratio Prot	0.04	c0.30		0.19	c0.37		0.16	0.16	c0.23		0.12	c0.20
v/s Ratio Perm									0.23			
v/c Ratio	0.42	0.83		1.07	0.81		0.89	0.90	1.26		0.79	1.31
Uniform Delay, d1	51.9	34.9		49.5	28.5		48.2	48.2	38.6		49.1	51.0
Progression Factor	0.67	0.48		0.84	0.77		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	4.6		69.0	4.2		25.6	26.4	132.4		13.1	154.0
Delay (s)	35.6	21.4		110.6	26.2		73.8	74.7	170.9		62.2	205.0
Level of Service	D	C		F	C		E	E	F		E	F
Approach Delay (s)		22.3			43.6			131.7				174.8
Approach LOS		C			D			F				F

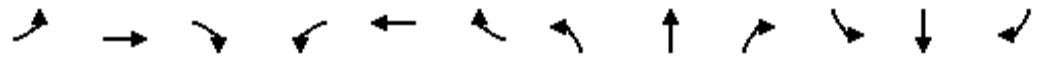
Intersection Summary

HCM Average Control Delay	88.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	115.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1671	99	90	1228	26	115	30	176	71	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3521		1685	1863	1583	1770	1863	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3521		1300	1863	1583	1374	1863	1459
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1671	99	90	1228	26	115	30	176	71	37	170
RTOR Reduction (vph)	0	0	14	0	1	0	0	0	149	0	0	134
Lane Group Flow (vph)	26	1671	85	90	1253	0	115	30	27	71	37	36
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	3.8	78.0	78.0	11.5	85.7		19.0	19.0	19.0	19.0	19.0	19.0
Effective Green, g (s)	3.3	78.5	78.5	11.0	86.2		18.5	18.5	18.5	18.5	18.5	18.5
Actuated g/C Ratio	0.03	0.65	0.65	0.09	0.72		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	49	2315	972	162	2529		200	287	244	212	287	225
v/s Ratio Prot	0.01	c0.47		0.05	c0.36			0.02			0.02	
v/s Ratio Perm			0.06				c0.09		0.02	0.05		0.02
v/c Ratio	0.53	0.72	0.09	0.56	0.50		0.57	0.10	0.11	0.33	0.13	0.16
Uniform Delay, d1	57.6	13.6	7.6	52.2	7.4		47.1	43.6	43.7	45.3	43.8	44.0
Progression Factor	1.04	0.94	0.81	0.85	0.62		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.5	0.0	2.1	0.6		2.5	0.1	0.1	0.3	0.1	0.1
Delay (s)	61.4	13.2	6.2	46.6	5.2		49.6	43.7	43.7	45.6	43.9	44.1
Level of Service	E	B	A	D	A		D	D	D	D	D	D
Approach Delay (s)		13.6			8.0			45.8			44.5	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	1673	39	7	1173	5	42	38	144	24	25	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.94			0.95	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			0.99			0.99	
Frt	1.00	1.00		1.00	1.00			0.91			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1734	3510		1770	3534			1565			1613	
Flt Permitted	0.19	1.00		0.07	1.00			0.93			0.91	
Satd. Flow (perm)	341	3510		138	3534			1469			1483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	58	1673	39	7	1173	5	42	38	144	24	25	52
RTOR Reduction (vph)	0	1	0	0	0	0	0	20	0	0	32	0
Lane Group Flow (vph)	58	1711	0	7	1178	0	0	204	0	0	69	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	78.5	78.5		78.5	78.5			33.5			33.5	
Effective Green, g (s)	79.0	79.0		79.0	79.0			33.0			33.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.28			0.28	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	224	2311		91	2327			404			408	
v/s Ratio Prot		c0.49			0.33							
v/s Ratio Perm	0.17			0.05				c0.14			0.05	
v/c Ratio	0.26	0.74		0.08	0.51			0.51			0.17	
Uniform Delay, d1	8.4	13.7		7.4	10.5			36.6			33.1	
Progression Factor	0.48	0.58		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.1	1.6		1.6	0.8			4.5			0.9	
Delay (s)	6.2	9.5		9.0	11.3			41.1			34.0	
Level of Service	A	A		A	B			D			C	
Approach Delay (s)		9.4			11.3			41.1			34.0	
Approach LOS		A			B			D			C	

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1753	262	50	0	50	110	5113	20	2953	825
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		3.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.93		1.00		1.00	1.00	0.88	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1466		1695		1770	6408	1396	6408	1471
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1466		1695		1770	6408	1396	6408	1471
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1753	262	50	0	50	110	5113	20	2953	825
RTOR Reduction (vph)	0	114	0	0	0	0	0	6	0	414
Lane Group Flow (vph)	1753	148	0	100	0	110	5113	14	2953	411
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Effective Green, g (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Actuated g/C Ratio	0.20	0.20		0.12		0.05	0.52	0.34	0.43	0.43
Clearance Time (s)	4.0	4.0		4.0		3.5		4.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	687	293		205		89	3326	473	2781	638
v/s Ratio Prot	c0.51			c0.06		0.06	c0.80		0.46	
v/s Ratio Perm		0.10						0.01		0.28
v/c Ratio	2.55	0.50		0.49		1.24	1.54	0.03	1.06	0.64
Uniform Delay, d1	40.0	35.6		41.1		47.5	24.0	22.1	28.3	22.2
Progression Factor	1.00	1.00		1.00		0.91	1.30	0.70	1.00	1.00
Incremental Delay, d2	702.5	1.4		1.8		115.0	241.9	0.0	36.3	2.2
Delay (s)	742.5	36.9		42.9		158.0	273.3	15.4	64.6	24.5
Level of Service	F	D		D		F	F	B	E	C
Approach Delay (s)				42.9			269.9			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	264.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	137.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013 No Proj PM Peak
 12/20/2006

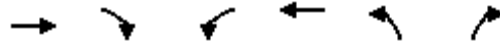


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		L	R
Volume (vph)	0	557	606	1	181	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	557	606	1	181	662
RTOR Reduction (vph)	303	0	0	0	0	0
Lane Group Flow (vph)	254	0	607	0	181	662
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		26.9		8.5	39.4
Effective Green, g (s)	12.6		26.9		8.5	39.4
Actuated g/C Ratio	0.21		0.45		0.14	0.66
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	338		835		251	1223
v/s Ratio Prot	c0.16		c0.33		c0.10	0.36
v/s Ratio Perm						
v/c Ratio	0.75		0.73		0.72	0.54
Uniform Delay, d1	22.2		13.5		24.6	5.5
Progression Factor	1.00		1.00		1.18	1.21
Incremental Delay, d2	9.0		5.5		6.0	1.0
Delay (s)	31.3		19.0		35.0	7.6
Level of Service	C		B		D	A
Approach Delay (s)	31.3		19.0			13.5
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th St

2013 No Proj PM Peak
 12/20/2006



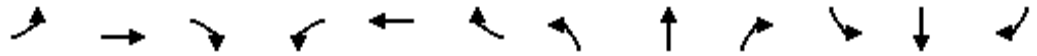
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	232	192	499	190	514	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.88
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1571
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1571
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	232	192	499	190	514	519
RTOR Reduction (vph)	0	140	0	0	0	78
Lane Group Flow (vph)	232	52	499	190	514	441
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot		pm+ov	
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	26.9	26.9	29.4	60.8	30.2	59.6
Effective Green, g (s)	26.9	26.9	29.4	60.8	30.2	59.6
Actuated g/C Ratio	0.27	0.27	0.29	0.61	0.30	0.60
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	501	391	520	1133	535	1007
v/s Ratio Prot	c0.12		c0.28	0.10	c0.29	0.13
v/s Ratio Perm		0.04				0.15
v/c Ratio	0.46	0.13	0.96	0.17	0.96	0.44
Uniform Delay, d1	30.5	27.7	34.7	8.6	34.3	11.0
Progression Factor	1.00	1.00	0.62	0.40	0.83	0.33
Incremental Delay, d2	0.7	0.2	21.3	0.2	28.3	0.3
Delay (s)	31.2	27.9	42.8	3.6	56.7	3.9
Level of Service	C	C	D	A	E	A
Approach Delay (s)	29.7			32.0	30.2	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: North B Street & 7th Street

2013 No Proj PM Peak
 12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗	↘	↘	↗	↘	↘	↗	↘
Volume (vph)	173	330	0	1041	474	128	54	1130	1036	152	674	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539		3433	1863	1437	1770	3539	1497	1770	3392	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539		3433	1863	1437	1770	3539	1497	1770	3392	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	330	0	1041	474	128	54	1130	1036	152	674	80
RTOR Reduction (vph)	0	0	0	0	0	68	0	0	93	0	9	0
Lane Group Flow (vph)	173	330	0	1041	474	60	54	1130	943	152	745	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.0	7.0		27.5	25.5	25.5	10.2	39.6	67.1	8.4	37.8	
Effective Green, g (s)	9.0	7.0		27.5	25.5	25.5	10.2	39.6	67.1	8.4	37.8	
Actuated g/C Ratio	0.09	0.07		0.28	0.26	0.26	0.10	0.40	0.67	0.08	0.38	
Clearance Time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	159	248		944	475	366	181	1401	1072	149	1282	
v/s Ratio Prot	0.10	c0.09		c0.30	0.25		0.03	0.32	c0.24	c0.09	0.22	
v/s Ratio Perm						0.04			0.39			
v/c Ratio	1.09	1.33		1.10	1.00	0.16	0.30	0.81	0.88	1.02	0.58	
Uniform Delay, d1	45.5	46.5		36.2	37.2	29.0	41.6	26.8	13.2	45.8	24.8	
Progression Factor	0.99	0.97		0.82	0.81	0.86	0.95	0.68	0.55	1.00	1.00	
Incremental Delay, d2	92.5	171.2		58.4	35.0	0.2	0.9	4.9	8.1	79.1	1.9	
Delay (s)	137.4	216.2		88.1	65.2	25.0	40.6	23.2	15.3	124.9	26.7	
Level of Service	F	F		F	E	C	D	C	B	F	C	
Approach Delay (s)		189.1			76.6			19.9			43.2	
Approach LOS		F			E			B			D	

Intersection Summary

HCM Average Control Delay	57.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013 No Proj PM Peak
 12/20/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	1341	249	38	170	38	54	2201	1425	18	40	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.99		1.00	0.98			1.00		0.91		
Flpb, ped/bikes	1.00		1.00	1.00			1.00		1.00		
Frt	0.98		1.00	0.97			0.94		0.90		
Flt Protected	1.00		0.95	1.00			1.00		0.99		
Satd. Flow (prot)	3427		1770	1782			6031		1515		
Flt Permitted	1.00		0.15	1.00			1.00		0.99		
Satd. Flow (perm)	3427		287	1782			6031		1515		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1341	249	38	170	38	54	2201	1425	18	40	4
RTOR Reduction (vph)	16	0	0	0	0	0	0	0	3	0	0
Lane Group Flow (vph)	1574	0	38	208	0	0	3680	0	59	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	26.0		26.0	26.0			41.7		13.3		
Effective Green, g (s)	26.0		26.0	26.0			44.7		13.3		
Actuated g/C Ratio	0.26		0.26	0.26			0.45		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	891		75	463			2696		201		
v/s Ratio Prot	c0.46			0.12							
v/s Ratio Perm			0.13				0.61		c0.04		
v/c Ratio	1.77		0.51	0.45			1.91dr		0.30		
Uniform Delay, d1	37.0		31.5	31.0			27.6		39.1		
Progression Factor	0.92		1.21	1.24			0.89		1.00		
Incremental Delay, d2	345.6		7.7	1.0			166.3		1.7		
Delay (s)	379.6		46.0	39.5			190.9		40.8		
Level of Service	F		D	D			F		D		
Approach Delay (s)	379.6			40.5			190.9		40.8		
Approach LOS	F			D			F		D		

Intersection Summary

HCM Average Control Delay	236.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	126.2%	ICU Level of Service	H
Analysis Period (min)	15		
dr Defacto Right Lane. Recode with 1 though lane as a right lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th St

2013 No Proj PM Peak
 12/20/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	153	415	264	880	498	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.94	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3198	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3198	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	415	264	880	498	193
RTOR Reduction (vph)	0	335	0	0	31	0
Lane Group Flow (vph)	153	80	264	880	660	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	19.3	19.8	71.7	47.4	
Effective Green, g (s)	19.3	19.3	19.8	71.7	47.4	
Actuated g/C Ratio	0.19	0.19	0.20	0.72	0.47	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	277	350	2537	1516	
v/s Ratio Prot	c0.09		c0.15	0.25	c0.21	
v/s Ratio Perm		0.06				
v/c Ratio	0.45	0.29	0.75	0.35	0.44	
Uniform Delay, d1	35.6	34.5	37.8	5.3	17.4	
Progression Factor	0.87	1.30	0.89	0.14	0.40	
Incremental Delay, d2	0.9	0.6	6.3	0.3	0.5	
Delay (s)	32.1	45.3	39.8	1.0	7.5	
Level of Service	C	D	D	A	A	
Approach Delay (s)	41.7			9.9	7.5	
Approach LOS	D			A	A	

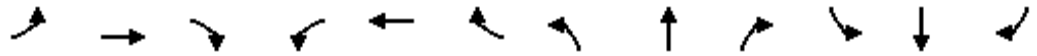
Intersection Summary

HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013 No Proj PM Peak
 12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘↗	↑↑	↗	↘↗	↑↑	↗
Volume (vph)	365	530	497	314	515	102	472	576	390	134	676	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	365	530	497	314	515	102	472	576	390	134	676	142
RTOR Reduction (vph)	0	0	194	0	0	76	0	0	231	0	0	97
Lane Group Flow (vph)	365	530	303	314	515	26	472	576	159	134	676	45
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.5	26.4	26.4	13.5	25.4	25.4	10.6	34.1	34.1	8.0	31.5	31.5
Effective Green, g (s)	14.5	26.4	26.4	13.5	25.4	25.4	10.6	34.1	34.1	8.0	31.5	31.5
Actuated g/C Ratio	0.14	0.26	0.26	0.14	0.25	0.25	0.11	0.34	0.34	0.08	0.32	0.32
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	257	934	387	239	899	372	364	1207	495	275	1115	461
v/s Ratio Prot	c0.21	0.15		c0.18	0.15		c0.14	0.16		0.04	c0.19	
v/s Ratio Perm			c0.21			0.02			0.11			0.03
v/c Ratio	1.42	0.57	0.78	1.31	0.57	0.07	1.30	0.48	0.32	0.49	0.61	0.10
Uniform Delay, d1	42.7	31.9	34.1	43.2	32.6	28.3	44.7	25.9	24.4	44.0	29.0	24.2
Progression Factor	1.00	1.00	1.00	0.72	0.63	1.36	1.00	1.00	1.00	0.87	0.94	1.75
Incremental Delay, d2	210.4	0.8	9.9	144.0	0.1	0.0	152.4	1.4	1.7	1.2	2.2	0.4
Delay (s)	253.1	32.7	44.0	175.1	20.5	38.4	197.1	27.3	26.1	39.7	29.4	42.6
Level of Service	F	C	D	F	C	D	F	C	C	D	C	D
Approach Delay (s)		94.5			74.6			82.7			32.8	
Approach LOS		F			E			F			C	

Intersection Summary

HCM Average Control Delay	74.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	600	478	374	897	1087	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.92	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3265	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3265	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	478	374	897	1087	586
RTOR Reduction (vph)	0	239	0	0	69	0
Lane Group Flow (vph)	600	239	374	897	1604	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	16.5	65.0	44.0	
Effective Green, g (s)	26.0	26.0	16.5	65.0	44.0	
Actuated g/C Ratio	0.26	0.26	0.16	0.65	0.44	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	893	381	292	2300	1437	
v/s Ratio Prot	c0.17		c0.21	0.25	c0.49	
v/s Ratio Perm		0.16				
v/c Ratio	0.67	0.63	1.28	0.39	1.12	
Uniform Delay, d1	33.2	32.7	41.8	8.2	28.0	
Progression Factor	0.67	0.64	0.44	1.07	0.40	
Incremental Delay, d2	1.8	2.8	128.9	0.0	57.1	
Delay (s)	24.1	23.7	147.0	8.8	68.2	
Level of Service	C	C	F	A	E	
Approach Delay (s)	23.9			49.5	68.2	
Approach LOS	C			D	E	

Intersection Summary

HCM Average Control Delay	50.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	104.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	152	0	93	46	363	0	1273	118	464	1103	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.91			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.87			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1465			3450			3437	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1465			3450			3437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	152	0	93	46	363	0	1273	118	464	1103	70
RTOR Reduction (vph)	0	0	0	0	284	0	0	7	0	0	3	0
Lane Group Flow (vph)	190	152	0	93	125	0	0	1384	0	0	1634	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	7.0	18.0		8.0	19.0			23.0			34.0	
Effective Green, g (s)	7.0	18.0		8.0	19.0			23.0			34.0	
Actuated g/C Ratio	0.07	0.18		0.08	0.19			0.23			0.34	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	124	335		142	278			794			1169	
v/s Ratio Prot	c0.11	0.08		c0.05	c0.09			c0.40			c0.48	
v/s Ratio Perm												
v/c Ratio	1.53	0.45		0.65	0.45			1.74			1.40	
Uniform Delay, d1	46.5	36.6		44.7	35.9			38.5			33.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.85	
Incremental Delay, d2	275.8	4.4		21.2	5.2			339.7			180.6	
Delay (s)	322.3	41.0		65.8	41.0			378.2			208.6	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		197.3			45.6			378.2			208.6	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	247.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	139.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: G Street & 6th Street

2013 No Proj PM Peak
 12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↖	↗	↖	↖↗		↖	↖↗	
Volume (vph)	108	216	212	436	564	1002	42	565	39	95	1607	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.90	1.00	1.00	0.89	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.98	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801	1425	1770	1863	1413	1770	3461		1770	3508	
Flt Permitted		0.67	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1235	1425	1770	1863	1413	1770	3461		1770	3508	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	216	212	436	564	1002	42	565	39	95	1607	58
RTOR Reduction (vph)	0	0	88	0	0	359	0	5	0	0	3	0
Lane Group Flow (vph)	0	324	124	436	564	643	42	599	0	95	1662	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		22.5	22.5	18.5	45.5	18.5	5.0	30.5		11.0	36.5	
Effective Green, g (s)		22.5	22.5	18.5	45.5	18.5	5.0	30.5		11.0	36.5	
Actuated g/C Ratio		0.22	0.22	0.18	0.46	0.18	0.05	0.30		0.11	0.36	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Grp Cap (vph)		278	321	327	848	261	89	1056		195	1280	
v/s Ratio Prot				0.25	0.30		0.02	c0.17		0.05	c0.47	
v/s Ratio Perm		c0.26	0.09			c0.46						
v/c Ratio		1.17	0.39	1.33	0.67	2.47	0.47	0.57		0.49	1.30	
Uniform Delay, d1		38.8	32.9	40.8	21.3	40.8	46.2	29.2		41.8	31.7	
Progression Factor		1.00	1.00	1.24	0.98	2.17	0.58	0.58		1.00	1.00	
Incremental Delay, d2		106.4	3.5	161.3	2.3	665.7	1.6	0.2		8.5	140.3	
Delay (s)		145.1	36.4	211.8	23.2	754.2	28.3	17.0		50.3	172.1	
Level of Service		F	D	F	C	F	C	B		D	F	
Approach Delay (s)		102.1			430.1			17.8			165.5	
Approach LOS		F			F			B			F	

Intersection Summary		
HCM Average Control Delay	246.5	HCM Level of Service F
HCM Volume to Capacity ratio	1.50	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 18.0
Intersection Capacity Utilization	112.3%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	278	0	96	98	997	424	310	726	0	0	661	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	278	0	96	98	997	424	310	726	0	0	661	465
RTOR Reduction (vph)	0	0	67	0	0	84	0	0	0	0	0	261
Lane Group Flow (vph)	278	0	29	98	997	340	310	726	0	0	661	204
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		30.5	15.0	29.0	29.0	18.0	43.5			21.5	21.5
Effective Green, g (s)	16.0		30.5	14.5	29.0	28.5	18.0	43.5			21.0	21.5
Actuated g/C Ratio	0.16		0.30	0.14	0.29	0.28	0.18	0.44			0.21	0.22
Clearance Time (s)	4.0		4.0	3.5	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		483	257	1026	393	319	810			743	340
v/s Ratio Prot	c0.16			0.06	c0.28		0.18	c0.39			0.19	
v/s Ratio Perm			0.02			0.25						0.13
v/c Ratio	0.98		0.06	0.38	0.97	0.87	0.97	0.90			0.89	0.60
Uniform Delay, d1	41.9		24.6	38.7	35.1	33.9	40.7	26.2			38.4	35.4
Progression Factor	1.09		3.34	0.85	0.82	0.80	0.82	0.75			0.78	0.40
Incremental Delay, d2	33.3		0.1	4.0	21.1	20.5	33.0	9.7			13.8	6.9
Delay (s)	78.8		82.4	36.9	49.9	47.8	66.3	29.2			43.5	21.2
Level of Service	E		F	D	D	D	E	C			D	C
Approach Delay (s)		79.8			48.5			40.3			34.3	
Approach LOS		E			D			D			C	

Intersection Summary

HCM Average Control Delay	45.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	198	79	0	0	0	0	595	460	1223	1540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.96						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.96						0.93		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3112						3087		1770	3539	
Flt Permitted	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3112						3087		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	170	198	79	0	0	0	0	595	460	1223	1540	0
RTOR Reduction (vph)	0	34	0	0	0	0	0	31	0	0	0	0
Lane Group Flow (vph)	150	263	0	0	0	0	0	1024	0	1223	1540	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.0	15.0						24.5		50.0	78.0	
Effective Green, g (s)	15.0	14.5						24.0		49.5	77.5	
Actuated g/C Ratio	0.15	0.14						0.24		0.50	0.78	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	242	451						741		876	2743	
v/s Ratio Prot	c0.09	0.08						c0.33		c0.69	0.44	
v/s Ratio Perm												
v/c Ratio	0.62	0.58						1.38		1.40	0.56	
Uniform Delay, d1	39.8	39.9						38.0		25.2	4.5	
Progression Factor	0.75	0.71						0.92		0.52	0.69	
Incremental Delay, d2	1.1	0.5						172.6		178.9	0.1	
Delay (s)	30.8	29.0						207.3		192.1	3.2	
Level of Service	C	C						F		F	A	
Approach Delay (s)		29.6			0.0			207.3			86.8	
Approach LOS		C			A			F			F	

Intersection Summary

HCM Average Control Delay	110.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	123.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↙	↕↕		
Volume (vph)	714	1026	357	0	0	0	0	0	0	121	535	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.97								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3343								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3343								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	714	1026	357	0	0	0	0	0	0	121	535	0	
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	2063	0	0	0	0	0	0	0	121	535	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		28.0								15.0	15.0		
Effective Green, g (s)		27.5								14.5	14.5		
Actuated g/C Ratio		0.55								0.29	0.29		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1839								513	1026		
v/s Ratio Prot		c0.62								0.07	c0.15		
v/s Ratio Perm													
v/c Ratio		1.12								0.24	0.52		
Uniform Delay, d1		11.2								13.5	14.8		
Progression Factor		1.21								1.46	1.58		
Incremental Delay, d2		55.6								0.7	1.2		
Delay (s)		69.2								20.4	24.6		
Level of Service		E								C	C		
Approach Delay (s)		69.2			0.0			0.0			23.8		
Approach LOS		E			A			A			C		
Intersection Summary													
HCM Average Control Delay			58.4		HCM Level of Service						E		
HCM Volume to Capacity ratio			0.91										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			82.8%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2013 No Proj PM Peak
 12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	42	1968	332	275	725	0	0	498	1324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6193		1770	3539			1644	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6193		1770	3539			1644	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	42	1968	332	275	725	0	0	498	1324
RTOR Reduction (vph)	0	0	0	0	30	0	0	0	0	0	23	23
Lane Group Flow (vph)	0	0	0	0	2312	0	275	725	0	0	925	851
Confl. Peds. (#/hr)							36					
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)						32.5	16.5	16.5			40.5	40.5
Effective Green, g (s)						32.0	16.0	16.0			40.0	40.0
Actuated g/C Ratio						0.32	0.16	0.16			0.40	0.40
Clearance Time (s)						3.5	3.5	3.5			3.5	3.5
Vehicle Extension (s)						3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)						1982	283	566			658	602
v/s Ratio Prot							0.16	c0.20			0.56	c0.57
v/s Ratio Perm						0.37						
v/c Ratio						1.17	0.97	1.28			1.41	1.41
Uniform Delay, d1						34.0	41.8	42.0			30.0	30.0
Progression Factor						0.72	0.93	0.92			1.11	1.11
Incremental Delay, d2						79.4	39.0	136.2			190.7	194.9
Delay (s)						103.8	78.0	174.9			224.0	228.1
Level of Service						F	E	F			F	F
Approach Delay (s)		0.0				103.8		148.3			226.0	
Approach LOS		A				F		F			F	

Intersection Summary

HCM Average Control Delay	155.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	147.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013 No Proj PM Peak

12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	240	1966	0	0	0	0	0	753	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4799						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4799						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	240	1966	0	0	0	0	0	753	373
RTOR Reduction (vph)	0	0	0	21	1	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	0	0	195	1989	0	0	0	0	0	753	360
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				59.5	59.5						33.5	33.5
Effective Green, g (s)				59.0	59.0						33.0	33.0
Actuated g/C Ratio				0.59	0.59						0.33	0.33
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				833	2831						1168	844
v/s Ratio Prot											c0.21	
v/s Ratio Perm				0.14	0.41							0.14
v/c Ratio				0.23	0.70						0.64	0.43
Uniform Delay, d1				9.8	14.4						28.5	26.1
Progression Factor				1.00	1.00						1.22	1.23
Incremental Delay, d2				0.7	1.5						2.2	1.3
Delay (s)				10.4	15.8						37.1	33.5
Level of Service				B	B						D	C
Approach Delay (s)		0.0			15.3			0.0			35.9	
Approach LOS		A			B			A			D	
Intersection Summary												
HCM Average Control Delay			22.3		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			62.9%		ICU Level of Service						B	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↔↗						↕		↘		
Volume (vph)	587	1605	0	0	0	0	0	204	214	529	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.97		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4787						1671		1717		
Flt Permitted	0.95	1.00						1.00		0.42		
Satd. Flow (perm)	1431	4787						1671		766		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	587	1605	0	0	0	0	0	204	214	529	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	528	1664	0	0	0	0	0	416	0	529	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	19.5	19.5						23.5		23.5		
Effective Green, g (s)	19.0	19.0						23.0		23.0		
Actuated g/C Ratio	0.38	0.38						0.46		0.46		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	544	1819						769		352		
v/s Ratio Prot								0.25				
v/s Ratio Perm	c0.37	0.35								c0.69		
v/c Ratio	0.97	0.91						0.54		1.50		
Uniform Delay, d1	15.2	14.7						9.7		13.5		
Progression Factor	0.59	0.59						1.00		1.81		
Incremental Delay, d2	22.2	5.1						2.7		227.6		
Delay (s)	31.1	13.7						12.4		252.1		
Level of Service	C	B						B		F		
Approach Delay (s)		17.9			0.0			12.4			252.1	
Approach LOS		B			A			B			F	

Intersection Summary			
HCM Average Control Delay	56.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	147.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013 No Proj PM Peak
12/20/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2014	442	0	0	0	0	0	0	156	885	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4885									5002	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4885									5002	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2014	442	0	0	0	0	0	0	156	885	0
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2437	0	0	0	0	0	0	0	0	1039	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		24.9									18.1	
Effective Green, g (s)		24.4									17.6	
Actuated g/C Ratio		0.49									0.35	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2384									1761	
v/s Ratio Prot		0.50										
v/s Ratio Perm											0.21	
v/c Ratio		1.02									0.59	
Uniform Delay, d1		12.8									13.2	
Progression Factor		0.49									0.59	
Incremental Delay, d2		16.2									1.2	
Delay (s)		22.5									9.1	
Level of Service		C									A	
Approach Delay (s)		22.5			0.0			0.0			9.1	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 35: New Street "A" & 7th Street

2013 No Proj PM Peak
 12/20/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	494	0	0	134	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	494	0	0	134	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	67	67			134	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	67	67			134	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	47	100			100	
cM capacity (veh/h)	938	997			1451	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	494	134	0
Volume Left	494	0	0
Volume Right	0	134	0
cSH	938	1700	1700
Volume to Capacity	0.53	0.08	0.00
Queue Length 95th (ft)	79	0	0
Control Delay (s)	13.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		10.2	
Intersection Capacity Utilization		42.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 36: Signature St & 7th Street

2013 No Proj PM Peak
 12/20/2006



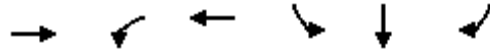
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	494	0	134	134	0	494
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	494	0	134	134	0	494
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			435			
pX, platoon unblocked						
vC, conflicting volume	695	201			268	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	695	201			268	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	100			100	
cM capacity (veh/h)	408	840			1296	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	494	268	494
Volume Left	494	0	0
Volume Right	0	134	0
cSH	408	1700	1296
Volume to Capacity	1.21	0.16	0.00
Queue Length 95th (ft)	500	0	0
Control Delay (s)	145.0	0.0	0.0
Lane LOS	F		
Approach Delay (s)	145.0	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay		57.0	
Intersection Capacity Utilization		60.0%	ICU Level of Service B
Analysis Period (min)		15	

Queues

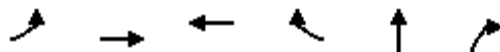
1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	445	360	193	782	783	686
v/c Ratio	0.46	0.50	0.19	1.16	1.17	0.45
Control Delay	26.8	36.5	27.0	123.3	123.8	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	36.5	27.0	123.3	123.8	0.9
Queue Length 50th (ft)	107	119	109	~756	~757	0
Queue Length 95th (ft)	158	m151	m152	#1009	#1010	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	978	715	994	672	672	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.50	0.19	1.16	1.17	0.45

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	147	1691	488	666	716	705
v/c Ratio	0.59	0.94	0.40	0.25	1.18	1.09
Control Delay	26.8	9.5	19.0	0.2	128.1	94.9
Queue Delay	0.0	15.0	0.2	0.0	373.5	284.5
Total Delay	26.8	24.6	19.2	0.2	501.6	379.4
Queue Length 50th (ft)	75	118	103	0	-632	-642
Queue Length 95th (ft)	m71	m87	137	0	#883	#892
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	251	1793	1224	2708	606	648
Starvation Cap Reductn	0	144	210	0	0	0
Spillback Cap Reductn	0	127	0	0	251	241
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.03	0.48	0.25	2.02	1.73

Intersection Summary

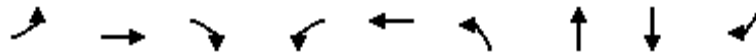
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013 No Proj AM Peak

3: Richard Blvd & Bercut Dr

1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	205	2079	763	26	615	505	79	102	79
v/c Ratio	0.41	0.89	0.72	0.42	0.22	0.86	0.25	0.89	0.46
Control Delay	7.5	16.9	5.4	29.7	4.4	58.9	34.4	113.7	20.6
Queue Delay	2.6	66.1	4.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	83.1	9.6	29.7	4.4	58.9	34.4	113.7	20.6
Queue Length 50th (ft)	53	573	143	6	49	191	37	80	0
Queue Length 95th (ft)	m55	m627	m142	#58	58	200	74	#181	49
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	503	2325	1067	62	2850	672	357	123	179
Starvation Cap Reductn	193	511	224	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	1.15	0.91	0.42	0.22	0.75	0.22	0.83	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

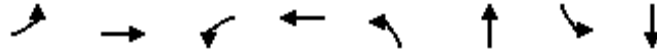
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013 No Proj AM Peak

1/9/2007

4: Richard Blvd & 5th Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	1770	10	913	17	7	19	53
v/c Ratio	0.36	0.67	0.23	0.36	0.11	0.03	0.12	0.23
Control Delay	82.0	2.9	44.9	0.5	43.6	0.3	43.8	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	2.9	44.9	0.5	43.6	0.3	43.8	14.1
Queue Length 50th (ft)	21	3	8	4	11	0	12	1
Queue Length 95th (ft)	m25	3	m11	m4	33	0	35	37
Internal Link Dist (ft)		2115		1060		442		259
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	89	2629	44	2557	232	320	241	312
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.67	0.23	0.36	0.07	0.02	0.08	0.17

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	468	1410	604	875	206	328	525	34	165
v/c Ratio	0.90	1.04	1.46	0.77	0.64	0.96	0.69	0.42	0.86
Control Delay	49.6	58.4	256.8	36.6	54.3	89.1	18.9	71.5	81.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	58.4	256.8	36.6	54.3	89.1	18.9	71.5	81.6
Queue Length 50th (ft)	346	-614	-628	258	155	266	176	26	52
Queue Length 95th (ft)	#576	#746	#858	284	243	#456	277	62	#119
Internal Link Dist (ft)		1060		1154		615			371
Turn Bay Length (ft)	200		200		200			200	
Base Capacity (vph)	519	1360	413	1143	329	345	762	81	191
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	1.04	1.46	0.77	0.63	0.95	0.69	0.42	0.86

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
6: Richard Blvd & 10th St

2013 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1237	195	206	1161	55	38	63	21	28	36
v/c Ratio	0.76	0.58	0.21	0.72	0.52	0.31	0.15	0.23	0.11	0.11	0.15
Control Delay	62.9	11.8	4.1	61.8	18.2	47.1	42.2	11.8	41.5	41.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	11.8	4.1	61.8	18.2	47.1	42.2	11.8	41.5	41.3	13.7
Queue Length 50th (ft)	142	157	10	121	330	36	24	0	13	18	0
Queue Length 95th (ft)	m121	m302	m9	209	214	75	55	38	36	44	29
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	325	2144	934	354	2215	273	388	380	284	388	338
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.58	0.21	0.58	0.52	0.20	0.10	0.17	0.07	0.07	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013 No Proj AM Peak

1/9/2007

7: Richard Blvd & Dos Rios St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	1262	24	1265	81	128
v/c Ratio	0.22	0.56	0.12	0.56	0.19	0.27
Control Delay	8.4	13.0	10.2	13.2	26.6	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	13.0	10.2	13.2	26.6	23.0
Queue Length 50th (ft)	17	535	7	266	37	49
Queue Length 95th (ft)	m8	462	20	325	78	101
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	194	2241	195	2251	423	479
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.56	0.12	0.56	0.19	0.27

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1073	76	40	106	1395	50	3860	1233
v/c Ratio	1.34	0.21	0.21	1.28	0.39	0.08	1.23	1.21
Control Delay	204.6	22.0	40.7	243.4	11.2	7.0	133.7	120.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	204.6	22.0	40.7	243.4	11.2	7.0	133.7	120.2
Queue Length 50th (ft)	~703	22	20	~131	136	0	~1179	~1387
Queue Length 95th (ft)	#839	68	58	#261	153	28	#1216	#1657
Internal Link Dist (ft)			487		826			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	801	369	219	83	3606	603	3136	1018
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.21	0.18	1.28	0.39	0.08	1.23	1.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: Bannon St & Bercut Dr

2013 No Proj AM Peak
1/9/2007



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	368	212	601
v/c Ratio	0.25	0.37	0.59	0.39
Control Delay	0.9	11.2	26.6	2.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.9	11.2	26.6	2.4
Queue Length 50th (ft)	0	76	85	53
Queue Length 95th (ft)	0	153	m125	m94
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	859	999	412	1528
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.37	0.51	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	110	182	212	134	177
v/c Ratio	0.10	0.18	0.66	0.15	0.30
Control Delay	11.9	2.8	45.6	2.1	43.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.8	45.6	2.1	43.5
Queue Length 50th (ft)	29	0	83	5	87
Queue Length 95th (ft)	70	34	m184	52	144
Internal Link Dist (ft)	182		1020	470	
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	1073	906	504	1447	416
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.36	0.15	0.32

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013 No Proj AM Peak
1/9/2007



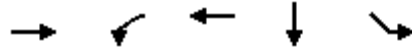
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	134	988	206	336	4	697	328	63	906
v/c Ratio	0.32	0.20	1.17	0.45	0.56	0.04	0.55	0.32	0.71	0.65
Control Delay	36.0	31.4	117.6	28.1	9.4	69.2	16.1	1.1	86.6	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	31.4	117.6	28.1	9.4	69.2	16.1	1.1	86.6	27.8
Queue Length 50th (ft)	51	33	~392	112	66	3	47	0	40	240
Queue Length 95th (ft)	91	64	#509	183	100	m10	175	0	#110	#392
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	389	768	841	456	606	89	1257	1030	89	1402
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.17	1.17	0.45	0.55	0.04	0.55	0.32	0.71	0.65

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	523	20	396	3898	84
v/c Ratio	0.78	0.32	1.12	1.21dr	0.48
Control Delay	64.9	68.2	138.5	68.5	69.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	64.9	68.2	138.5	68.5	69.7
Queue Length 50th (ft)	251	17	~445	~1027	75
Queue Length 95th (ft)	320	47	#656	#1064	134
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	669	62	353	3587	192
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	0.32	1.12	1.09	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th Street

2013 No Proj AM Peak
1/9/2007

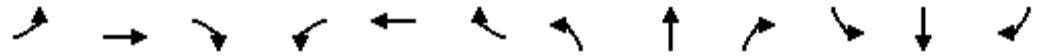


Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	46	210	199	266	345
v/c Ratio	0.14	0.48	0.38	0.10	0.26
Control Delay	32.6	8.6	21.3	1.7	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	8.6	21.3	1.7	13.8
Queue Length 50th (ft)	24	0	113	7	83
Queue Length 95th (ft)	54	58	181	12	40
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	540	584	522	2559	1310
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.36	0.38	0.10	0.26

Intersection Summary

Queues
19: Big Four Blvd & 6th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	389	434	234	245	32	388	281	221	8	335	74
v/c Ratio	0.51	0.44	0.67	0.97	0.29	0.08	0.97	0.17	0.28	0.05	0.30	0.14
Control Delay	47.7	32.5	11.5	80.1	21.1	4.6	82.1	17.9	3.9	31.9	14.9	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	32.5	11.5	80.1	21.1	4.6	82.1	17.9	3.9	31.9	14.9	2.3
Queue Length 50th (ft)	78	105	31	160	53	3	128	54	0	1	55	0
Queue Length 95th (ft)	138	148	130	m#294	m68	m5	#222	96	48	m5	103	3
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	255	991	677	241	1094	475	402	1628	788	172	1122	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.39	0.64	0.97	0.22	0.07	0.97	0.17	0.28	0.05	0.30	0.14

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	404	219	80	573	1318
v/c Ratio	0.47	0.41	0.53	0.24	0.71
Control Delay	19.8	3.7	14.4	2.8	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	3.7	14.4	2.8	10.1
Queue Length 50th (ft)	38	0	19	2	212
Queue Length 95th (ft)	58	1	m20	m0	m39
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	972	572	168	2339	1862
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.38	0.48	0.24	0.71

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	56	40	55	171	843	1517
v/c Ratio	0.79	0.12	0.62	0.50	1.27	1.10
Control Delay	108.6	35.6	76.2	39.5	167.3	83.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.6	35.6	76.2	39.5	167.3	83.4
Queue Length 50th (ft)	36	22	35	92	-360	-566
Queue Length 95th (ft)	#109	51	#94	159	#484	#705
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	71	335	89	345	665	1375
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.12	0.62	0.50	1.27	1.10

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	236	52	118	264	621	67	743	127	1262
v/c Ratio	0.88	0.20	0.26	0.55	0.90	0.94	0.64	0.72	0.88
Control Delay	73.3	12.5	27.2	32.0	29.6	79.0	23.3	66.9	35.8
Queue Delay	0.0	0.2	0.2	0.0	3.0	0.0	2.2	0.0	0.2
Total Delay	73.3	12.7	27.4	32.0	32.6	79.0	25.5	66.9	36.0
Queue Length 50th (ft)	149	0	65	147	216	41	257	80	381
Queue Length 95th (ft)	#286	33	m114	m224	#379	m#52	m234	#167	#493
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	269	264	460	484	691	71	1156	177	1432
Starvation Cap Reductn	0	0	0	0	28	0	269	0	0
Spillback Cap Reductn	0	40	64	0	0	0	0	0	12
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.23	0.30	0.55	0.94	0.94	0.84	0.72	0.89

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	63	22	224	540	333	237	559	826	197
v/c Ratio	0.40	0.07	0.72	0.56	0.57	0.74	0.57	0.78	0.33
Control Delay	37.4	14.6	53.5	28.5	9.0	58.9	16.1	28.4	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	2.6	0.0	0.0
Total Delay	37.4	14.6	53.5	28.5	9.2	58.9	18.7	28.4	3.2
Queue Length 50th (ft)	31	3	149	132	12	156	200	222	7
Queue Length 95th (ft)	m43	m5	#247	174	79	m211	m266	m258	m15
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	159	303	310	956	585	319	978	1062	597
Starvation Cap Reductn	0	0	0	0	26	0	292	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.07	0.72	0.56	0.60	0.74	0.81	0.78	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	138	277	1065	1057	400
v/c Ratio	0.53	0.54	1.28	1.30	0.15
Control Delay	43.1	37.6	159.9	155.9	0.5
Queue Delay	1.1	0.2	1.4	0.0	0.0
Total Delay	44.1	37.8	161.3	155.9	0.5
Queue Length 50th (ft)	73	57	~459	~876	3
Queue Length 95th (ft)	m105	m83	#593	m#1041	m6
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	258	512	830	814	2690
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	28	25	2	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.57	1.29	1.30	0.15

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1550	166	657
v/c Ratio	0.83	0.32	0.63
Control Delay	8.9	6.4	10.7
Queue Delay	0.1	0.0	0.0
Total Delay	9.0	6.4	10.7
Queue Length 50th (ft)	149	33	123
Queue Length 95th (ft)	m109	m35	117
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1864	524	1048
Starvation Cap Reductn	2	0	0
Spillback Cap Reductn	14	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	0.32	0.63

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1348	40	765	240	215
v/c Ratio	0.71	0.08	0.78	0.70	0.47
Control Delay	9.5	14.2	20.0	32.9	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	14.2	20.0	32.9	11.3
Queue Length 50th (ft)	47	11	138	101	35
Queue Length 95th (ft)	43	m11	m127	#166	87
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	1900	492	984	345	457
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.08	0.78	0.70	0.47

Intersection Summary

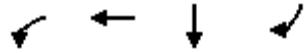
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2013 No Proj AM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	245	1102	615	316
v/c Ratio	0.33	0.50	0.46	0.30
Control Delay	5.7	10.3	5.3	2.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.7	10.3	5.3	2.5
Queue Length 50th (ft)	20	80	29	7
Queue Length 95th (ft)	60	111	m33	m10
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	744	2211	1345	1060
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.50	0.46	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	764	2539	47	179
v/c Ratio	1.09	1.08	0.07	0.40
Control Delay	70.3	58.0	11.1	15.3
Queue Delay	0.0	3.8	0.0	2.3
Total Delay	70.3	61.7	11.1	17.6
Queue Length 50th (ft)	~345	~376	9	66
Queue Length 95th (ft)	m#877	#507	25	m77
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	701	2346	630	447
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	19	0	161
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.09	1.09	0.07	0.63

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2840	744
v/c Ratio	0.83	0.69
Control Delay	13.2	33.5
Queue Delay	18.3	0.0
Total Delay	31.5	33.5
Queue Length 50th (ft)	355	172
Queue Length 95th (ft)	m338	209
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	3431	1081
Starvation Cap Reductn	678	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.03	0.69

Intersection Summary

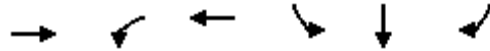
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013 No Proj PM Peak

1/9/2007

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1059	1032	329	611	614	556
v/c Ratio	1.18	1.04	0.32	0.96	0.96	0.36
Control Delay	122.5	49.3	16.5	64.4	64.7	0.7
Queue Delay	1.2	72.9	3.8	3.8	3.8	0.0
Total Delay	123.6	122.2	20.3	68.1	68.5	0.7
Queue Length 50th (ft)	~414	~455	116	481	484	0
Queue Length 95th (ft)	#551	m#437	m114	#734	#736	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	896	990	1034	636	638	1539
Starvation Cap Reductn	0	142	607	0	0	0
Spillback Cap Reductn	2	0	0	14	14	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.18	1.22	0.77	0.98	0.98	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

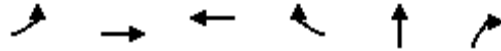
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

2: Richard Blvd & I-5 NB Off



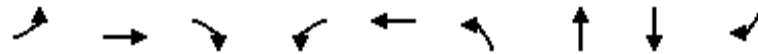
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	425	1204	1263	2458	495	475
v/c Ratio	1.17	0.74	1.03	0.91	0.91	0.75
Control Delay	104.8	7.1	44.7	7.6	50.5	32.1
Queue Delay	5.5	2.7	131.1	0.0	10.1	0.7
Total Delay	110.3	9.9	175.9	7.6	60.6	32.8
Queue Length 50th (ft)	~375	99	~330	202	283	247
Queue Length 95th (ft)	m#371	m115	m251	m125	#498	365
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	364	1618	1224	2708	553	642
Starvation Cap Reductn	4	238	123	0	0	0
Spillback Cap Reductn	0	292	280	0	47	34
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.91	1.34	0.91	0.98	0.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
3: Richard Blvd & Bercut Dr

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	164	1217	686	29	2392	1181	87	191	183
v/c Ratio	1.09	0.68	0.73	0.36	1.11	1.15	0.16	1.14	0.89
Control Delay	119.9	18.1	6.6	25.2	79.0	110.0	22.3	159.7	74.9
Queue Delay	0.0	6.4	1.4	0.0	74.6	12.9	0.0	0.0	9.4
Total Delay	119.9	24.5	8.0	25.2	153.6	122.9	22.3	159.7	84.3
Queue Length 50th (ft)	~94	311	67	10	~767	~547	33	~172	92
Queue Length 95th (ft)	m#174	m370	m122	m20	#864	#681	m53	#322	#230
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	151	1799	934	80	2153	1030	535	168	205
Starvation Cap Reductn	0	528	103	0	0	26	0	0	0
Spillback Cap Reductn	0	0	2	0	283	0	0	0	13
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.96	0.83	0.36	1.28	1.18	0.16	1.14	0.95

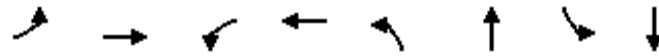
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	1078	9	1936	13	18	16	16
v/c Ratio	0.44	0.42	0.20	0.75	0.07	0.07	0.08	0.06
Control Delay	70.9	0.6	55.0	5.2	41.9	18.7	42.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.9	0.6	55.0	5.2	41.9	18.7	42.2	0.4
Queue Length 50th (ft)	28	2	7	198	8	1	10	0
Queue Length 95th (ft)	m41	m5	m8	m246	27	22	31	0
Internal Link Dist (ft)		2115		1060		442		189
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	89	2545	44	2582	234	281	234	321
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.42	0.20	0.75	0.06	0.06	0.07	0.05

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	1045	332	1284	267	278	800	209	779
v/c Ratio	0.42	0.84	1.07	0.81	0.89	0.90	1.21	0.79	1.24
Control Delay	48.9	23.6	109.9	26.1	78.2	79.0	131.2	70.4	157.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	23.6	109.9	26.1	78.2	79.0	131.2	70.4	157.3
Queue Length 50th (ft)	47	90	~288	480	210	218	~424	158	~339
Queue Length 95th (ft)	#141	#107	#463	536	#353	#365	#807	#278	#467
Internal Link Dist (ft)		1060		1154		615			355
Turn Bay Length (ft)	200		200		200			200	
Base Capacity (vph)	154	1246	310	1587	329	339	660	266	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.84	1.07	0.81	0.81	0.82	1.21	0.79	1.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
6: Richard Blvd & 10th St

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1671	99	90	1254	115	30	176	71	37	170
v/c Ratio	0.33	0.71	0.10	0.63	0.49	0.57	0.10	0.45	0.33	0.13	0.47
Control Delay	60.9	14.5	4.9	62.9	6.0	56.7	40.7	9.6	47.0	41.3	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	14.5	4.9	62.9	6.0	56.7	40.7	9.6	47.0	41.3	12.1
Queue Length 50th (ft)	20	493	10	69	163	78	19	0	47	23	8
Queue Length 95th (ft)	m20	m519	m13	123	97	139	46	59	91	54	67
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	89	2354	1002	187	2569	265	380	463	281	380	429
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.71	0.10	0.48	0.49	0.43	0.08	0.38	0.25	0.10	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013 No Proj PM Peak

1/9/2007

7: Richard Blvd & Dos Rios St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	58	1712	7	1178	224	101
v/c Ratio	0.26	0.74	0.08	0.51	0.53	0.23
Control Delay	6.6	9.7	9.9	11.4	37.6	21.2
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	6.6	9.8	9.9	11.4	37.6	21.2
Queue Length 50th (ft)	3	49	2	226	129	33
Queue Length 95th (ft)	m14	183	9	275	212	80
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	224	2313	91	2326	423	439
Starvation Cap Reductn	0	72	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.76	0.08	0.51	0.53	0.23

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Richard Blvd & 12th Street

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1753	262	100	110	5113	20	2953	825
v/c Ratio	2.55	0.64	0.44	1.24	1.49	0.04	1.02	0.77
Control Delay	723.0	24.6	44.7	154.1	242.9	12.8	44.2	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	723.0	24.6	44.7	154.1	242.9	12.8	44.2	8.0
Queue Length 50th (ft)	~969	67	57	~87	~1453	5	~429	21
Queue Length 95th (ft)	#1104	156	107	m#80	m#1305	m5	#499	81
Internal Link Dist (ft)			371		802			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	687	408	288	89	3430	491	2885	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.55	0.64	0.35	1.24	1.49	0.04	1.02	0.77

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Bannon St & Bercut Dr

2013 No Proj PM Peak
1/9/2007



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	557	607	181	662
v/c Ratio	0.87	0.73	0.72	0.54
Control Delay	23.0	21.8	41.1	8.7
Queue Delay	4.3	6.6	0.0	0.2
Total Delay	27.3	28.5	41.1	8.9
Queue Length 50th (ft)	53	178	75	163
Queue Length 95th (ft)	#209	#355	m112	m237
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	711	837	250	1224
Starvation Cap Reductn	0	0	0	113
Spillback Cap Reductn	94	182	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.90	0.93	0.72	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th St

2013 No Proj PM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	232	192	499	190	514	519
v/c Ratio	0.46	0.36	0.96	0.17	0.96	0.51
Control Delay	34.3	6.5	46.4	3.7	59.9	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	6.5	46.4	3.7	59.9	3.5
Queue Length 50th (ft)	124	0	327	21	345	2
Queue Length 95th (ft)	198	53	m#388	m26	#534	39
Internal Link Dist (ft)	182			1020	470	
Turn Bay Length (ft)		150	150			
Base Capacity (vph)	501	531	522	1133	540	1015
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.36	0.96	0.17	0.95	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013 No Proj PM Peak
1/9/2007



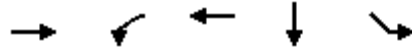
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	173	330	1041	474	128	54	1130	1036	152	754
v/c Ratio	1.09	1.33	1.10	1.00	0.29	0.27	0.79	0.94	1.14	0.57
Control Delay	136.4	208.1	88.5	67.7	10.7	42.4	22.3	21.2	164.8	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.4	208.1	88.5	67.7	10.7	42.4	22.3	21.2	164.8	26.6
Queue Length 50th (ft)	~128	~148	~380	261	18	35	284	97	~114	208
Queue Length 95th (ft)	#266	#242	#510	m#497	m35	m72	357	#851	#241	250
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	159	248	944	475	434	201	1433	1108	133	1340
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.33	1.10	1.00	0.29	0.27	0.79	0.94	1.14	0.56

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013 No Proj PM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	1590	38	208	3680	62
v/c Ratio	1.75	0.51	0.45	1.91dr	0.27
Control Delay	364.8	58.7	41.4	166.5	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	364.8	58.7	41.4	166.5	37.2
Queue Length 50th (ft)	~798	21	114	~979	32
Queue Length 95th (ft)	m#767	m31	m129	#1031	70
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	907	75	463	2791	290
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.75	0.51	0.45	1.32	0.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th St

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	153	415	264	880	691
v/c Ratio	0.45	0.68	0.75	0.35	0.45
Control Delay	34.5	10.7	42.9	1.1	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	10.7	42.9	1.1	7.6
Queue Length 50th (ft)	72	19	117	12	38
Queue Length 95th (ft)	m119	69	m137	m12	m184
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	522	716	451	2536	1546
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.58	0.59	0.35	0.45

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	365	530	497	314	515	102	472	576	390	134	676	142
v/c Ratio	1.42	0.57	0.86	1.32	0.57	0.23	1.31	0.48	0.54	0.49	0.60	0.25
Control Delay	244.2	33.8	30.9	176.0	20.4	8.1	195.7	28.5	7.5	44.1	30.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	244.2	33.8	30.9	176.0	20.4	8.1	195.7	28.5	7.5	44.1	30.4	9.5
Queue Length 50th (ft)	~316	150	145	~253	133	13	~200	157	17	44	207	30
Queue Length 95th (ft)	#495	197	#316	m#215	m109	m9	#300	211	97	77	253	70
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	257	1062	624	238	991	484	360	1209	728	285	1119	561
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.50	0.80	1.32	0.52	0.21	1.31	0.48	0.54	0.47	0.60	0.25

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	600	478	374	897	1673
v/c Ratio	0.67	0.77	1.28	0.39	1.11
Control Delay	25.7	14.9	151.3	9.4	70.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	14.9	151.3	9.4	70.9
Queue Length 50th (ft)	162	0	-284	272	-656
Queue Length 95th (ft)	229	275	m110	m105	m#624
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	961	643	292	2299	1504
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.74	1.28	0.39	1.11

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	190	152	93	409	1391	1637
v/c Ratio	1.53	0.45	0.65	0.73	1.74	1.40
Control Delay	309.5	41.6	67.1	15.4	364.9	206.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	309.5	41.6	67.1	15.4	364.9	206.2
Queue Length 50th (ft)	~171	87	59	32	~701	~758
Queue Length 95th (ft)	#308	150	#131	141	#839	m#716
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	124	335	142	563	800	1173
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.53	0.45	0.65	0.73	1.74	1.40

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2013 No Proj PM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	324	212	436	564	1002	42	604	95	1665
v/c Ratio	1.17	0.52	1.33	0.67	1.62	0.47	0.57	0.49	1.30
Control Delay	143.0	20.8	200.9	23.8	305.4	29.1	17.0	51.0	169.2
Queue Delay	0.0	13.8	80.3	3.7	13.1	0.0	0.7	0.0	16.8
Total Delay	143.0	34.6	281.3	27.5	318.5	29.1	17.8	51.0	186.0
Queue Length 50th (ft)	~247	52	~374	232	-836	21	216	58	~723
Queue Length 95th (ft)	#418	126	m#448	m270	m#952	m19	m165	110	#863
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	278	409	327	848	620	89	1060	195	1283
Starvation Cap Reductn	0	0	0	196	11	0	189	0	0
Spillback Cap Reductn	0	173	39	0	0	0	0	0	36
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.90	1.51	0.87	1.65	0.47	0.69	0.49	1.34

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	278	96	98	997	424	310	726	661	465
v/c Ratio	0.98	0.17	0.38	0.97	0.89	0.97	0.90	0.89	0.77
Control Delay	80.0	18.9	37.4	51.2	41.8	68.8	30.6	44.5	13.6
Queue Delay	0.0	0.0	0.0	11.1	0.7	9.9	58.0	0.0	65.9
Total Delay	80.0	18.9	37.4	62.3	42.5	78.7	88.7	44.5	79.4
Queue Length 50th (ft)	192	20	51	276	165	186	309	203	35
Queue Length 95th (ft)	m#229	m30	97	#453	#323	m#209	m308	m225	m66
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	283	550	257	1026	476	319	810	743	601
Starvation Cap Reductn	0	0	0	7	5	0	165	0	9
Spillback Cap Reductn	0	0	0	49	0	13	0	0	190
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.17	0.38	1.02	0.90	1.01	1.13	0.89	1.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	150	297	1055	1223	1540
v/c Ratio	0.62	0.61	1.37	1.40	0.56
Control Delay	31.5	25.4	195.1	197.9	3.3
Queue Delay	0.0	0.1	0.8	102.3	1.8
Total Delay	31.5	25.5	195.9	300.2	5.0
Queue Length 50th (ft)	90	75	~411	~1030	123
Queue Length 95th (ft)	m71	m52	m#275	m#812	m102
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	242	486	772	876	2743
Starvation Cap Reductn	0	0	0	0	978
Spillback Cap Reductn	0	8	1	123	721
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.62	1.37	1.62	0.87

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	2097	121	535
v/c Ratio	1.12	0.24	0.52
Control Delay	71.4	20.7	24.8
Queue Delay	36.8	0.0	0.0
Total Delay	108.2	20.7	24.8
Queue Length 50th (ft)	~489	69	161
Queue Length 95th (ft)	m241	m85	m183
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1872	513	1026
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	130	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.20	0.24	0.52

Intersection Summary

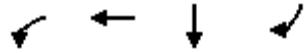
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2342	275	725	948	874
v/c Ratio	1.16	0.97	1.28	1.39	1.40
Control Delay	103.2	80.0	170.2	213.5	216.9
Queue Delay	569.7	0.0	0.0	14.1	14.4
Total Delay	672.9	80.0	170.2	227.6	231.3
Queue Length 50th (ft)	~518	159	~303	~828	~762
Queue Length 95th (ft)	#577	m#248	m#364	#1082	#1011
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	2012	283	566	680	624
Starvation Cap Reductn	27	0	0	0	0
Spillback Cap Reductn	1049	0	0	15	14
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	2.43	0.97	1.28	1.43	1.43

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	216	1990	753	373
v/c Ratio	0.25	0.70	0.64	0.44
Control Delay	8.3	16.1	37.5	32.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.3	16.1	37.5	32.2
Queue Length 50th (ft)	52	320	243	115
Queue Length 95th (ft)	97	378	m276	m138
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	854	2831	1168	857
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.70	0.64	0.44

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	528	1664	418	529
v/c Ratio	0.97	0.91	0.54	1.50
Control Delay	35.0	14.7	12.9	251.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.0	14.7	12.9	251.8
Queue Length 50th (ft)	73	77	81	~454
Queue Length 95th (ft)	m#359	#168	148	m#208
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	544	1819	770	352
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.97	0.91	0.54	1.50

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2456	1041
v/c Ratio	1.02	0.59
Control Delay	25.0	9.1
Queue Delay	0.0	0.0
Total Delay	25.0	9.1
Queue Length 50th (ft)	~128	49
Queue Length 95th (ft)	m#135	90
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	2403	1763
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.02	0.59

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Year 2013 Near Term + Project

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	273	172	360	193	0	0	0	0	1666	0	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.92		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.94		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3069		3433	1863					1681	1681	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3069		3433	1863					1681	1681	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	273	172	360	193	0	0	0	0	1666	0	686
RTOR Reduction (vph)	0	83	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	362	0	360	193	0	0	0	0	833	833	686
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		33.0		27.5	63.5					49.0	49.0	120.0
Effective Green, g (s)		33.0		26.0	63.0					49.0	49.0	120.0
Actuated g/C Ratio		0.28		0.22	0.52					0.41	0.41	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		844		744	978					686	686	1539
v/s Ratio Prot		0.12		c0.10	0.10					c0.50	0.50	
v/s Ratio Perm												c0.45
v/c Ratio		0.43		0.48	0.20					1.21	1.21	0.45
Uniform Delay, d1		35.7		41.1	15.1					35.5	35.5	0.0
Progression Factor		1.00		0.84	1.77					1.00	1.00	1.00
Incremental Delay, d2		1.0		0.9	0.2					109.5	109.5	0.9
Delay (s)		36.7		35.5	27.0					145.0	145.0	0.9
Level of Service		D		D	C					F	F	A
Approach Delay (s)		36.7			32.5			0.0			103.0	
Approach LOS		D			C			A			F	

Intersection Summary

HCM Average Control Delay	82.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	147	1792	0	0	488	896	65	0	1356	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1521	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1521	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	1792	0	0	488	896	65	0	1356	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	91	6	0	0	0
Lane Group Flow (vph)	147	1792	0	0	488	896	0	625	699	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	18.0	62.3			43.5	120.0		40.0	50.7			
Effective Green, g (s)	17.0	61.8			40.0	120.0		39.5	45.7			
Actuated g/C Ratio	0.14	0.52			0.33	1.00		0.33	0.38			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	251	1823			1180	2708		501	573			
v/s Ratio Prot	0.08	c0.51			0.14			c0.41	c0.46			
v/s Ratio Perm						0.33						
v/c Ratio	0.59	0.98			0.41	0.33		1.25	1.22			
Uniform Delay, d1	48.2	28.6			30.9	0.0		40.2	37.2			
Progression Factor	0.57	0.27			0.96	1.00		1.00	1.00			
Incremental Delay, d2	0.5	3.5			0.4	0.3		127.0	114.4			
Delay (s)	27.9	11.2			30.0	0.3		167.3	151.5			
Level of Service	C	B			C	A		F	F			
Approach Delay (s)		12.5			10.8			159.5			0.0	
Approach LOS		B			B			F			A	

Intersection Summary

HCM Average Control Delay	56.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘↗	↗			↘	↗
Volume (vph)	205	2180	763	26	800	45	505	65	14	21	81	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2	4.6	5.2	5.2		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1755	3539	1408	1770	4997		3433	1790			1844	1583
Flt Permitted	0.28	1.00	1.00	0.06	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	517	3539	1408	109	4997		3433	1790			1844	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	2180	763	26	800	45	505	65	14	21	81	79
RTOR Reduction (vph)	0	0	129	0	5	0	0	7	0	0	0	74
Lane Group Flow (vph)	205	2180	634	26	840	0	505	72	0	0	102	5
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	79.6	79.6	79.6	69.0	69.0		21.0	21.0			7.8	7.8
Effective Green, g (s)	79.1	79.0	79.6	68.4	68.4		20.5	20.5			7.3	7.3
Actuated g/C Ratio	0.66	0.66	0.66	0.57	0.57		0.17	0.17			0.06	0.06
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	409	2330	934	62	2848		586	306			112	96
v/s Ratio Prot	0.03	c0.62			0.17		c0.15	0.04			c0.06	
v/s Ratio Perm	0.30		0.45	0.24								0.00
v/c Ratio	0.50	0.94	0.68	0.42	0.30		0.86	0.24			0.91	0.05
Uniform Delay, d1	8.5	18.2	12.4	14.6	13.3		48.4	43.0			56.0	53.1
Progression Factor	0.78	0.79	0.64	0.61	0.55		0.88	0.84			1.00	1.00
Incremental Delay, d2	0.0	1.0	0.4	17.1	0.2		11.7	0.1			56.9	0.1
Delay (s)	6.6	15.3	8.3	26.0	7.6		54.1	36.3			112.9	53.2
Level of Service	A	B	A	C	A		D	D			F	D
Approach Delay (s)		13.1			8.1			51.7			86.8	
Approach LOS		B			A			D			F	

Intersection Summary

HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	1782	12	83	1031	47	17	96	7	119	154	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.95	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3533		1770	3500		1719	1834		1674	1668	
Flt Permitted	0.95	1.00		0.95	1.00		0.18	1.00		0.63	1.00	
Satd. Flow (perm)	1770	3533		1770	3500		332	1834		1108	1668	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	1782	12	83	1031	47	17	96	7	119	154	138
RTOR Reduction (vph)	0	0	0	0	2	0	0	2	0	0	29	0
Lane Group Flow (vph)	104	1794	0	83	1076	0	17	101	0	119	263	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	11.0	76.8		10.0	75.8		22.4	22.4		22.4	22.4	
Effective Green, g (s)	10.0	76.5		9.0	75.5		21.9	21.9		21.9	21.9	
Actuated g/C Ratio	0.08	0.64		0.08	0.63		0.18	0.18		0.18	0.18	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	148	2252		133	2202		61	335		202	304	
v/s Ratio Prot	0.06	c0.51		c0.05	0.31			0.05			c0.16	
v/s Ratio Perm							0.05			0.11		
v/c Ratio	0.70	0.80		0.62	0.49		0.28	0.30		0.59	0.87	
Uniform Delay, d1	53.6	16.0		53.9	11.9		42.2	42.4		44.9	47.6	
Progression Factor	1.21	0.22		0.68	0.34		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.2		4.1	0.5		0.9	0.2		2.8	21.2	
Delay (s)	69.6	4.8		40.5	4.5		43.2	42.6		47.7	68.9	
Level of Service	E	A		D	A		D	D		D	E	
Approach Delay (s)		8.3			7.1			42.7			62.7	
Approach LOS		A			A			D			E	

Intersection Summary

HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕	↗	↖	↕	↗
Volume (vph)	492	1209	300	604	692	288	259	431	525	214	429	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3401		1770	3305		1681	1765	1542	1770	3435	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3401		1770	3305		1681	1765	1542	1770	3435	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	1209	300	604	692	288	259	431	525	214	429	105
RTOR Reduction (vph)	0	17	0	0	37	0	0	0	62	0	18	0
Lane Group Flow (vph)	492	1492	0	604	943	0	233	457	463	214	516	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		pm+ov	Split		
Protected Phases	1	6		5	2		8	8	5	7	7	
Permitted Phases									8			
Actuated Green, G (s)	24.3	46.0		22.0	43.7		26.5	26.5	48.5	11.5	11.5	
Effective Green, g (s)	23.3	46.0		21.0	43.7		26.0	26.0	47.5	11.0	11.0	
Actuated g/C Ratio	0.19	0.38		0.18	0.36		0.22	0.22	0.40	0.09	0.09	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.0	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	344	1304		310	1204		364	382	610	162	315	
v/s Ratio Prot	c0.28	c0.44		c0.34	0.29		0.14	c0.26	0.14	0.12	c0.15	
v/s Ratio Perm									0.16			
v/c Ratio	1.43	1.14		1.95	0.78		0.64	1.20	0.76	1.32	1.64	
Uniform Delay, d1	48.3	37.0		49.5	33.9		42.7	47.0	31.3	54.5	54.5	
Progression Factor	0.73	0.63		0.88	0.67		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	204.4	71.5		437.4	4.7		2.9	111.2	4.8	180.9	300.9	
Delay (s)	239.7	94.8		480.9	27.4		45.6	158.2	36.1	235.4	355.4	
Level of Service	F	F		F	C		D	F	D	F	F	
Approach Delay (s)		130.5			200.3			83.9			321.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	165.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	128.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↘	↘	↑↑		↘	↑	↘	↘	↑	↘
Volume (vph)	175	1478	195	206	1182	84	55	38	63	21	28	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3480		1684	1863	1583	1770	1863	1440
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.74	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3480		1310	1863	1583	1364	1863	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1478	195	206	1182	84	55	38	63	21	28	36
RTOR Reduction (vph)	0	0	30	0	3	0	0	0	55	0	0	31
Lane Group Flow (vph)	175	1478	165	206	1263	0	55	38	8	21	28	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	15.9	73.9	73.9	18.4	76.4		16.2	16.2	16.2	16.2	16.2	16.2
Effective Green, g (s)	15.4	73.4	73.4	17.9	75.9		15.7	15.7	15.7	15.7	15.7	15.7
Actuated g/C Ratio	0.13	0.61	0.61	0.15	0.63		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	227	2165	909	264	2201		171	244	207	178	244	188
v/s Ratio Prot	c0.10	c0.42		c0.12	0.36			0.02				0.02
v/s Ratio Perm			0.11				c0.04		0.01	0.02		0.00
v/c Ratio	0.77	0.68	0.18	0.78	0.57		0.32	0.16	0.04	0.12	0.11	0.03
Uniform Delay, d1	50.6	15.5	10.2	49.2	12.7		47.3	46.3	45.6	46.0	46.0	45.5
Progression Factor	0.98	0.75	0.49	0.81	0.64		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.0	11.0	0.9		0.4	0.1	0.0	0.1	0.1	0.0
Delay (s)	50.8	11.8	5.0	50.9	9.0		47.7	46.4	45.6	46.1	46.1	45.5
Level of Service	D	B	A	D	A		D	D	D	D	D	D
Approach Delay (s)		14.7			14.9			46.5			45.9	
Approach LOS		B			B			D			D	

Intersection Summary

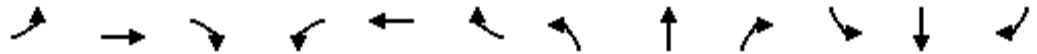
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1453	50	24	1338	32	35	22	24	17	45	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.97			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Frt	1.00	1.00		1.00	1.00			0.96			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	3496		1770	3509			1657			1624	
Flt Permitted	0.14	1.00		0.11	1.00			0.85			0.96	
Satd. Flow (perm)	264	3496		211	3509			1447			1577	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	1453	50	24	1338	32	35	22	24	17	45	66
RTOR Reduction (vph)	0	2	0	0	1	0	0	12	0	0	32	0
Lane Group Flow (vph)	43	1501	0	24	1369	0	0	69	0	0	96	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	79.5	79.5		79.5	79.5			32.5			32.5	
Effective Green, g (s)	79.0	79.0		79.0	79.0			32.0			32.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.27			0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	174	2302		139	2310			386			421	
v/s Ratio Prot		c0.43			0.39							
v/s Ratio Perm	0.16			0.11				0.05			c0.06	
v/c Ratio	0.25	0.65		0.17	0.59			0.18			0.23	
Uniform Delay, d1	8.4	12.3		7.9	11.5			33.9			34.3	
Progression Factor	0.21	0.38		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.6	1.1		2.7	1.1			1.0			1.3	
Delay (s)	4.3	5.7		10.6	12.6			34.9			35.6	
Level of Service	A	A		B	B			C			D	
Approach Delay (s)		5.7			12.6			34.9			35.6	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1314	76	20	0	20	106	1395	50	3860	1338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.90		1.00		1.00	1.00	0.83	1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1425		1695		1770	6408	1319	6408	1425
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1425		1695		1770	6408	1319	6408	1425
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1314	76	20	0	20	106	1395	50	3860	1338
RTOR Reduction (vph)	0	30	0	12	0	0	0	30	0	357
Lane Group Flow (vph)	1314	46	0	28	0	106	1395	20	3860	981
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	39.0	39.0		14.4		7.0	78.6	60.6	67.6	67.6
Effective Green, g (s)	39.0	39.0		14.4		7.0	78.6	60.6	67.6	67.6
Actuated g/C Ratio	0.26	0.26		0.10		0.05	0.52	0.40	0.45	0.45
Clearance Time (s)	4.0	4.0		4.0		4.0		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	893	371		163		83	3358	533	2888	642
v/s Ratio Prot	c0.38			c0.02		c0.06	0.22		0.60	
v/s Ratio Perm		0.03						0.02		c0.69
v/c Ratio	1.47	0.13		0.17		1.28	0.42	0.04	1.34	1.53
Uniform Delay, d1	55.5	42.5		62.3		71.5	21.7	27.1	41.2	41.2
Progression Factor	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	218.3	0.1		0.2		190.2	0.1	0.1	153.9	245.8
Delay (s)	273.8	42.5		62.5		261.7	21.8	27.2	195.1	287.0
Level of Service	F	D		E		F	C	C	F	F
Approach Delay (s)				62.5			38.4			
Approach LOS				E			D			

Intersection Summary

HCM Average Control Delay	191.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+Proj (Res) AM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	167	367	1	212	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	167	367	1	212	601
RTOR Reduction (vph)	155	0	0	0	0	0
Lane Group Flow (vph)	12	0	368	0	212	601
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	4.4		31.4		12.2	47.6
Effective Green, g (s)	4.4		31.4		12.2	47.6
Actuated g/C Ratio	0.07		0.52		0.20	0.79
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	118		974		360	1478
v/s Ratio Prot	c0.01		0.20		c0.12	c0.32
v/s Ratio Perm						
v/c Ratio	0.10		0.38		0.59	0.41
Uniform Delay, d1	26.0		8.5		21.6	1.9
Progression Factor	1.00		1.00		1.03	0.79
Incremental Delay, d2	0.4		1.1		1.7	0.6
Delay (s)	26.3		9.6		23.9	2.1
Level of Service	C		A		C	A
Approach Delay (s)	26.3		9.6			7.8
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
14: North B Street & 6th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	110	163	182	212	134	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1591
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1591
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	163	182	212	134	177
RTOR Reduction (vph)	0	69	0	0	0	126
Lane Group Flow (vph)	110	94	182	212	134	51
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot		pm+ov	
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	57.6	57.6	15.6	77.7	13.3	28.9
Effective Green, g (s)	57.6	57.6	15.6	77.7	13.3	28.9
Actuated g/C Ratio	0.58	0.58	0.16	0.78	0.13	0.29
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1073	837	276	1448	235	531
v/s Ratio Prot	0.06		c0.10	c0.11	c0.08	0.02
v/s Ratio Perm		0.06				0.02
v/c Ratio	0.10	0.11	0.66	0.15	0.57	0.10
Uniform Delay, d1	9.6	9.6	39.7	2.8	40.7	26.0
Progression Factor	1.00	1.00	0.88	0.65	0.80	2.52
Incremental Delay, d2	0.0	0.1	5.1	0.2	3.3	0.1
Delay (s)	9.6	9.7	40.0	2.0	35.7	65.6
Level of Service	A	A	D	A	D	E
Approach Delay (s)	9.6			19.6	52.7	
Approach LOS	A			B	D	

Intersection Summary

HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕		↘↙	↕	↗	↘	↕↖	↗	↘	↕↖	
Volume (vph)	106	121	13	988	206	405	4	784	328	220	997	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3457		3433	1863	1437	1770	3539	1499	1770	3410	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3457		3433	1863	1437	1770	3539	1499	1770	3410	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	106	121	13	988	206	405	4	784	328	220	997	102
RTOR Reduction (vph)	0	8	0	0	0	310	0	0	146	0	6	0
Lane Group Flow (vph)	106	126	0	988	206	95	4	784	182	220	1093	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	19.0	18.9		23.5	23.4	23.4	1.0	32.1	55.6	7.5	38.6	
Effective Green, g (s)	19.0	18.9		23.5	23.4	23.4	1.0	32.1	55.6	7.5	38.6	
Actuated g/C Ratio	0.19	0.19		0.24	0.23	0.23	0.01	0.32	0.56	0.08	0.39	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	336	653		807	436	336	18	1136	901	133	1316	
v/s Ratio Prot	0.06	0.04		c0.29	c0.11		0.00	0.22	0.05	c0.12	c0.32	
v/s Ratio Perm						0.07			0.07			
v/c Ratio	0.32	0.19		1.22	0.47	0.28	0.22	0.69	0.20	1.65	0.83	
Uniform Delay, d1	34.9	34.1		38.2	33.0	31.4	49.1	29.6	11.1	46.2	27.7	
Progression Factor	1.00	1.01		0.78	0.80	1.84	0.77	0.72	5.11	1.00	1.00	
Incremental Delay, d2	0.5	0.1		110.0	0.7	0.4	6.0	3.3	0.1	325.3	6.2	
Delay (s)	35.5	34.7		139.7	26.9	58.2	43.5	24.6	56.8	371.6	33.9	
Level of Service	D	C		F	C	E	D	C	E	F	C	
Approach Delay (s)		35.1			104.5			34.1			90.3	
Approach LOS		D			F			C			F	

Intersection Summary

HCM Average Control Delay	77.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013+Proj (Res) AM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↶	↑			↑↑↑↑		↷		
Volume (vph)	425	255	20	436	29	22	2736	1140	34	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0	4.0			
Lane Util. Factor	0.95		1.00	1.00			0.86	1.00			
Frbp, ped/bikes	0.97		1.00	0.99			1.00	0.89			
Flpb, ped/bikes	1.00		1.00	1.00			1.00	1.00			
Frt	0.94		1.00	0.99			0.96	0.92			
Flt Protected	1.00		0.95	1.00			1.00	0.98			
Satd. Flow (prot)	3246		1770	1831			6125	1500			
Flt Permitted	1.00		0.12	1.00			1.00	0.98			
Satd. Flow (perm)	3246		226	1831			6125	1500			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	255	20	436	29	22	2736	1140	34	43	7
RTOR Reduction (vph)	59	0	0	0	0	0	0	0	2	0	0
Lane Group Flow (vph)	621	0	20	465	0	0	3898	0	82	0	0
Confl. Peds. (#/hr)	36		36			36			36		36
Turn Type			Perm				Perm				
Protected Phases	4		4				2 3				
Permitted Phases			4				2 3		1		
Actuated Green, G (s)	33.0		33.0		33.0		80.8		17.2		
Effective Green, g (s)	33.0		33.0		33.0		83.8		17.2		
Actuated g/C Ratio	0.22		0.22		0.22		0.56		0.11		
Clearance Time (s)	4.0		4.0		4.0				4.0		
Vehicle Extension (s)	5.0		5.0		5.0				5.0		
Lane Grp Cap (vph)	714		50		403		3422		172		
v/s Ratio Prot	0.19				c0.25						
v/s Ratio Perm			0.09				0.64		c0.05		
v/c Ratio	0.87		0.40		1.15		1.27dr		0.48		
Uniform Delay, d1	56.4		50.0		58.5		33.1		62.2		
Progression Factor	1.00		1.00		1.00		1.00		1.00		
Incremental Delay, d2	11.9		10.6		93.9		66.6		4.3		
Delay (s)	68.3		60.7		152.4		99.7		66.5		
Level of Service	E		E		F		F		E		
Approach Delay (s)	68.3				148.6		99.7		66.5		
Approach LOS	E				F		F		E		

Intersection Summary

HCM Average Control Delay	99.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th Street

2013+Proj (Res) AM Peak
 12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	46	210	199	362	531	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	0.91	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3452	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3452	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	210	199	362	531	40
RTOR Reduction (vph)	0	171	0	0	5	0
Lane Group Flow (vph)	46	39	199	362	566	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.7	18.7	26.5	72.3	41.3	
Effective Green, g (s)	18.7	18.7	26.5	72.3	41.3	
Actuated g/C Ratio	0.19	0.19	0.26	0.72	0.41	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	331	269	469	2559	1426	
v/s Ratio Prot	0.03		c0.11	0.10	c0.16	
v/s Ratio Perm		c0.03				
v/c Ratio	0.14	0.15	0.42	0.14	0.40	
Uniform Delay, d1	33.9	34.0	30.4	4.3	20.6	
Progression Factor	1.00	1.00	0.61	0.48	0.74	
Incremental Delay, d2	0.2	0.3	0.6	0.1	0.8	
Delay (s)	34.1	34.2	19.2	2.1	16.1	
Level of Service	C	C	B	A	B	
Approach Delay (s)	34.2			8.2	16.1	
Approach LOS	C			A	B	

Intersection Summary

HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	129	389	434	234	245	32	388	377	221	8	561	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	129	389	434	234	245	32	388	377	221	8	561	74
RTOR Reduction (vph)	0	0	242	0	0	24	0	0	127	0	0	53
Lane Group Flow (vph)	129	389	192	234	245	8	388	377	94	8	561	21
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.4	25.0	25.0	13.6	24.2	24.2	15.3	42.4	42.4	1.0	28.1	28.1
Effective Green, g (s)	14.4	25.0	25.0	13.6	24.2	24.2	15.3	42.4	42.4	1.0	28.1	28.1
Actuated g/C Ratio	0.14	0.25	0.25	0.14	0.24	0.24	0.15	0.42	0.42	0.01	0.28	0.28
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	255	885	366	241	856	355	525	1501	616	34	994	412
v/s Ratio Prot	0.07	0.11		c0.13	0.07		c0.11	0.11		0.00	c0.16	
v/s Ratio Perm			c0.13			0.01			0.06			0.01
v/c Ratio	0.51	0.44	0.52	0.97	0.29	0.02	0.74	0.25	0.15	0.24	0.56	0.05
Uniform Delay, d1	39.5	31.6	32.4	43.0	30.9	28.9	40.4	18.6	17.7	49.1	30.7	26.2
Progression Factor	1.00	1.00	1.00	0.77	0.75	0.44	1.00	1.00	1.00	0.68	0.49	0.33
Incremental Delay, d2	1.6	0.4	1.4	38.0	0.1	0.0	5.4	0.4	0.5	3.3	2.2	0.2
Delay (s)	41.1	31.9	33.7	70.9	23.2	12.6	45.8	19.0	18.3	36.8	17.3	8.8
Level of Service	D	C	C	E	C	B	D	B	B	D	B	A
Approach Delay (s)		34.0			44.4			29.4			16.5	
Approach LOS		C			D			C			B	

Intersection Summary

HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔	↔	↔	↑↑	↑↑	
Volume (vph)	404	219	80	660	1060	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.92	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3305	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3305	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	404	219	80	660	1060	451
RTOR Reduction (vph)	0	139	0	0	42	0
Lane Group Flow (vph)	404	80	80	660	1469	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.9	24.9	6.2	66.1	55.4	
Effective Green, g (s)	24.9	24.9	6.2	66.1	55.4	
Actuated g/C Ratio	0.25	0.25	0.06	0.66	0.55	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	855	365	110	2339	1831	
v/s Ratio Prot	c0.12		c0.05	0.19	c0.44	
v/s Ratio Perm		0.05				
v/c Ratio	0.47	0.22	0.73	0.28	0.80	
Uniform Delay, d1	32.0	29.8	46.1	7.1	17.9	
Progression Factor	0.56	0.23	0.66	0.50	0.41	
Incremental Delay, d2	0.4	0.3	2.2	0.0	1.0	
Delay (s)	18.3	7.3	32.4	3.6	8.3	
Level of Service	B	A	C	A	A	
Approach Delay (s)	14.4			6.7	8.3	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	40	0	55	137	34	25	866	39	321	1161	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1770			3486			3343	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1770			3486			3343	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	40	0	55	137	34	25	866	39	321	1161	228
RTOR Reduction (vph)	0	0	0	0	9	0	0	3	0	0	12	0
Lane Group Flow (vph)	56	40	0	55	162	0	0	927	0	0	1698	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	4.0	18.0		5.0	19.0			19.0			41.0	
Effective Green, g (s)	4.0	18.0		5.0	19.0			19.0			41.0	
Actuated g/C Ratio	0.04	0.18		0.05	0.19			0.19			0.41	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	71	335		89	336			662			1371	
v/s Ratio Prot	c0.03	0.02		0.03	c0.09			c0.27			c0.51	
v/s Ratio Perm												
v/c Ratio	0.79	0.12		0.62	0.48			1.40			1.24	
Uniform Delay, d1	47.6	34.4		46.6	36.1			40.5			29.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.76	
Incremental Delay, d2	58.6	0.7		28.1	4.9			189.0			112.7	
Delay (s)	106.1	35.1		74.7	41.0			229.5			135.0	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		76.5			49.2			229.5			135.0	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	156.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	108.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗		↖ ↗	↖ ↗	
Volume (vph)	37	199	52	118	264	621	67	735	104	127	1411	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.87	1.00	1.00	0.87	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		0.99	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1378	1770	1863	1378	1770	3380		1770	3488	
Flt Permitted		0.91	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1676	1378	1770	1863	1378	1770	3380		1770	3488	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	199	52	118	264	621	67	735	104	127	1411	77
RTOR Reduction (vph)	0	0	44	0	0	351	0	11	0	0	4	0
Lane Group Flow (vph)	0	236	8	118	264	270	67	828	0	127	1484	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		15.0	15.0	24.0	24.0	24.0	4.0	34.0		13.0	44.0	
Effective Green, g (s)		15.0	15.0	24.0	24.0	24.0	4.0	34.0		13.0	44.0	
Actuated g/C Ratio		0.15	0.15	0.24	0.24	0.24	0.04	0.34		0.13	0.44	
Clearance Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		251	207	425	447	331	71	1149		230	1535	
v/s Ratio Prot				0.07	0.14		c0.04	0.24		0.07	c0.43	
v/s Ratio Perm		c0.14	0.01			c0.20						
v/c Ratio		0.94	0.04	0.28	0.59	0.82	0.94	0.72		0.55	0.97	
Uniform Delay, d1		42.1	36.3	30.9	33.6	35.9	47.9	28.8		40.8	27.3	
Progression Factor		1.20	1.58	0.88	0.91	2.01	0.82	0.69		1.00	1.00	
Incremental Delay, d2		36.4	0.3	1.4	4.8	16.8	20.9	0.4		9.2	16.3	
Delay (s)		86.8	57.6	28.6	35.5	88.9	60.2	20.3		50.0	43.6	
Level of Service		F	E	C	D	F	E	C		D	D	
Approach Delay (s)		81.5			67.8			23.2			44.1	
Approach LOS		F			E			C			D	

Intersection Summary

HCM Average Control Delay	48.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	0	22	224	540	358	237	622	0	0	1019	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	0	22	224	540	358	237	622	0	0	1019	197
RTOR Reduction (vph)	0	0	18	0	0	181	0	0	0	0	0	92
Lane Group Flow (vph)	63	0	4	224	540	177	237	622	0	0	1019	105
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0		18.0	16.0	28.0	28.0	16.0	54.5			34.5	34.5
Effective Green, g (s)	6.0		18.0	15.5	28.0	27.5	16.0	54.5			34.0	34.5
Actuated g/C Ratio	0.06		0.18	0.16	0.28	0.28	0.16	0.55			0.34	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	106		285	274	991	379	283	1015			1203	546
v/s Ratio Prot	c0.04			c0.13	c0.15		c0.13	0.33			c0.29	
v/s Ratio Perm			0.00			0.13						0.07
v/c Ratio	0.59		0.01	0.82	0.54	0.47	0.84	0.61			0.85	0.19
Uniform Delay, d1	45.8		33.7	40.9	30.6	30.1	40.7	15.5			30.6	23.0
Progression Factor	0.86		0.90	0.88	0.86	0.87	0.85	0.77			0.94	0.77
Incremental Delay, d2	14.1		0.1	21.5	2.0	3.8	21.8	2.4			7.1	0.7
Delay (s)	53.4		30.3	57.4	28.2	30.0	56.5	14.3			35.8	18.4
Level of Service	D		C	E	C	C	E	B			D	B
Approach Delay (s)		47.4			34.6			26.0			33.0	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	32.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	256	232	55	0	0	0	0	565	531	1057	626	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3207						3039		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3207						3039		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	256	232	55	0	0	0	0	565	531	1057	626	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	36	0	0	0	0
Lane Group Flow (vph)	179	350	0	0	0	0	0	1060	0	1057	626	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.0	16.0						26.5		46.5	76.5	
Effective Green, g (s)	16.0	15.5						26.0		46.0	76.0	
Actuated g/C Ratio	0.16	0.16						0.26		0.46	0.76	
Clearance Time (s)	4.0	4.0						3.5		3.5	3.5	
Lane Grp Cap (vph)	258	497						790		814	2690	
v/s Ratio Prot	c0.11	0.11						c0.35		c0.60	0.18	
v/s Ratio Perm												
v/c Ratio	0.69	0.71						1.34		1.30	0.23	
Uniform Delay, d1	39.7	40.1						37.0		27.0	3.5	
Progression Factor	0.94	0.94						0.73		0.30	0.12	
Incremental Delay, d2	8.7	4.9						158.3		139.1	0.1	
Delay (s)	45.9	42.4						185.2		147.1	0.5	
Level of Service	D	D						F		F	A	
Approach Delay (s)		43.6			0.0			185.2			92.6	
Approach LOS		D			A			F			F	

Intersection Summary

HCM Average Control Delay	115.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	117.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↙	↕↕		
Volume (vph)	512	892	209	0	0	0	0	0	0	166	850	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3380								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3380								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	512	892	209	0	0	0	0	0	0	166	850	0	
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1602	0	0	0	0	0	0	0	166	850	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		27.5								15.5	15.5		
Effective Green, g (s)		27.0								15.0	15.0		
Actuated g/C Ratio		0.54								0.30	0.30		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1825								531	1062		
v/s Ratio Prot		c0.47								0.09	c0.24		
v/s Ratio Perm													
v/c Ratio		0.88								0.31	0.80		
Uniform Delay, d1		10.1								13.5	16.1		
Progression Factor		0.92								1.25	1.30		
Incremental Delay, d2		0.6								0.8	3.5		
Delay (s)		9.9								17.7	24.4		
Level of Service		A								B	C		
Approach Delay (s)		9.9			0.0			0.0			23.3		
Approach LOS		A			A			A			C		
Intersection Summary													
HCM Average Control Delay			15.1		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			77.0%		ICU Level of Service						D		
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2013+Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	57	1100	302	40	784	0	0	271	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			0.96	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6136		1770	3539			1703	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6136		1770	3539			1703	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	57	1100	302	40	784	0	0	271	410
RTOR Reduction (vph)	0	0	0	0	94	0	0	0	0	0	24	251
Lane Group Flow (vph)	0	0	0	0	1365	0	40	784	0	0	337	69
Confl. Peds. (#/hr)						36						
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					15.5		12.7	12.7			11.3	11.3
Effective Green, g (s)					15.0		12.2	12.2			10.8	10.8
Actuated g/C Ratio					0.30		0.24	0.24			0.22	0.22
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1841		432	864			368	325
v/s Ratio Prot							0.02	c0.22			c0.20	0.05
v/s Ratio Perm					0.22							
v/c Ratio					0.74		0.09	0.91			0.92	0.21
Uniform Delay, d1					15.8		14.6	18.4			19.2	16.1
Progression Factor					0.55		1.04	1.12			1.23	3.32
Incremental Delay, d2					2.4		0.0	1.8			29.5	1.5
Delay (s)					11.2		15.2	22.3			53.0	55.0
Level of Service					B		B	C			D	D
Approach Delay (s)		0.0			11.2			21.9			54.0	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔↔↔						↕↕	↗↗
Volume (vph)	0	0	0	272	1087	0	0	0	0	0	709	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.95
Flpb, ped/bikes				0.96	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1467	4796						3539	2655
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1467	4796						3539	2655
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	272	1087	0	0	0	0	0	709	415
RTOR Reduction (vph)	0	0	0	58	5	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	0	0	187	1109	0	0	0	0	0	709	374
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				22.5	22.5						20.5	20.5
Effective Green, g (s)				22.0	22.0						20.0	20.0
Actuated g/C Ratio				0.44	0.44						0.40	0.40
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				645	2110						1416	1062
v/s Ratio Prot											c0.20	
v/s Ratio Perm				0.13	0.23							0.14
v/c Ratio				0.29	0.53						0.50	0.35
Uniform Delay, d1				9.0	10.2						11.3	10.5
Progression Factor				1.00	1.00						0.30	0.22
Incremental Delay, d2				1.1	0.9						0.8	0.6
Delay (s)				10.1	11.1						4.2	2.9
Level of Service				B	B						A	A
Approach Delay (s)		0.0			11.0			0.0			3.7	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	859	2454	0	0	0	0	0	48	8	214	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.99		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.94		
Frt	1.00	1.00						0.98		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4788						1808		1671		
Flt Permitted	0.95	1.00						1.00		0.72		
Satd. Flow (perm)	1431	4788						1808		1268		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	859	2454	0	0	0	0	0	48	8	214	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	773	2540	0	0	0	0	0	55	0	214	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	25.0	25.0						18.0		18.0		
Effective Green, g (s)	24.5	24.5						17.5		17.5		
Actuated g/C Ratio	0.49	0.49						0.35		0.35		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	701	2346						633		444		
v/s Ratio Prot								0.03				
v/s Ratio Perm	c0.54	0.53								c0.17		
v/c Ratio	1.10	1.08						0.09		0.48		
Uniform Delay, d1	12.8	12.8						10.9		12.7		
Progression Factor	1.02	1.03						1.00		1.11		
Incremental Delay, d2	57.9	41.9						0.3		1.6		
Delay (s)	70.8	55.0						11.2		15.7		
Level of Service	E	E						B		B		
Approach Delay (s)		58.7			0.0			11.2			15.7	
Approach LOS		E			A			B			B	

Intersection Summary

HCM Average Control Delay	55.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013+Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2471	404	0	0	0	0	0	0	224	614	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									0.97	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4887									4857	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4887									4857	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2471	404	0	0	0	0	0	0	224	614	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	2868	0	0	0	0	0	0	0	0	832	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		70.5									22.5	
Effective Green, g (s)		70.0									22.0	
Actuated g/C Ratio		0.70									0.22	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3421									1069	
v/s Ratio Prot		0.59										
v/s Ratio Perm											0.17	
v/c Ratio		0.84									0.78	
Uniform Delay, d1		10.9									36.7	
Progression Factor		1.08									0.94	
Incremental Delay, d2		0.8									5.1	
Delay (s)		12.6									39.5	
Level of Service		B									D	
Approach Delay (s)		12.6			0.0			0.0			39.5	
Approach LOS		B			A			A			D	
Intersection Summary												
HCM Average Control Delay			18.7		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			80.5%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 33: Riverfront Dr & 5th Street

2013+Proj (Res) AM Peak
 12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	64	0	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	64	0	0	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume	0			128	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0			128	0	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	96			100	98	
cM capacity (veh/h)	1623			832	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	64	27
Volume Left	0	64	0
Volume Right	0	0	27
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.02
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization	13.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2013+Proj (Res) AM Peak
 12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	64	0	27	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	64	0	27	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		128	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		128	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		97	100
cM capacity (veh/h)			1623		832	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	64	27
Volume Left	0	64	27
Volume Right	0	0	0
cSH	1700	1623	832
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	3
Control Delay (s)	0.0	7.3	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.5
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		13.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	407	652	1032	329	0	0	0	0	1484	3	556
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.87		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.91		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		2805		3433	1863					1681	1686	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		2805		3433	1863					1681	1686	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	407	652	1032	329	0	0	0	0	1484	3	556
RTOR Reduction (vph)	0	242	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	818	0	1032	329	0	0	0	0	742	745	556
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		28.0		36.1	67.1					45.4	45.4	120.0
Effective Green, g (s)		28.0		34.6	66.6					45.4	45.4	120.0
Actuated g/C Ratio		0.23		0.29	0.55					0.38	0.38	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		655		990	1034					636	638	1539
v/s Ratio Prot		c0.29		c0.30	0.18					0.44	c0.44	
v/s Ratio Perm												0.36
v/c Ratio		1.25		1.04	0.32					1.17	1.17	0.36
Uniform Delay, d1		46.0		42.7	14.4					37.3	37.3	0.0
Progression Factor		1.00		0.59	1.12					1.00	1.00	1.00
Incremental Delay, d2		124.1		22.5	0.0					91.3	91.6	0.7
Delay (s)		170.1		47.8	16.1					128.6	128.9	0.7
Level of Service		F		D	B					F	F	A
Approach Delay (s)		170.1			40.1			0.0			93.9	
Approach LOS		F			D			A			F	

Intersection Summary

HCM Average Control Delay	95.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	146.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	425	1466	0	0	1263	2638	98	9	863	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1546	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1546	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	1466	0	0	1263	2638	98	9	863	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	110	11	0	0	0
Lane Group Flow (vph)	425	1466	0	0	1263	2638	0	385	464	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	25.7	59.4			41.5	120.0		34.3	53.6			
Effective Green, g (s)	24.7	58.9			38.0	120.0		33.8	48.6			
Actuated g/C Ratio	0.21	0.49			0.32	1.00		0.28	0.40			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	364	1737			1121	2708		435	609			
v/s Ratio Prot	c0.24	0.41			0.36			0.25	0.31			
v/s Ratio Perm						c0.97						
v/c Ratio	1.17	0.84			1.13	0.97		0.89	0.76			
Uniform Delay, d1	47.6	26.6			41.0	0.0		41.2	30.7			
Progression Factor	0.55	0.14			0.99	1.00		1.00	1.00			
Incremental Delay, d2	78.4	0.4			58.3	1.9		20.1	6.6			
Delay (s)	104.5	4.2			98.7	1.9		61.4	37.3			
Level of Service	F	A			F	A		E	D			
Approach Delay (s)		26.7			33.3			49.6			0.0	
Approach LOS		C			C			D			A	

Intersection Summary

HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	146.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗			↖	↗
Volume (vph)	164	1479	686	29	2537	35	1181	61	26	54	137	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.6	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	1.00		1.00	0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1770	3539	1408	1770	5063		3433	1742			1837	1583
Flt Permitted	0.07	1.00	1.00	0.08	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	135	3539	1408	146	5063		3433	1742			1837	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	1479	686	29	2537	35	1181	61	26	54	137	183
RTOR Reduction (vph)	0	0	185	0	1	0	0	13	0	0	0	60
Lane Group Flow (vph)	164	1479	501	29	2571	0	1181	74	0	0	191	123
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	61.5	60.4	60.4	50.4	50.4		36.5	36.5			11.5	11.5
Effective Green, g (s)	61.0	61.0	60.4	51.0	51.0		36.0	36.0			11.0	11.0
Actuated g/C Ratio	0.51	0.51	0.50	0.42	0.42		0.30	0.30			0.09	0.09
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	150	1799	709	62	2152		1030	523			168	145
v/s Ratio Prot	0.05	c0.42			c0.51		c0.34	0.04			c0.10	
v/s Ratio Perm	0.50		0.36	0.20								0.08
v/c Ratio	1.09	0.82	0.71	0.47	1.19		1.15	0.14			1.14	0.85
Uniform Delay, d1	53.9	24.9	23.0	24.8	34.5		42.0	30.7			54.5	53.7
Progression Factor	0.79	0.68	0.45	0.73	0.72		0.90	0.91			1.00	1.00
Incremental Delay, d2	81.3	2.4	3.2	16.2	90.9		74.7	0.0			111.0	33.3
Delay (s)	123.9	19.5	13.4	34.2	115.7		112.5	27.9			165.5	87.0
Level of Service	F	B	B	C	F		F	C			F	F
Approach Delay (s)		25.1			114.8			106.7			127.1	
Approach LOS		C			F			F			F	

Intersection Summary

HCM Average Control Delay	82.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	1122	21	67	2039	70	13	247	17	89	113	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3509		1697	1836		1713	1692	
Flt Permitted	0.95	1.00		0.95	1.00		0.41	1.00		0.24	1.00	
Satd. Flow (perm)	1770	3523		1770	3509		725	1836		432	1692	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	1122	21	67	2039	70	13	247	17	89	113	80
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	21	0
Lane Group Flow (vph)	230	1142	0	67	2107	0	13	262	0	89	172	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	7.0	83.1		4.0	80.1		22.1	22.1		22.1	22.1	
Effective Green, g (s)	6.0	83.4		3.0	80.4		21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.05	0.70		0.02	0.67		0.18	0.18		0.18	0.18	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	89	2448		44	2351		131	330		78	305	
v/s Ratio Prot	c0.13	c0.32		0.04	c0.60			0.14			0.10	
v/s Ratio Perm							0.02			c0.21		
v/c Ratio	2.58	0.47		1.52	0.90		0.10	0.79		1.14	0.56	
Uniform Delay, d1	57.0	8.3		58.5	16.4		41.1	47.1		49.2	44.9	
Progression Factor	1.43	0.15		0.99	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	730.3	0.3		245.5	0.6		0.1	11.5		145.1	1.4	
Delay (s)	811.9	1.6		303.6	11.7		41.2	58.6		194.3	46.3	
Level of Service	F	A		F	B		D	E		F	D	
Approach Delay (s)		137.3			20.7			57.7			93.0	
Approach LOS		F			C			E			F	

Intersection Summary

HCM Average Control Delay	67.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	807	311	332	1344	213	461	491	800	353	662	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3347		1770	3429		1681	1762	1544	1770	3336	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3347		1770	3429		1681	1762	1544	1770	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	130	807	311	332	1344	213	461	491	800	353	662	410
RTOR Reduction (vph)	0	31	0	0	9	0	0	0	64	0	80	0
Lane Group Flow (vph)	130	1087	0	332	1548	0	415	537	736	353	992	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		pm+ov	Split		
Protected Phases	1	6		5	2		8	8	5	7	7	
Permitted Phases									8			
Actuated Green, G (s)	6.0	41.5		22.0	57.5		24.0	24.0	46.0	18.5	18.5	
Effective Green, g (s)	5.0	41.5		21.0	57.5		23.5	23.5	45.0	18.0	18.0	
Actuated g/C Ratio	0.04	0.35		0.18	0.48		0.20	0.20	0.38	0.15	0.15	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.0	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	74	1158		310	1643		329	345	579	266	500	
v/s Ratio Prot	c0.07	0.32		0.19	c0.45		0.25	c0.30	c0.23	0.20	c0.30	
v/s Ratio Perm									0.25			
v/c Ratio	1.76	0.94		1.07	0.94		1.26	1.56	1.27	1.33	1.98	
Uniform Delay, d1	57.5	38.0		49.5	29.7		48.2	48.2	37.5	51.0	51.0	
Progression Factor	1.15	0.64		1.13	0.76		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	384.1	12.5		67.4	10.8		139.8	264.3	134.9	170.8	450.0	
Delay (s)	450.3	36.7		123.5	33.4		188.1	312.5	172.4	221.8	501.0	
Level of Service	F	D		F	C		F	F	F	F	F	
Approach Delay (s)		79.8			49.2			219.1			431.9	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	188.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	126.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	26	1859	99	90	1501	26	115	30	176	71	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3524		1685	1863	1583	1770	1863	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3524		1300	1863	1583	1374	1863	1459
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1859	99	90	1501	26	115	30	176	71	37	170
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	121	0	0	107
Lane Group Flow (vph)	26	1859	87	90	1526	0	115	30	55	71	37	63
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	3.8	79.4	79.4	10.1	85.7		19.0	19.0	19.0	19.0	19.0	19.0
Effective Green, g (s)	3.3	79.9	79.9	9.6	86.2		18.5	18.5	18.5	18.5	18.5	18.5
Actuated g/C Ratio	0.03	0.67	0.67	0.08	0.72		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	49	2356	989	142	2531		200	287	244	212	287	225
v/s Ratio Prot	0.01	c0.53		c0.05	0.43			0.02			0.02	
v/s Ratio Perm			0.06				c0.09		0.03	0.05		0.04
v/c Ratio	0.53	0.79	0.09	0.63	0.60		0.57	0.10	0.23	0.33	0.13	0.28
Uniform Delay, d1	57.6	14.1	7.1	53.5	8.4		47.1	43.6	44.5	45.3	43.8	44.8
Progression Factor	0.99	1.18	1.27	1.01	0.72		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	0.0	5.5	0.9		2.5	0.1	0.2	0.3	0.1	0.2
Delay (s)	57.3	16.8	9.0	59.3	6.9		49.6	43.7	44.6	45.6	43.9	45.1
Level of Service	E	B	A	E	A		D	D	D	D	D	D
Approach Delay (s)		17.0			9.8			46.3			45.1	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	1861	39	7	1446	5	42	38	144	24	25	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.94			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Frt	1.00	1.00		1.00	1.00			0.91			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3513		1770	3535			1565			1613	
Flt Permitted	0.12	1.00		0.05	1.00			0.93			0.91	
Satd. Flow (perm)	227	3513		94	3535			1469			1483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	58	1861	39	7	1446	5	42	38	144	24	25	52
RTOR Reduction (vph)	0	1	0	0	0	0	0	13	0	0	32	0
Lane Group Flow (vph)	58	1899	0	7	1451	0	0	211	0	0	69	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	78.5	78.5		78.5	78.5			33.5			33.5	
Effective Green, g (s)	79.0	79.0		79.0	79.0			33.0			33.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.28			0.28	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	149	2313		62	2327			404			408	
v/s Ratio Prot		c0.54			0.41							
v/s Ratio Perm	0.26			0.07				c0.14			0.05	
v/c Ratio	0.39	0.82		0.11	0.62			0.52			0.17	
Uniform Delay, d1	9.4	15.2		7.6	11.9			36.8			33.1	
Progression Factor	0.69	0.74		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.9	2.3		3.7	1.3			4.8			0.9	
Delay (s)	11.4	13.6		11.2	13.2			41.6			34.0	
Level of Service	B	B		B	B			D			C	
Approach Delay (s)		13.5			13.1			41.6			34.0	
Approach LOS		B			B			D			C	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1941	262	50	0	50	110	5113	20	2953	1098
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		3.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.93		1.00		1.00	1.00	0.88	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1466		1695		1770	6408	1396	6408	1471
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1466		1695		1770	6408	1396	6408	1471
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1941	262	50	0	50	110	5113	20	2953	1098
RTOR Reduction (vph)	0	104	0	0	0	0	0	6	0	548
Lane Group Flow (vph)	1941	158	0	100	0	110	5113	14	2953	550
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Effective Green, g (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Actuated g/C Ratio	0.20	0.20		0.12		0.05	0.52	0.34	0.43	0.43
Clearance Time (s)	4.0	4.0		4.0		3.5		4.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	687	293		205		89	3326	473	2781	638
v/s Ratio Prot	c0.57			c0.06		0.06	c0.80		0.46	
v/s Ratio Perm		0.11						0.01		0.37
v/c Ratio	2.83	0.54		0.49		1.24	1.54	0.03	1.06	0.86
Uniform Delay, d1	40.0	35.9		41.1		47.5	24.0	22.1	28.3	25.6
Progression Factor	1.00	1.00		1.00		0.92	1.31	0.64	1.00	1.00
Incremental Delay, d2	825.4	1.9		1.8		115.0	241.9	0.0	36.3	11.6
Delay (s)	865.4	37.8		42.9		158.7	273.4	14.2	64.6	37.1
Level of Service	F	D		D		F	F	B	E	D
Approach Delay (s)				42.9			270.0			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	288.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	142.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	557	606	1	181	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	557	606	1	181	662
RTOR Reduction (vph)	323	0	0	0	0	0
Lane Group Flow (vph)	234	0	607	0	181	662
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.1		27.0		8.9	39.9
Effective Green, g (s)	12.1		27.0		8.9	39.9
Actuated g/C Ratio	0.20		0.45		0.15	0.66
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	325		838		263	1239
v/s Ratio Prot	c0.15		c0.33		c0.10	0.36
v/s Ratio Perm						
v/c Ratio	0.72		0.72		0.69	0.53
Uniform Delay, d1	22.4		13.5		24.2	5.2
Progression Factor	1.00		1.00		1.22	1.33
Incremental Delay, d2	7.7		5.4		4.1	0.9
Delay (s)	30.1		18.9		33.6	7.9
Level of Service	C		B		C	A
Approach Delay (s)	30.1		18.9			13.4
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th Street

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	232	192	499	190	514	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.88
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1575
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1575
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	232	192	499	190	514	519
RTOR Reduction (vph)	0	140	0	0	0	78
Lane Group Flow (vph)	232	52	499	190	514	441
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	27.1	27.1	29.9	61.5	29.5	59.4
Effective Green, g (s)	27.1	27.1	29.9	61.5	29.5	59.4
Actuated g/C Ratio	0.27	0.27	0.30	0.62	0.30	0.59
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	505	394	529	1146	522	1006
v/s Ratio Prot	c0.12		c0.28	0.10	c0.29	0.13
v/s Ratio Perm		0.04				0.15
v/c Ratio	0.46	0.13	0.94	0.17	0.98	0.44
Uniform Delay, d1	30.4	27.6	34.2	8.3	35.0	11.1
Progression Factor	1.00	1.00	0.58	0.42	0.71	0.21
Incremental Delay, d2	0.7	0.2	17.8	0.2	33.6	0.3
Delay (s)	31.0	27.7	37.6	3.6	58.5	2.7
Level of Service	C	C	D	A	E	A
Approach Delay (s)	29.5			28.2	30.4	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗	↘	↘	↗	↘	↘	↗	↘
Volume (vph)	173	330	0	1041	474	306	54	1360	1036	275	830	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539		3433	1863	1437	1770	3539	1497	1770	3417	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539		3433	1863	1437	1770	3539	1497	1770	3417	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	330	0	1041	474	306	54	1360	1036	275	830	80
RTOR Reduction (vph)	0	0	0	0	0	162	0	0	86	0	7	0
Lane Group Flow (vph)	173	330	0	1041	474	144	54	1360	950	275	903	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.0	7.0		27.5	25.5	25.5	7.3	39.6	67.1	8.4	40.7	
Effective Green, g (s)	9.0	7.0		27.5	25.5	25.5	7.3	39.6	67.1	8.4	40.7	
Actuated g/C Ratio	0.09	0.07		0.28	0.26	0.26	0.07	0.40	0.67	0.08	0.41	
Clearance Time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	159	248		944	475	366	129	1401	1072	149	1391	
v/s Ratio Prot	0.10	c0.09		c0.30	0.25		0.03	c0.38	0.24	c0.16	0.26	
v/s Ratio Perm						0.10			0.39			
v/c Ratio	1.09	1.33		1.10	1.00	0.39	0.42	0.97	0.89	1.85	0.65	
Uniform Delay, d1	45.5	46.5		36.2	37.2	30.8	44.3	29.6	13.4	45.8	23.9	
Progression Factor	0.97	0.99		0.83	0.82	0.83	0.87	0.64	0.65	1.00	1.00	
Incremental Delay, d2	92.5	171.2		58.5	35.2	0.5	2.1	17.3	8.5	405.3	2.4	
Delay (s)	136.6	217.1		88.4	65.8	26.2	40.8	36.3	17.2	451.1	26.3	
Level of Service	F	F		F	E	C	D	D	B	F	C	
Approach Delay (s)		189.4			72.1			28.3			124.9	
Approach LOS		F			E			C			F	

Intersection Summary

HCM Average Control Delay	74.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2	
Lane Configurations	↑↑		↖		↑		↑↑↑↑			↘		
Volume (vph)	1341	372	38	348	38	54	2201	1425	18	40	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0		4.0		4.0		4.0			4.0		
Lane Util. Factor	0.95		1.00		1.00		0.86			1.00		
Frbp, ped/bikes	0.99		1.00		0.99		1.00			0.91		
Flpb, ped/bikes	1.00		1.00		1.00		1.00			1.00		
Frt	0.97		1.00		0.99		0.94			0.90		
Flt Protected	1.00		0.95		1.00		1.00			0.99		
Satd. Flow (prot)	3384		1770		1819		6031			1515		
Flt Permitted	1.00		0.15		1.00		1.00			0.99		
Satd. Flow (perm)	3384		287		1819		6031			1515		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	1341	372	38	348	38	54	2201	1425	18	40	4	
RTOR Reduction (vph)	25	0	0	0	0	0	0	0	3	0	0	
Lane Group Flow (vph)	1688	0	38	386	0	0	3680	0	59	0	0	
Confl. Peds. (#/hr)	36		36		36					36		
Turn Type	Perm				Perm							
Protected Phases	4		4		4		2 3					
Permitted Phases			4				2 3			1		
Actuated Green, G (s)	26.0		26.0		26.0		41.7			13.3		
Effective Green, g (s)	26.0		26.0		26.0		44.7			13.3		
Actuated g/C Ratio	0.26		0.26		0.26		0.45			0.13		
Clearance Time (s)	4.0		4.0		4.0					4.0		
Vehicle Extension (s)	5.0		5.0		5.0					5.0		
Lane Grp Cap (vph)	880		75		473		2696			201		
v/s Ratio Prot	c0.50				0.21							
v/s Ratio Perm			0.13				0.61			c0.04		
v/c Ratio	1.92		0.51		0.82		1.91dr			0.30		
Uniform Delay, d1	37.0		31.5		34.8		27.6			39.1		
Progression Factor	0.91		1.14		1.14		0.86			1.00		
Incremental Delay, d2	413.5		10.1		11.0		166.3			1.7		
Delay (s)	447.2		46.2		50.7		190.2			40.8		
Level of Service	F		D		D		F			D		
Approach Delay (s)	447.2				50.3		190.2			40.8		
Approach LOS	F				D		F			D		

Intersection Summary

HCM Average Control Delay	253.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	130.3%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

17: Canal St &

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	153	415	264	1126	670	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3265	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3265	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	415	264	1126	670	193
RTOR Reduction (vph)	0	335	0	0	21	0
Lane Group Flow (vph)	153	80	264	1126	842	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	19.3	19.8	71.7	47.4	
Effective Green, g (s)	19.3	19.3	19.8	71.7	47.4	
Actuated g/C Ratio	0.19	0.19	0.20	0.72	0.47	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	277	350	2537	1548	
v/s Ratio Prot	c0.09		c0.15	0.32	c0.26	
v/s Ratio Perm		0.06				
v/c Ratio	0.45	0.29	0.75	0.44	0.54	
Uniform Delay, d1	35.6	34.5	37.8	5.9	18.6	
Progression Factor	0.85	1.23	0.78	0.51	0.77	
Incremental Delay, d2	0.9	0.6	5.3	0.3	1.1	
Delay (s)	31.3	42.9	34.8	3.3	15.5	
Level of Service	C	D	C	A	B	
Approach Delay (s)	39.8			9.3	15.5	
Approach LOS	D			A	B	

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	365	530	497	314	515	102	472	822	390	134	848	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	365	530	497	314	515	102	472	822	390	134	848	142
RTOR Reduction (vph)	0	0	143	0	0	76	0	0	218	0	0	78
Lane Group Flow (vph)	365	530	354	314	515	26	472	822	172	134	848	64
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.5	27.7	27.7	12.5	25.7	25.7	10.5	33.8	33.8	8.0	31.3	31.3
Effective Green, g (s)	14.5	27.7	27.7	12.5	25.7	25.7	10.5	33.8	33.8	8.0	31.3	31.3
Actuated g/C Ratio	0.14	0.28	0.28	0.12	0.26	0.26	0.10	0.34	0.34	0.08	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	257	980	406	221	910	377	360	1196	491	275	1108	459
v/s Ratio Prot	c0.21	0.15		0.18	0.15		c0.14	0.23		0.04	c0.24	
v/s Ratio Perm			c0.24			0.02			0.12			0.04
v/c Ratio	1.42	0.54	0.87	1.42	0.57	0.07	1.31	0.69	0.35	0.49	0.77	0.14
Uniform Delay, d1	42.7	30.7	34.5	43.8	32.3	28.1	44.8	28.5	24.8	44.0	31.0	24.7
Progression Factor	1.00	1.00	1.00	1.01	0.62	1.00	1.00	1.00	1.00	0.73	1.12	1.67
Incremental Delay, d2	210.4	0.6	18.1	191.8	0.1	0.0	158.6	3.2	2.0	1.2	4.3	0.5
Delay (s)	253.1	31.4	52.6	236.0	20.2	28.1	203.4	31.8	26.8	33.3	39.1	41.8
Level of Service	F	C	D	F	C	C	F	C	C	C	D	D
Approach Delay (s)		97.1			93.8			78.7			38.8	
Approach LOS		F			F			E			D	

Intersection Summary

HCM Average Control Delay	77.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 20: Big Four Blvd & 7th Street

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↖	↖	↑↑	↑↗	
Volume (vph)	600	478	374	1127	1243	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	0.92	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3288	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3288	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	478	374	1127	1243	586
RTOR Reduction (vph)	0	235	0	0	54	0
Lane Group Flow (vph)	600	243	374	1127	1775	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	16.5	65.0	44.0	
Effective Green, g (s)	26.0	26.0	16.5	65.0	44.0	
Actuated g/C Ratio	0.26	0.26	0.16	0.65	0.44	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	893	381	292	2300	1447	
v/s Ratio Prot	c0.17		c0.21	0.32	c0.54	
v/s Ratio Perm		0.17				
v/c Ratio	0.67	0.64	1.28	0.49	1.23	
Uniform Delay, d1	33.2	32.8	41.8	9.0	28.0	
Progression Factor	0.72	0.53	0.47	1.16	0.48	
Incremental Delay, d2	1.8	3.1	128.9	0.1	104.8	
Delay (s)	25.6	20.6	148.3	10.5	118.3	
Level of Service	C	C	F	B	F	
Approach Delay (s)	23.4			44.8	118.3	
Approach LOS	C			D	F	

Intersection Summary

HCM Average Control Delay	70.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	109.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 21: F Street & 7th Street

2013+ Proj(Res) PM Peak
 12/22/2006

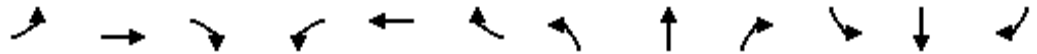


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	152	0	93	46	363	0	1503	118	464	1259	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.91			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.87			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1465			3463			3446	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1465			3463			3446	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	152	0	93	46	363	0	1503	118	464	1259	70
RTOR Reduction (vph)	0	0	0	0	284	0	0	6	0	0	3	0
Lane Group Flow (vph)	190	152	0	93	125	0	0	1615	0	0	1790	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	7.0	18.0		8.0	19.0			23.0			34.0	
Effective Green, g (s)	7.0	18.0		8.0	19.0			23.0			34.0	
Actuated g/C Ratio	0.07	0.18		0.08	0.19			0.23			0.34	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	124	335		142	278			796			1172	
v/s Ratio Prot	c0.11	0.08		0.05	c0.09			c0.47			c0.52	
v/s Ratio Perm												
v/c Ratio	1.53	0.45		0.65	0.45			2.03			1.53	
Uniform Delay, d1	46.5	36.6		44.7	35.9			38.5			33.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.88	
Incremental Delay, d2	275.8	4.4		21.2	5.2			467.3			237.8	
Delay (s)	322.3	41.0		65.8	41.0			505.8			266.8	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		197.3			45.6			505.8			266.8	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	326.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	149.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: G Street & 6th Street

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↖	↗	↖	↖↗		↖	↖↗	
Volume (vph)	108	216	212	436	564	1002	42	811	39	95	1779	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.90	1.00	1.00	0.89	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.98	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801	1425	1770	1863	1413	1770	3484		1770	3511	
Flt Permitted		0.67	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1235	1425	1770	1863	1413	1770	3484		1770	3511	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	216	212	436	564	1002	42	811	39	95	1779	58
RTOR Reduction (vph)	0	0	81	0	0	352	0	3	0	0	3	0
Lane Group Flow (vph)	0	324	131	436	564	650	42	847	0	95	1834	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		22.5	22.5	18.5	45.5	18.5	5.0	30.5		11.0	36.5	
Effective Green, g (s)		22.5	22.5	18.5	45.5	18.5	5.0	30.5		11.0	36.5	
Actuated g/C Ratio		0.22	0.22	0.18	0.46	0.18	0.05	0.30		0.11	0.36	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Grp Cap (vph)		278	321	327	848	261	89	1063		195	1282	
v/s Ratio Prot				0.25	0.30		0.02	c0.24		0.05	c0.52	
v/s Ratio Perm		c0.26	0.09			c0.46						
v/c Ratio		1.17	0.41	1.33	0.67	2.49	0.47	0.80		0.49	1.43	
Uniform Delay, d1		38.8	33.1	40.8	21.3	40.8	46.2	31.9		41.8	31.7	
Progression Factor		1.11	1.25	1.44	0.76	2.53	1.32	1.45		1.00	1.00	
Incremental Delay, d2		92.2	1.9	161.1	2.2	676.7	1.6	0.6		8.5	198.5	
Delay (s)		135.3	43.0	219.7	18.4	779.8	62.6	46.9		50.3	230.2	
Level of Service		F	D	F	B	F	E	D		D	F	
Approach Delay (s)		98.8			443.4			47.6			221.4	
Approach LOS		F			F			D			F	

Intersection Summary		
HCM Average Control Delay	263.1	HCM Level of Service F
HCM Volume to Capacity ratio	1.50	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 13.5
Intersection Capacity Utilization	119.0%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	278	0	96	98	997	486	310	893	0	0	817	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	278	0	96	98	997	486	310	893	0	0	817	465
RTOR Reduction (vph)	0	0	67	0	0	58	0	0	0	0	0	235
Lane Group Flow (vph)	278	0	29	98	997	428	310	893	0	0	817	230
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		30.5	15.0	29.0	29.0	18.0	43.5			21.5	21.5
Effective Green, g (s)	16.0		30.5	14.5	29.0	28.5	18.0	43.5			21.0	21.5
Actuated g/C Ratio	0.16		0.30	0.14	0.29	0.28	0.18	0.44			0.21	0.22
Clearance Time (s)	4.0		4.0	3.5	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		483	257	1026	393	319	810			743	340
v/s Ratio Prot	c0.16			0.06	0.28		0.18	c0.48			0.23	
v/s Ratio Perm			0.02			c0.31						0.15
v/c Ratio	0.98		0.06	0.38	0.97	1.09	0.97	1.10			1.10	0.68
Uniform Delay, d1	41.9		24.6	38.7	35.1	35.8	40.7	28.2			39.5	36.1
Progression Factor	1.08		3.45	1.03	0.85	0.81	1.12	0.84			0.92	0.85
Incremental Delay, d2	31.8		0.1	4.0	21.2	70.1	26.8	54.8			62.3	9.5
Delay (s)	76.8		84.9	43.9	51.0	99.2	72.5	78.5			98.6	40.0
Level of Service	E		F	D	D	F	E	E			F	D
Approach Delay (s)		78.9			65.4			77.0			77.3	
Approach LOS		E			E			E			E	

Intersection Summary

HCM Average Control Delay	73.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	325	79	0	0	0	0	641	500	1223	1712	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3200						3085		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3200						3085		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	370	325	79	0	0	0	0	641	500	1223	1712	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	255	505	0	0	0	0	0	1116	0	1223	1712	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.0	15.0						24.5		50.0	78.0	
Effective Green, g (s)	15.0	14.5						24.0		49.5	77.5	
Actuated g/C Ratio	0.15	0.14						0.24		0.50	0.78	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	242	464						740		876	2743	
v/s Ratio Prot	c0.16	0.16						c0.36		c0.69	0.48	
v/s Ratio Perm												
v/c Ratio	1.05	1.09						1.51		1.40	0.62	
Uniform Delay, d1	42.5	42.7						38.0		25.2	4.9	
Progression Factor	0.97	0.96						0.59		0.44	0.34	
Incremental Delay, d2	53.3	55.2						229.2		178.9	0.1	
Delay (s)	94.5	96.2						251.7		189.9	1.8	
Level of Service	F	F						F		F	A	
Approach Delay (s)		95.7			0.0			251.7			80.2	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	123.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↙	↕↕		
Volume (vph)	881	1026	357	0	0	0	0	0	0	121	691	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3345								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3345								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	881	1026	357	0	0	0	0	0	0	121	691	0	
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	2244	0	0	0	0	0	0	0	121	691	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		28.0								15.0	15.0		
Effective Green, g (s)		27.5								14.5	14.5		
Actuated g/C Ratio		0.55								0.29	0.29		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1840								513	1026		
v/s Ratio Prot		c0.67								0.07	c0.20		
v/s Ratio Perm													
v/c Ratio		1.22								0.24	0.67		
Uniform Delay, d1		11.2								13.5	15.7		
Progression Factor		0.95								0.62	1.26		
Incremental Delay, d2		99.3								0.4	1.2		
Delay (s)		110.0								8.8	21.0		
Level of Service		F								A	C		
Approach Delay (s)		110.0			0.0			0.0			19.2		
Approach LOS		F			A			A			B		
Intersection Summary													
HCM Average Control Delay			86.0		HCM Level of Service						F		
HCM Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			91.9%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↖	↑↑			↗	↖
Volume (vph)	0	0	0	42	2047	365	275	778	0	0	569	1425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6183		1770	3539			1650	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6183		1770	3539			1650	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	42	2047	365	275	778	0	0	569	1425
RTOR Reduction (vph)	0	0	0	0	31	0	0	0	0	0	23	23
Lane Group Flow (vph)	0	0	0	0	2423	0	275	778	0	0	1016	932
Confl. Peds. (#/hr)						36						
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					32.5		16.5	16.5			40.5	40.5
Effective Green, g (s)					32.0		16.0	16.0			40.0	40.0
Actuated g/C Ratio					0.32		0.16	0.16			0.40	0.40
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1979		283	566			660	602
v/s Ratio Prot							0.16	c0.22			0.62	c0.62
v/s Ratio Perm					0.39							
v/c Ratio					1.22		0.97	1.37			1.54	1.55
Uniform Delay, d1					34.0		41.8	42.0			30.0	30.0
Progression Factor					0.74		0.96	0.95			1.36	1.36
Incremental Delay, d2					104.4		38.4	176.4			249.1	253.6
Delay (s)					129.4		78.5	216.5			289.9	294.4
Level of Service					F		E	F			F	F
Approach Delay (s)		0.0			129.4			180.5			292.1	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	198.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	154.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	240	1999	0	0	0	0	0	829	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4799						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4799						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	240	1999	0	0	0	0	0	829	452
RTOR Reduction (vph)	0	0	0	15	1	0	0	0	0	0	0	12
Lane Group Flow (vph)	0	0	0	201	2022	0	0	0	0	0	829	440
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				59.5	59.5						33.5	33.5
Effective Green, g (s)				59.0	59.0						33.0	33.0
Actuated g/C Ratio				0.59	0.59						0.33	0.33
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				833	2831						1168	844
v/s Ratio Prot											c0.23	
v/s Ratio Perm				0.14	0.42							0.17
v/c Ratio				0.24	0.71						0.71	0.52
Uniform Delay, d1				9.8	14.5						29.3	27.1
Progression Factor				1.00	1.00						1.10	1.08
Incremental Delay, d2				0.7	1.6						2.6	1.6
Delay (s)				10.5	16.1						34.8	30.9
Level of Service				B	B						C	C
Approach Delay (s)		0.0			15.6			0.0			33.4	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖						↖		↖		
Volume (vph)	617	1605	0	0	0	0	0	228	214	554	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.97		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.97		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4781						1681		1720		
Flt Permitted	0.95	1.00						1.00		0.40		
Satd. Flow (perm)	1431	4781						1681		726		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	617	1605	0	0	0	0	0	228	214	554	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	537	1685	0	0	0	0	0	440	0	554	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	19.5	19.5						23.5		23.5		
Effective Green, g (s)	19.0	19.0						23.0		23.0		
Actuated g/C Ratio	0.38	0.38						0.46		0.46		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	544	1817						773		334		
v/s Ratio Prot								0.26				
v/s Ratio Perm	c0.38	0.35								c0.76		
v/c Ratio	0.99	0.93						0.57		1.66		
Uniform Delay, d1	15.4	14.8						9.9		13.5		
Progression Factor	0.67	0.66						1.00		1.51		
Incremental Delay, d2	25.5	5.8						3.0		297.6		
Delay (s)	35.8	15.6						12.9		318.0		
Level of Service	D	B						B		F		
Approach Delay (s)		20.5			0.0			12.9			318.0	
Approach LOS		C			A			B			F	

Intersection Summary

HCM Average Control Delay	70.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	154.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013+ Proj(Res) PM Peak
12/22/2006

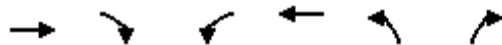


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2039	442	0	0	0	0	0	0	196	921	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4887									4988	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4887									4988	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2039	442	0	0	0	0	0	0	196	921	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2465	0	0	0	0	0	0	0	0	1115	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		24.9									18.1	
Effective Green, g (s)		24.4									17.6	
Actuated g/C Ratio		0.49									0.35	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2385									1756	
v/s Ratio Prot		0.50										
v/s Ratio Perm											0.22	
v/c Ratio		1.03									0.63	
Uniform Delay, d1		12.8									13.5	
Progression Factor		0.50									0.61	
Incremental Delay, d2		16.9									1.4	
Delay (s)		23.3									9.7	
Level of Service		C									A	
Approach Delay (s)		23.3			0.0			0.0			9.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2013+ Proj(Res) PM Peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	48	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	48	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume	0			96	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0			96	0	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	97			100	93	
cM capacity (veh/h)	1623			877	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	48	71
Volume Left	0	48	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization	14.4%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
34: Riverfront Dr & 7th Street

2013+ Proj(Res) PM Peak
12/27/2006



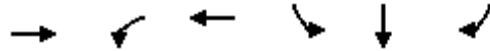
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	52	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0	104	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	104	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			97	100	93	
cM capacity (veh/h)			1623	865	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization	14.4%	ICU Level of Service	A
Analysis Period (min)		15	

Queues

1: Richard Blvd & I-5 SB Off



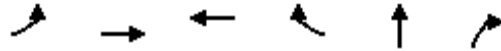
Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	445	360	193	833	833	686
v/c Ratio	0.48	0.48	0.20	1.21	1.21	0.45
Control Delay	28.5	36.9	27.6	142.3	142.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	36.9	27.6	142.3	142.3	0.9
Queue Length 50th (ft)	111	112	103	-831	-831	0
Queue Length 95th (ft)	163	m149	m151	#1087	#1087	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	927	744	978	686	686	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.48	0.20	1.21	1.21	0.45

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

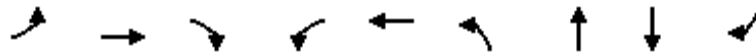
2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	147	1792	488	896	716	705
v/c Ratio	0.59	0.98	0.38	0.33	1.21	1.11
Control Delay	26.6	13.1	16.3	0.5	139.2	104.0
Queue Delay	0.0	26.2	0.2	0.0	387.7	290.4
Total Delay	26.6	39.3	16.5	0.5	526.9	394.4
Queue Length 50th (ft)	75	152	86	5	-635	-655
Queue Length 95th (ft)	m68	m84	112	6	#886	#905
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	251	1823	1283	2708	592	634
Starvation Cap Reductn	0	143	218	0	0	0
Spillback Cap Reductn	0	142	0	0	247	235
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.07	0.46	0.33	2.08	1.77

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	205	2180	763	26	845	505	79	102	79
v/c Ratio	0.50	0.94	0.72	0.42	0.30	0.86	0.25	0.91	0.46
Control Delay	6.8	16.9	4.6	32.3	7.9	57.0	33.5	119.9	21.0
Queue Delay	2.8	82.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	98.9	9.9	32.3	7.9	57.0	33.5	119.9	21.0
Queue Length 50th (ft)	52	704	141	9	94	191	37	80	0
Queue Length 95th (ft)	m49	m612	m114	m24	110	197	75	#186	49
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	418	2331	1063	62	2854	672	357	117	174
Starvation Cap Reductn	122	491	236	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.18	0.92	0.42	0.30	0.75	0.22	0.87	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

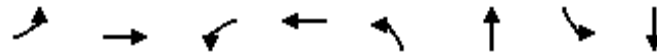
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Richard Blvd & 5th Street

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	1794	83	1078	17	103	119	292
v/c Ratio	0.71	0.80	0.62	0.49	0.28	0.30	0.59	0.88
Control Delay	74.9	5.1	50.7	4.9	52.6	42.2	56.0	67.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.9	5.1	50.7	4.9	52.6	42.2	56.0	67.4
Queue Length 50th (ft)	75	3	61	54	11	67	84	195
Queue Length 95th (ft)	m78	m4	m82	m140	35	115	143	289
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	192	2252	133	2204	74	415	249	402
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.80	0.62	0.49	0.23	0.25	0.48	0.73

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	492	1509	604	980	233	457	525	214	534
v/c Ratio	1.43	1.14	1.95	0.79	0.64	1.20	0.77	1.32	1.60
Control Delay	236.2	95.2	463.9	25.8	51.9	152.3	32.4	223.3	319.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	236.2	95.2	463.9	25.8	51.9	152.3	32.4	223.3	319.3
Queue Length 50th (ft)	~523	~711	~716	341	173	~451	269	~214	~306
Queue Length 95th (ft)	m#795	#845	#941	191	268	#668	406	#371	#422
Internal Link Dist (ft)		1060		1154		615			370
Turn Bay Length (ft)	200		200		200			200	
Base Capacity (vph)	343	1320	310	1273	364	382	678	162	333
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.43	1.14	1.95	0.77	0.64	1.20	0.77	1.32	1.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richard Blvd & 10th St

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1478	195	206	1266	55	38	63	21	28	36
v/c Ratio	0.77	0.68	0.21	0.78	0.57	0.31	0.15	0.23	0.11	0.11	0.15
Control Delay	51.1	13.9	4.1	57.2	10.8	47.1	42.2	11.8	41.5	41.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	13.9	4.1	57.2	10.8	47.1	42.2	11.8	41.5	41.3	13.7
Queue Length 50th (ft)	122	240	11	157	163	36	24	0	13	18	0
Queue Length 95th (ft)	m108	m484	m19	238	435	75	55	38	36	44	29
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	305	2186	948	310	2225	267	380	373	278	380	332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.68	0.21	0.66	0.57	0.21	0.10	0.17	0.08	0.07	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj (Res) AM Peak

7: Richard Blvd & Dos Rios St

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	1503	24	1370	81	128
v/c Ratio	0.25	0.65	0.17	0.59	0.20	0.28
Control Delay	4.5	5.8	11.5	12.8	28.4	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	5.8	11.5	12.8	28.4	24.5
Queue Length 50th (ft)	1	15	7	286	38	51
Queue Length 95th (ft)	m2	34	21	347	81	105
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	174	2304	138	2310	398	453
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.65	0.17	0.59	0.20	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Richard Blvd & 12th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1314	76	40	106	1395	50	3860	1338
v/c Ratio	1.47	0.19	0.22	1.28	0.41	0.09	1.30	1.33
Control Delay	257.0	23.6	46.9	243.4	12.8	7.7	165.1	170.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	257.0	23.6	46.9	243.4	12.8	7.7	165.1	170.9
Queue Length 50th (ft)	~907	27	24	~131	151	0	~1228	~1608
Queue Length 95th (ft)	#1044	71	63	#261	170	29	#1266	#1880
Internal Link Dist (ft)			487		826			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	893	400	215	83	3435	569	2965	1008
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.47	0.19	0.19	1.28	0.41	0.09	1.30	1.33

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: Bannon St & Bercut Dr

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	368	212	601
v/c Ratio	0.25	0.37	0.59	0.39
Control Delay	0.9	11.2	26.3	2.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.9	11.2	26.3	2.1
Queue Length 50th (ft)	0	76	87	51
Queue Length 95th (ft)	0	153	m122	m88
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	859	999	412	1528
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.37	0.51	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	NBL	NBR	
Lane Group Flow (vph)	110	182	212	134	177	
v/c Ratio	0.10	0.18	0.66	0.15	0.57	0.30
Control Delay	11.9	2.8	44.9	2.3	41.4	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.8	44.9	2.3	41.4	8.8
Queue Length 50th (ft)	29	0	87	5	86	9
Queue Length 95th (ft)	70	34	m176	m55	144	84
Internal Link Dist (ft)	182			1020	470	
Turn Bay Length (ft)		150	150			
Base Capacity (vph)	1073	906	504	1447	416	795
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.36	0.15	0.32	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

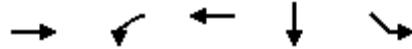
2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	134	988	206	405	4	784	328	220	1099
v/c Ratio	0.32	0.20	1.22	0.47	0.63	0.04	0.69	0.33	1.65	0.76
Control Delay	36.1	31.3	139.0	29.7	10.3	35.8	25.6	7.3	356.7	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	31.3	139.0	29.7	10.3	35.8	25.6	7.3	356.7	30.6
Queue Length 50th (ft)	50	33	~405	114	80	2	205	81	~205	311
Queue Length 95th (ft)	88	64	#520	187	119	m6	277	126	#350	#521
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	389	768	807	438	648	89	1136	980	133	1445
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.17	1.22	0.47	0.63	0.04	0.69	0.33	1.65	0.76

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	680	20	465	3898	84
v/c Ratio	0.88	0.40	1.15	1.27dr	0.48
Control Delay	63.8	76.5	144.5	91.1	69.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	76.5	144.5	91.1	69.7
Queue Length 50th (ft)	307	17	~535	~1075	75
Queue Length 95th (ft)	#410	#50	#758	#1112	134
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	773	50	403	3424	192
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.88	0.40	1.15	1.14	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th Street

2013+Proj (Res) AM Peak
1/9/2007

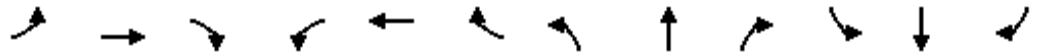


Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	46	210	199	362	571
v/c Ratio	0.14	0.48	0.42	0.14	0.40
Control Delay	32.6	8.6	21.7	2.5	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	8.6	21.7	2.5	16.8
Queue Length 50th (ft)	24	0	115	14	114
Queue Length 95th (ft)	54	58	80	20	107
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	487	547	469	2559	1430
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.38	0.42	0.14	0.40

Intersection Summary

Queues
19: Big Four Blvd & 6th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	389	434	234	245	32	388	377	221	8	561	74
v/c Ratio	0.51	0.44	0.71	0.97	0.29	0.08	0.97	0.23	0.28	0.05	0.50	0.14
Control Delay	47.7	32.5	15.7	75.1	22.8	4.5	82.1	18.4	3.9	31.4	15.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	32.5	15.7	75.1	22.8	4.5	82.1	18.4	3.9	31.4	15.8	2.7
Queue Length 50th (ft)	78	105	55	162	50	3	128	75	0	1	171	7
Queue Length 95th (ft)	138	148	169	m#252	m60	m4	#222	128	48	m4	220	14
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	255	991	643	241	1094	475	402	1628	788	172	1122	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.39	0.67	0.97	0.22	0.07	0.97	0.23	0.28	0.05	0.50	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	404	219	80	660	1511
v/c Ratio	0.47	0.43	0.61	0.28	0.79
Control Delay	19.3	4.2	32.6	3.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	4.2	32.6	3.9	9.0
Queue Length 50th (ft)	38	0	55	15	251
Queue Length 95th (ft)	58	2	m43	m11	m40
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	972	547	136	2339	1902
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.40	0.59	0.28	0.79

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	56	40	55	171	930	1710
v/c Ratio	0.79	0.12	0.62	0.50	1.40	1.24
Control Delay	108.6	35.6	76.2	39.5	220.3	135.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	108.6	35.6	76.2	39.5	220.3	135.9
Queue Length 50th (ft)	36	22	35	92	-421	-701
Queue Length 95th (ft)	#109	51	#94	159	#549	#843
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	71	335	89	345	666	1383
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.12	0.62	0.50	1.40	1.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	236	52	118	264	621	67	839	127	1488
v/c Ratio	0.94	0.21	0.28	0.59	0.91	0.94	0.72	0.55	0.97
Control Delay	87.4	18.9	29.0	36.1	35.1	65.1	20.1	50.7	44.4
Queue Delay	0.0	0.2	0.2	0.0	15.9	0.0	6.9	0.0	1.0
Total Delay	87.4	19.2	29.2	36.1	50.9	65.1	27.1	50.7	45.4
Queue Length 50th (ft)	161	7	73	169	247	43	293	77	472
Queue Length 95th (ft)	m#282	m22	m114	m239	m#349	m46	m246	137	#641
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	251	251	425	447	682	71	1160	230	1538
Starvation Cap Reductn	0	0	0	0	68	0	274	0	0
Spillback Cap Reductn	0	37	49	0	0	0	0	0	12
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.24	0.31	0.59	1.01	0.94	0.95	0.55	0.98

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	63	22	224	540	358	237	622	1019	197
v/c Ratio	0.59	0.07	0.82	0.54	0.64	0.84	0.61	0.85	0.31
Control Delay	55.0	13.0	58.9	28.4	14.0	58.2	14.7	36.4	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	3.9	2.7	0.1
Total Delay	55.0	13.0	58.9	28.4	14.2	58.2	18.6	39.1	7.3
Queue Length 50th (ft)	41	3	132	128	44	135	227	336	25
Queue Length 95th (ft)	m56	m5	#266	182	122	m#210	m299	m364	m56
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	106	303	274	991	560	283	1015	1203	638
Starvation Cap Reductn	0	0	0	0	16	0	302	98	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	40
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.07	0.82	0.54	0.66	0.84	0.87	0.92	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	179	364	1096	1057	626
v/c Ratio	0.69	0.71	1.33	1.30	0.23
Control Delay	47.0	41.2	177.5	154.5	0.5
Queue Delay	6.9	1.3	11.0	0.0	0.4
Total Delay	54.0	42.5	188.5	154.5	0.9
Queue Length 50th (ft)	102	85	~485	~863	4
Queue Length 95th (ft)	m146	m127	m#575	m#925	m7
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	258	511	825	814	2690
Starvation Cap Reductn	0	0	0	0	1443
Spillback Cap Reductn	45	42	15	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.78	1.35	1.30	0.50

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1613	166	850
v/c Ratio	0.88	0.31	0.80
Control Delay	10.4	18.0	24.7
Queue Delay	0.0	0.0	0.0
Total Delay	10.5	18.0	24.7
Queue Length 50th (ft)	214	66	177
Queue Length 95th (ft)	m143	m83	m222
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1836	531	1062
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	5	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.88	0.31	0.80

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1459	40	784	361	320
v/c Ratio	0.75	0.09	0.91	0.92	0.56
Control Delay	10.5	15.4	23.7	53.1	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	15.4	23.7	53.1	10.6
Queue Length 50th (ft)	44	12	142	152	54
Queue Length 95th (ft)	44	m12	m131	#291	107
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	1935	432	864	392	576
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	0.09	0.91	0.92	0.56

Intersection Summary

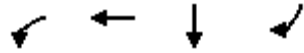
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2013+Proj (Res) AM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	245	1114	709	415
v/c Ratio	0.35	0.53	0.50	0.38
Control Delay	7.0	11.2	4.2	2.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.0	11.2	4.2	2.5
Queue Length 50th (ft)	27	85	26	11
Queue Length 95th (ft)	70	118	m29	m11
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	704	2116	1416	1103
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.50	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	773	2540	56	214
v/c Ratio	1.10	1.08	0.09	0.48
Control Delay	75.0	57.8	11.3	16.2
Queue Delay	0.0	5.0	0.0	4.9
Total Delay	75.0	62.8	11.3	21.1
Queue Length 50th (ft)	~366	~380	11	71
Queue Length 95th (ft)	m#895	#535	29	m73
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	701	2346	634	443
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	25	0	164
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.10	1.09	0.09	0.77

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2875	838
v/c Ratio	0.84	0.78
Control Delay	12.9	39.4
Queue Delay	21.7	0.0
Total Delay	34.5	39.4
Queue Length 50th (ft)	364	194
Queue Length 95th (ft)	m347	237
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	3429	1075
Starvation Cap Reductn	667	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.04	0.78

Intersection Summary

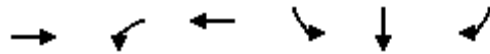
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+ Proj(Res) PM Peak

1/9/2007

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1059	1032	329	742	745	556
v/c Ratio	1.18	1.04	0.32	1.17	1.17	0.36
Control Delay	122.5	49.3	16.5	126.1	126.5	0.7
Queue Delay	1.7	72.9	3.8	13.0	13.0	0.0
Total Delay	124.2	122.2	20.3	139.1	139.5	0.7
Queue Length 50th (ft)	~414	~455	116	~718	~723	0
Queue Length 95th (ft)	#551	m#436	m114	#967	#972	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	896	990	1034	636	638	1539
Starvation Cap Reductn	0	142	607	0	0	0
Spillback Cap Reductn	3	0	0	16	16	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.22	0.77	1.20	1.20	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

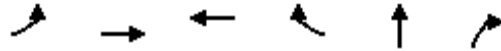
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

2013+ Proj(Res) PM Peak
1/9/2007



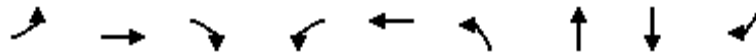
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	425	1466	1263	2638	495	475
v/c Ratio	1.17	0.84	1.03	0.97	0.91	0.70
Control Delay	105.7	4.5	43.4	12.1	50.5	32.6
Queue Delay	6.9	23.6	131.1	0.0	89.4	3.0
Total Delay	112.5	28.1	174.5	12.1	139.9	35.6
Queue Length 50th (ft)	~376	94	~325	790	283	292
Queue Length 95th (ft)	m#250	m76	m231	m632	#498	430
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	364	1736	1224	2708	553	684
Starvation Cap Reductn	5	266	124	0	0	0
Spillback Cap Reductn	0	327	280	0	140	120
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.18	1.04	1.34	0.97	1.20	0.84

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
3: Richard Blvd & Bercut Dr

2013+ Proj(Res) PM Peak
1/9/2007



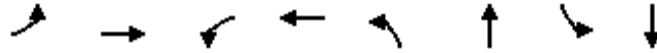
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	164	1479	686	29	2572	1181	87	191	183
v/c Ratio	1.09	0.82	0.77	0.47	1.19	1.15	0.16	1.14	0.89
Control Delay	114.5	19.8	8.2	38.8	116.4	110.2	22.9	159.7	74.9
Queue Delay	0.0	39.2	2.3	0.0	83.2	12.4	0.0	0.0	7.5
Total Delay	114.5	59.0	10.5	38.8	199.6	122.6	22.9	159.7	82.5
Queue Length 50th (ft)	~88	338	73	11	-880	~543	34	~172	92
Queue Length 95th (ft)	m#150	478	m116	m19	#969	#680	m54	#322	#230
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	151	1799	894	62	2153	1030	535	168	205
Starvation Cap Reductn	0	429	105	0	0	25	0	0	0
Spillback Cap Reductn	0	0	7	0	290	0	0	0	11
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.08	0.87	0.47	1.38	1.18	0.16	1.14	0.94

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
4: Richard Blvd & 5th Street

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	230	1143	67	2109	13	264	89	193
v/c Ratio	2.58	0.47	1.52	0.90	0.10	0.79	1.14	0.59
Control Delay	756.8	1.6	284.2	12.3	43.5	64.7	190.4	47.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	756.8	1.6	284.2	12.3	43.5	64.7	190.4	47.2
Queue Length 50th (ft)	~295	2	~73	365	9	196	-81	120
Queue Length 95th (ft)	m#376	m1	m#63	m344	28	#326	#190	199
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	89	2449	44	2353	131	333	78	326
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.58	0.47	1.52	0.90	0.10	0.79	1.14	0.59

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	130	1118	332	1557	415	537	800	353	1072
v/c Ratio	1.76	0.94	1.07	0.94	1.26	1.56	1.23	1.33	1.85
Control Delay	420.1	38.1	119.7	33.9	180.1	297.9	146.8	211.0	415.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	420.1	38.1	119.7	33.9	180.1	297.9	146.8	211.0	415.8
Queue Length 50th (ft)	~153	157	~278	351	~425	~617	~481	~355	~635
Queue Length 95th (ft)	m#272	m#446	#462	#741	#635	#845	#727	#544	#771
Internal Link Dist (ft)		1060		1154		615			370
Turn Bay Length (ft)	200		200		200			200	
Base Capacity (vph)	74	1188	310	1652	329	345	649	266	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.76	0.94	1.07	0.94	1.26	1.56	1.23	1.33	1.85

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richard Blvd & 10th St

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1859	99	90	1527	115	30	176	71	37	170
v/c Ratio	0.33	0.79	0.10	0.63	0.59	0.57	0.10	0.48	0.33	0.13	0.50
Control Delay	56.0	20.0	8.1	69.6	8.0	56.7	40.7	15.1	47.0	41.3	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	20.0	8.1	69.6	8.0	56.7	40.7	15.1	47.0	41.3	18.2
Queue Length 50th (ft)	20	647	22	72	198	78	19	21	47	23	28
Queue Length 95th (ft)	m0	m550	m15	m119	194	139	46	85	91	54	92
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	89	2354	1001	187	2570	265	380	437	281	380	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.79	0.10	0.48	0.59	0.43	0.08	0.40	0.25	0.10	0.42

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
7: Richard Blvd & Dos Rios St

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	58	1900	7	1451	224	101
v/c Ratio	0.39	0.82	0.11	0.62	0.54	0.23
Control Delay	12.7	13.9	12.4	13.4	39.5	21.2
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	12.7	14.0	12.4	13.4	39.5	21.2
Queue Length 50th (ft)	6	111	2	315	136	33
Queue Length 95th (ft)	m19	263	10	381	219	80
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	149	2314	63	2326	417	439
Starvation Cap Reductn	0	21	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.83	0.11	0.62	0.54	0.23

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Richard Blvd & 12th Street

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1941	262	100	110	5113	20	2953	1098
v/c Ratio	2.83	0.66	0.44	1.24	1.49	0.04	1.02	0.92
Control Delay	844.2	27.1	44.7	154.5	243.0	11.8	44.2	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	844.2	27.1	44.7	154.5	243.0	11.8	44.2	16.8
Queue Length 50th (ft)	~1098	76	57	~87	~1436	5	~429	30
Queue Length 95th (ft)	#1234	166	107	m#80	m#1288	m5	#499	#772
Internal Link Dist (ft)			371		802			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	687	397	288	89	3430	491	2885	1195
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.83	0.66	0.35	1.24	1.49	0.04	1.02	0.92

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Bannon St & Bercut Dr



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	557	607	181	662
v/c Ratio	0.86	0.72	0.69	0.53
Control Delay	21.2	22.3	38.1	9.1
Queue Delay	4.0	4.8	0.0	0.2
Total Delay	25.2	27.1	38.1	9.3
Queue Length 50th (ft)	48	178	76	161
Queue Length 95th (ft)	#196	#367	m109	m251
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	726	838	271	1238
Starvation Cap Reductn	0	0	0	130
Spillback Cap Reductn	102	165	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.90	0.67	0.60

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	232	192	499	190	514	519
v/c Ratio	0.46	0.36	0.94	0.17	0.98	0.51
Control Delay	34.2	6.5	40.9	3.7	61.6	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	6.5	40.9	3.7	61.6	2.9
Queue Length 50th (ft)	124	0	328	19	348	1
Queue Length 95th (ft)	198	53	m#377	m19	#549	15
Internal Link Dist (ft)	182			1020	470	
Turn Bay Length (ft)		150	150			
Base Capacity (vph)	504	533	540	1146	522	1023
Starvation Cap Reductn	0	0	0	0	0	5
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.36	0.92	0.17	0.98	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

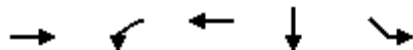
2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	173	330	1041	474	306	54	1360	1036	275	910
v/c Ratio	1.09	1.33	1.10	1.00	0.58	0.36	0.95	0.94	2.07	0.64
Control Delay	135.9	208.6	88.7	68.3	12.0	45.6	33.5	23.0	531.2	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	135.9	208.6	88.7	68.3	12.0	45.6	33.5	23.0	531.2	26.0
Queue Length 50th (ft)	~125	~149	~380	260	45	36	323	93	~278	251
Queue Length 95th (ft)	#263	#243	#510	m#495	m78	m#73	#577	#831	#438	298
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	159	248	944	475	529	150	1433	1101	133	1428
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.33	1.10	1.00	0.58	0.36	0.95	0.94	2.07	0.64

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	1713	38	386	3680	62
v/c Ratio	1.89	0.51	0.82	1.91dr	0.27
Control Delay	427.1	61.2	54.2	166.3	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	427.1	61.2	54.2	166.3	37.2
Queue Length 50th (ft)	~884	21	233	~961	32
Queue Length 95th (ft)	m#850	m43	m285	#1031	70
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	904	75	473	2791	290
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.89	0.51	0.82	1.32	0.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	153	415	264	1126	863
v/c Ratio	0.45	0.68	0.75	0.44	0.55
Control Delay	33.8	10.4	37.4	3.7	16.5
Queue Delay	0.0	0.0	0.0	0.5	0.0
Total Delay	33.8	10.4	37.4	4.2	16.5
Queue Length 50th (ft)	72	19	125	76	267
Queue Length 95th (ft)	m119	69	m143	m41	m327
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	522	716	451	2536	1566
Starvation Cap Reductn	0	0	0	874	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.58	0.59	0.68	0.55

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	365	530	497	314	515	102	472	822	390	134	848	142
v/c Ratio	1.42	0.54	0.91	1.42	0.57	0.23	1.31	0.69	0.55	0.49	0.77	0.26
Control Delay	244.2	32.5	42.3	226.4	20.1	6.0	195.7	33.0	8.6	37.5	40.5	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	244.2	32.5	42.3	226.4	20.1	6.0	195.7	33.0	8.6	37.5	40.5	14.9
Queue Length 50th (ft)	~316	145	189	~274	124	12	~200	245	27	44	289	37
Queue Length 95th (ft)	#495	197	#380	m#191	m95	m7	#300	317	113	68	360	84
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	257	1062	578	221	991	484	360	1198	710	285	1108	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.50	0.86	1.42	0.52	0.21	1.31	0.69	0.55	0.47	0.77	0.26

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	600	478	374	1127	1829
v/c Ratio	0.67	0.78	1.28	0.49	1.22
Control Delay	27.2	14.3	152.0	11.2	119.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	14.3	152.0	11.2	119.8
Queue Length 50th (ft)	100	14	~283	367	~771
Queue Length 95th (ft)	135	85	m85	m107	m#751
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	961	638	292	2299	1499
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.75	1.28	0.49	1.22

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	190	152	93	409	1621	1793
v/c Ratio	1.53	0.45	0.65	0.73	2.02	1.53
Control Delay	309.5	41.6	67.1	15.4	487.2	263.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	309.5	41.6	67.1	15.4	487.2	263.6
Queue Length 50th (ft)	~171	87	59	32	-865	~856
Queue Length 95th (ft)	#308	150	#131	141	#1005	m#745
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	124	335	142	563	803	1174
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.53	0.45	0.65	0.73	2.02	1.53

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	324	212	436	564	1002	42	850	95	1837
v/c Ratio	1.17	0.53	1.33	0.67	1.63	0.47	0.80	0.49	1.43
Control Delay	131.7	24.3	205.1	18.9	315.2	63.4	47.3	51.0	226.4
Queue Delay	0.0	15.6	109.8	2.0	23.5	3.5	10.4	0.0	18.5
Total Delay	131.7	39.9	314.9	20.9	338.7	66.9	57.6	51.0	245.0
Queue Length 50th (ft)	~232	60	~375	173	-867	29	307	58	~846
Queue Length 95th (ft)	m#235	m70	m#439	m205	m#984	m22	m236	110	#987
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	278	401	327	848	613	89	1066	195	1284
Starvation Cap Reductn	0	0	0	153	19	0	197	0	0
Spillback Cap Reductn	0	169	51	153	0	14	0	0	36
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.91	1.58	0.81	1.69	0.56	0.98	0.49	1.47

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+ Proj(Res) PM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	278	96	98	997	486	310	893	817	465
v/c Ratio	0.98	0.17	0.38	0.97	1.08	0.97	1.10	1.10	0.81
Control Delay	78.0	19.5	44.6	52.3	89.6	73.5	80.1	97.8	22.6
Queue Delay	0.0	0.0	0.0	11.1	0.0	407.1	85.8	0.0	4.3
Total Delay	78.0	19.5	44.6	63.4	89.6	480.7	165.9	97.8	26.9
Queue Length 50th (ft)	192	9	61	278	-312	211	-638	-317	120
Queue Length 95th (ft)	m#219	m18	113	#456	#497	m206	m#440	m#348	m170
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	283	550	257	1026	451	319	810	743	575
Starvation Cap Reductn	0	0	0	7	0	0	123	0	0
Spillback Cap Reductn	0	0	0	49	0	159	0	0	59
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.17	0.38	1.02	1.08	1.94	1.30	1.10	0.90

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	255	519	1141	1223	1712
v/c Ratio	1.05	1.09	1.49	1.40	0.62
Control Delay	94.9	92.5	244.7	196.7	1.8
Queue Delay	80.3	465.6	3.5	135.8	14.2
Total Delay	175.2	558.0	248.2	332.5	16.0
Queue Length 50th (ft)	~202	~204	~528	~1039	62
Queue Length 95th (ft)	m#201	m#182	m#330	m#738	m52
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	242	478	765	876	2743
Starvation Cap Reductn	0	0	0	28	1048
Spillback Cap Reductn	39	235	4	156	639
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.26	2.14	1.50	1.70	1.01

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	2264	121	691
v/c Ratio	1.22	0.24	0.67
Control Delay	114.1	8.9	21.2
Queue Delay	57.2	0.0	0.0
Total Delay	171.3	8.9	21.2
Queue Length 50th (ft)	~761	40	215
Queue Length 95th (ft)	m221	m41	m204
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1860	513	1026
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	177	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.35	0.24	0.67

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

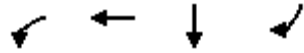


Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2454	275	778	1039	955
v/c Ratio	1.22	0.97	1.37	1.52	1.53
Control Delay	128.2	80.4	209.5	271.8	275.3
Queue Delay	574.1	16.1	0.0	7.1	7.8
Total Delay	702.3	96.4	209.5	278.9	283.1
Queue Length 50th (ft)	~563	160	~341	~990	~910
Queue Length 95th (ft)	#623	m#244	m#398	m#1222	m#1138
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	2010	283	566	682	624
Starvation Cap Reductn	26	0	0	0	0
Spillback Cap Reductn	1060	17	0	7	7
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	2.58	1.03	1.37	1.54	1.55

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	216	2023	829	452
v/c Ratio	0.25	0.71	0.71	0.53
Control Delay	9.0	16.3	35.2	30.2
Queue Delay	0.0	0.0	0.4	0.0
Total Delay	9.0	16.3	35.6	30.2
Queue Length 50th (ft)	58	329	285	137
Queue Length 95th (ft)	103	389	m241	m138
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	848	2831	1168	856
Starvation Cap Reductn	0	0	75	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.71	0.76	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	537	1685	442	554
v/c Ratio	0.99	0.93	0.57	1.66
Control Delay	39.9	16.6	13.4	319.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.9	16.6	13.4	319.4
Queue Length 50th (ft)	100	104	87	~418
Queue Length 95th (ft)	m#409	#245	158	m#164
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	544	1818	775	334
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.93	0.57	1.66

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2481	1117
v/c Ratio	1.03	0.64
Control Delay	26.1	9.7
Queue Delay	0.0	0.0
Total Delay	26.1	9.7
Queue Length 50th (ft)	~306	61
Queue Length 95th (ft)	m#107	121
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	2401	1757
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.03	0.64

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2013+Proj(Off) AM Peak

1: Richard Blvd & I-5 SB Off

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	273	172	360	193	0	0	0	0	1854	0	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.92		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.94		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3069		3433	1863					1681	1681	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3069		3433	1863					1681	1681	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	273	172	360	193	0	0	0	0	1854	0	686
RTOR Reduction (vph)	0	83	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	362	0	360	193	0	0	0	0	927	927	686
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		31.0		26.5	60.5					52.0	52.0	120.0
Effective Green, g (s)		31.0		25.0	60.0					52.0	52.0	120.0
Actuated g/C Ratio		0.26		0.21	0.50					0.43	0.43	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		793		715	932					728	728	1539
v/s Ratio Prot		0.12		c0.10	0.10					c0.55	0.55	
v/s Ratio Perm												c0.45
v/c Ratio		0.46		0.50	0.21					1.27	1.27	0.45
Uniform Delay, d1		37.4		42.0	16.7					34.0	34.0	0.0
Progression Factor		1.00		1.13	2.43					1.00	1.00	1.00
Incremental Delay, d2		1.2		1.0	0.2					133.6	133.6	0.9
Delay (s)		38.6		48.6	40.8					167.6	167.6	0.9
Level of Service		D		D	D					F	F	A
Approach Delay (s)		38.6			45.9			0.0			122.6	
Approach LOS		D			D			A			F	

Intersection Summary

HCM Average Control Delay	100.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	135.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	147	1980	0	0	488	889	65	0	1356	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1521	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1521	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	1980	0	0	488	889	65	0	1356	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	79	3	0	0	0
Lane Group Flow (vph)	147	1980	0	0	488	889	0	637	702	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	18.0	61.8			45.5	120.0		34.5	44.2			
Effective Green, g (s)	17.0	60.8			42.0	120.0		33.5	38.7			
Actuated g/C Ratio	0.14	0.51			0.35	1.00		0.28	0.32			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	251	1793			1239	2708		425	485			
v/s Ratio Prot	0.08	c0.56			0.14			c0.42	c0.47			
v/s Ratio Perm						c0.33						
v/c Ratio	0.59	1.10			0.39	0.33		1.50	1.45			
Uniform Delay, d1	48.2	29.6			29.4	0.0		43.2	40.6			
Progression Factor	0.55	0.16			0.89	1.00		1.00	1.00			
Incremental Delay, d2	0.5	47.9			0.4	0.3		237.0	212.4			
Delay (s)	27.2	52.6			26.5	0.3		280.2	253.0			
Level of Service	C	D			C	A		F	F			
Approach Delay (s)		50.9			9.6			266.7			0.0	
Approach LOS		D			A			F			A	

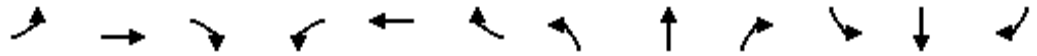
Intersection Summary

HCM Average Control Delay	101.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	135.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Richard Blvd & Bercut Dr

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘↗	↑			↖	↗
Volume (vph)	205	2368	763	26	793	45	505	65	14	21	81	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2	4.6	5.2	5.2		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1763	3539	1408	1770	4996		3433	1790			1844	1583
Flt Permitted	0.18	1.00	1.00	0.15	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	335	3539	1408	282	4996		3433	1790			1844	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	2368	763	26	793	45	505	65	14	21	81	79
RTOR Reduction (vph)	0	0	120	0	9	0	0	7	0	0	0	74
Lane Group Flow (vph)	205	2368	643	26	829	0	505	72	0	0	102	5
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	81.0	79.9	79.9	27.0	27.0		21.0	21.0			7.5	7.5
Effective Green, g (s)	80.5	79.3	79.9	26.4	26.4		20.5	20.5			7.0	7.0
Actuated g/C Ratio	0.67	0.66	0.67	0.22	0.22		0.17	0.17			0.06	0.06
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	807	2339	937	62	1099		586	306			108	92
v/s Ratio Prot	0.10	c0.67			0.17		c0.15	0.04			c0.06	
v/s Ratio Perm	0.07		0.46	0.09								0.00
v/c Ratio	0.25	1.01	0.69	0.42	0.75		0.86	0.24			0.94	0.05
Uniform Delay, d1	16.1	20.4	12.3	40.2	43.8		48.4	43.0			56.3	53.4
Progression Factor	0.68	0.62	0.42	0.97	0.94		0.88	0.84			1.00	1.00
Incremental Delay, d2	0.0	9.1	0.4	15.2	3.7		11.7	0.1			68.0	0.1
Delay (s)	11.0	21.6	5.5	54.3	44.7		54.0	36.1			124.3	53.4
Level of Service	B	C	A	D	D		D	D			F	D
Approach Delay (s)		17.3			45.0			51.6			93.4	
Approach LOS		B			D			D			F	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	115.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
Volume (vph)	289	1785	12	66	1018	51	17	279	7	126	163	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3533		1770	3496		1719	1852		1715	1671	
Flt Permitted	0.95	1.00		0.95	1.00		0.28	1.00		0.31	1.00	
Satd. Flow (perm)	1770	3533		1770	3496		504	1852		566	1671	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	289	1785	12	66	1018	51	17	279	7	126	163	143
RTOR Reduction (vph)	0	0	0	0	3	0	0	1	0	0	27	0
Lane Group Flow (vph)	289	1797	0	66	1066	0	17	285	0	126	279	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	22.8	72.1		8.0	57.3		29.1	29.1		29.1	29.1	
Effective Green, g (s)	21.8	71.8		7.0	57.0		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.18	0.60		0.06	0.48		0.24	0.24		0.24	0.24	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	322	2114		103	1661		120	441		135	398	
v/s Ratio Prot	0.16	c0.51		0.04	c0.30			0.15			0.17	
v/s Ratio Perm							0.03			c0.22		
v/c Ratio	0.90	0.85		0.64	0.64		0.14	0.65		0.93	0.70	
Uniform Delay, d1	48.0	19.7		55.3	23.8		36.0	41.2		44.8	41.8	
Progression Factor	1.22	0.39		0.86	0.80		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	1.1		3.7	0.7		0.2	2.4		56.5	4.3	
Delay (s)	66.0	8.7		51.3	19.7		36.2	43.6		101.3	46.1	
Level of Service	E	A		D	B		D	D		F	D	
Approach Delay (s)		16.6			21.5			43.2			62.2	
Approach LOS		B			C			D			E	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.6
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕		↗	↖	↗	↖	↕	↖
Volume (vph)	495	1214	303	604	821	356	366	611	525	203	416	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3401		1770	3298		1681	1765	1536	1770	3429	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3401		1770	3298		1681	1765	1536	1770	3429	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	495	1214	303	604	821	356	366	611	525	203	416	109
RTOR Reduction (vph)	0	17	0	0	37	0	0	0	61	0	19	0
Lane Group Flow (vph)	495	1500	0	604	1140	0	329	648	464	203	506	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		pm+ov	Split		
Protected Phases	1	6		5	2		8	8	5	7	7	
Permitted Phases									8			
Actuated Green, G (s)	16.0	45.0		19.0	48.0		31.5	31.5	50.5	10.5	10.5	
Effective Green, g (s)	15.0	45.0		18.0	48.0		31.0	31.0	49.5	10.0	10.0	
Actuated g/C Ratio	0.12	0.38		0.15	0.40		0.26	0.26	0.41	0.08	0.08	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.0	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	221	1275		266	1319		434	456	634	148	286	
v/s Ratio Prot	c0.28	c0.44		c0.34	0.35		0.20	c0.37	0.11	0.11	c0.15	
v/s Ratio Perm									0.19			
v/c Ratio	2.24	1.18		2.27	0.86		0.76	1.42	0.73	1.37	1.77	
Uniform Delay, d1	52.5	37.5		51.0	33.0		41.0	44.5	29.7	55.0	55.0	
Progression Factor	0.67	0.52		1.11	0.81		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	566.1	84.4		582.1	6.8		6.6	202.0	3.8	204.0	359.7	
Delay (s)	601.2	104.1		638.5	33.5		47.7	246.5	33.4	259.0	414.7	
Level of Service	F	F		F	C		D	F	C	F	F	
Approach Delay (s)		226.4			238.7			128.5			371.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	223.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	137.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↘	↘	↑↑		↘	↑	↘	↘	↑	↘
Volume (vph)	175	1470	195	206	1379	84	55	38	63	21	28	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3488		1684	1863	1583	1770	1863	1440
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.74	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3488		1310	1863	1583	1364	1863	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1470	195	206	1379	84	55	38	63	21	28	36
RTOR Reduction (vph)	0	0	30	0	3	0	0	0	55	0	0	31
Lane Group Flow (vph)	175	1470	165	206	1460	0	55	38	8	21	28	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	15.6	73.6	73.6	18.7	76.7		16.2	16.2	16.2	16.2	16.2	16.2
Effective Green, g (s)	15.1	73.1	73.1	18.2	76.2		15.7	15.7	15.7	15.7	15.7	15.7
Actuated g/C Ratio	0.13	0.61	0.61	0.15	0.64		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	223	2156	905	268	2215		171	244	207	178	244	188
v/s Ratio Prot	c0.10	c0.42		c0.12	0.42			0.02				0.02
v/s Ratio Perm			0.11				c0.04		0.01	0.02		0.00
v/c Ratio	0.78	0.68	0.18	0.77	0.66		0.32	0.16	0.04	0.12	0.11	0.03
Uniform Delay, d1	50.9	15.7	10.3	48.9	13.7		47.3	46.3	45.6	46.0	46.0	45.5
Progression Factor	1.00	0.72	0.47	1.00	1.03		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.2	0.0	8.9	1.2		0.4	0.1	0.0	0.1	0.1	0.0
Delay (s)	52.4	11.5	4.9	57.6	15.4		47.7	46.4	45.6	46.1	46.1	45.5
Level of Service	D	B	A	E	B		D	D	D	D	D	D
Approach Delay (s)		14.7			20.6			46.5				45.9
Approach LOS		B			C			D				D

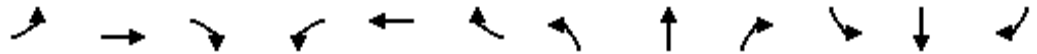
Intersection Summary

HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 7: Richard Blvd & Dos Rios St

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1445	50	24	1535	32	35	22	24	17	45	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.97			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Frt	1.00	0.99		1.00	1.00			0.96			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	3496		1770	3513			1658			1624	
Flt Permitted	0.10	1.00		0.12	1.00			0.85			0.96	
Satd. Flow (perm)	193	3496		219	3513			1445			1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	1445	50	24	1535	32	35	22	24	17	45	66
RTOR Reduction (vph)	0	2	0	0	1	0	0	13	0	0	29	0
Lane Group Flow (vph)	43	1493	0	24	1566	0	0	68	0	0	99	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	80.5	80.5		80.5	80.5			31.5			31.5	
Effective Green, g (s)	80.0	80.0		80.0	80.0			31.0			31.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.26			0.26	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	129	2331		146	2342			373			407	
v/s Ratio Prot		0.43			c0.45							
v/s Ratio Perm	0.22			0.11				0.05			c0.06	
v/c Ratio	0.33	0.64		0.16	0.67			0.18			0.24	
Uniform Delay, d1	8.6	11.6		7.5	12.0			34.6			35.2	
Progression Factor	0.54	0.91		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.2	1.0		2.4	1.5			1.1			1.4	
Delay (s)	9.9	11.7		9.9	13.6			35.7			36.6	
Level of Service	A	B		A	B			D			D	
Approach Delay (s)		11.6			13.5			35.7			36.6	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1306	76	20	0	20	106	1395	50	3860	1535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.90		1.00		1.00	1.00	0.83	1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1425		1695		1770	6408	1319	6408	1425
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1425		1695		1770	6408	1319	6408	1425
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1306	76	20	0	20	106	1395	50	3860	1535
RTOR Reduction (vph)	0	30	0	14	0	0	0	29	0	408
Lane Group Flow (vph)	1306	46	0	26	0	106	1395	21	3860	1127
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	37.0	37.0		14.4		7.0	80.6	62.6	69.6	69.6
Effective Green, g (s)	37.0	37.0		14.4		7.0	80.6	62.6	69.6	69.6
Actuated g/C Ratio	0.25	0.25		0.10		0.05	0.54	0.42	0.46	0.46
Clearance Time (s)	4.0	4.0		4.0		4.0		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	847	352		163		83	3443	550	2973	661
v/s Ratio Prot	c0.38			c0.02		c0.06	0.22		0.60	
v/s Ratio Perm		0.03						0.02		c0.79
v/c Ratio	1.54	0.13		0.16		1.28	0.41	0.04	1.30	1.70
Uniform Delay, d1	56.5	44.0		62.3		71.5	20.5	25.9	40.2	40.2
Progression Factor	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	249.8	0.1		0.2		190.2	0.1	0.1	136.8	323.4
Delay (s)	306.3	44.0		62.4		261.7	20.6	26.0	177.0	363.6
Level of Service	F	D		E		F	C	C	F	F
Approach Delay (s)				62.4			37.3			
Approach LOS				E			D			

Intersection Summary

HCM Average Control Delay	203.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	119.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+Proj(Off) AM Peak
 12/22/2006

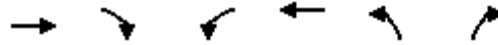


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		L	U
Volume (vph)	0	167	367	1	212	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	167	367	1	212	601
RTOR Reduction (vph)	155	0	0	0	0	0
Lane Group Flow (vph)	12	0	368	0	212	601
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	4.4		31.4		12.2	47.6
Effective Green, g (s)	4.4		31.4		12.2	47.6
Actuated g/C Ratio	0.07		0.52		0.20	0.79
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	118		974		360	1478
v/s Ratio Prot	c0.01		0.20		c0.12	c0.32
v/s Ratio Perm						
v/c Ratio	0.10		0.38		0.59	0.41
Uniform Delay, d1	26.0		8.5		21.6	1.9
Progression Factor	1.00		1.00		1.05	0.72
Incremental Delay, d2	0.4		1.1		1.7	0.6
Delay (s)	26.3		9.6		24.4	1.9
Level of Service	C		A		C	A
Approach Delay (s)	26.3		9.6			7.8
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th Street

2013+Proj(Off) AM Peak
 12/22/2006

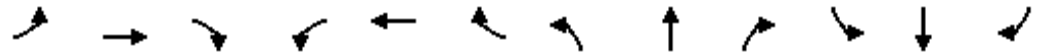


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	110	163	182	212	134	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1591
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1591
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	163	182	212	134	177
RTOR Reduction (vph)	0	69	0	0	0	126
Lane Group Flow (vph)	110	94	182	212	134	51
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	57.6	57.6	15.6	77.7	13.3	28.9
Effective Green, g (s)	57.6	57.6	15.6	77.7	13.3	28.9
Actuated g/C Ratio	0.58	0.58	0.16	0.78	0.13	0.29
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1073	837	276	1448	235	531
v/s Ratio Prot	0.06		c0.10	c0.11	c0.08	0.02
v/s Ratio Perm		0.06				0.02
v/c Ratio	0.10	0.11	0.66	0.15	0.57	0.10
Uniform Delay, d1	9.6	9.6	39.7	2.8	40.7	26.0
Progression Factor	1.00	1.00	0.90	0.38	0.66	1.73
Incremental Delay, d2	0.0	0.1	5.1	0.2	3.3	0.1
Delay (s)	9.6	9.7	41.0	1.3	30.1	45.2
Level of Service	A	A	D	A	C	D
Approach Delay (s)	9.6			19.6	38.7	
Approach LOS	A			B	D	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: North B Street & 7th Street

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↕		↙	↕	↗	↙	↕	↗	↙	↕	↗
Volume (vph)	106	121	13	988	206	533	4	943	328	215	992	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3457		3433	1863	1437	1770	3539	1498	1770	3410	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3457		3433	1863	1437	1770	3539	1498	1770	3410	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	106	121	13	988	206	533	4	943	328	215	992	102
RTOR Reduction (vph)	0	8	0	0	0	329	0	0	133	0	6	0
Lane Group Flow (vph)	106	126	0	988	206	204	4	943	195	215	1088	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	19.0	18.9		23.5	23.4	23.4	1.0	33.1	56.6	6.5	38.6	
Effective Green, g (s)	19.0	18.9		23.5	23.4	23.4	1.0	33.1	56.6	6.5	38.6	
Actuated g/C Ratio	0.19	0.19		0.24	0.23	0.23	0.01	0.33	0.57	0.06	0.39	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	336	653		807	436	336	18	1171	915	115	1316	
v/s Ratio Prot	0.06	0.04		c0.29	0.11		0.00	0.27	0.05	c0.12	c0.32	
v/s Ratio Perm						c0.14			0.08			
v/c Ratio	0.32	0.19		1.22	0.47	0.61	0.22	0.81	0.21	1.87	0.83	
Uniform Delay, d1	34.9	34.1		38.2	33.0	34.2	49.1	30.5	10.7	46.8	27.7	
Progression Factor	1.03	1.07		0.79	0.81	1.19	1.44	0.43	0.33	1.00	1.00	
Incremental Delay, d2	0.5	0.1		110.4	0.7	2.6	5.9	5.7	0.1	422.5	6.1	
Delay (s)	36.6	36.5		140.7	27.5	43.5	76.6	18.9	3.6	469.2	33.7	
Level of Service	D	D		F	C	D	E	B	A	F	C	
Approach Delay (s)		36.6			97.2			15.2			105.3	
Approach LOS		D			F			B			F	

Intersection Summary

HCM Average Control Delay	73.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2	
Lane Configurations	↑↑		↵	↑		↑↑↑↑			↵			
Volume (vph)	425	250	20	564	29	22	2736	1140	34	43	7	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0		4.0	4.0	4.0			4.0				
Lane Util. Factor	0.95		1.00	1.00	0.86			1.00				
Frbp, ped/bikes	0.97		1.00	0.99	1.00			0.89				
Flpb, ped/bikes	1.00		0.99	1.00	1.00			1.00				
Frt	0.94		1.00	0.99	0.96			0.92				
Flt Protected	1.00		0.95	1.00	1.00			0.98				
Satd. Flow (prot)	3249		1745	1838	6125			1500				
Flt Permitted	1.00		0.17	1.00	1.00			0.98				
Satd. Flow (perm)	3249		308	1838	6125			1500				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	425	250	20	564	29	22	2736	1140	34	43	7	
RTOR Reduction (vph)	57	0	0	0	0	0	0	0	2	0	0	
Lane Group Flow (vph)	618	0	20	593	0	0	3898	0	82	0	0	
Confl. Peds. (#/hr)	36		36	36			36			36		
Turn Type	Perm				Perm							
Protected Phases	4		4		2 3							
Permitted Phases	4				2 3			1				
Actuated Green, G (s)	40.0		40.0	40.0	73.8			17.2				
Effective Green, g (s)	40.0		40.0	40.0	76.8			17.2				
Actuated g/C Ratio	0.27		0.27	0.27	0.51			0.11				
Clearance Time (s)	4.0		4.0	4.0	4.0			4.0				
Vehicle Extension (s)	5.0		5.0	5.0	5.0			5.0				
Lane Grp Cap (vph)	866		82	490	3136			172				
v/s Ratio Prot	0.19		c0.32			0.64			c0.05			
v/s Ratio Perm	0.71		0.24	1.21	1.38dr			0.48				
Uniform Delay, d1	49.8		43.1	55.0	36.6			62.2				
Progression Factor	1.00		1.00	1.00	1.00			1.00				
Incremental Delay, d2	3.5		3.2	112.4	112.2			4.3				
Delay (s)	53.3		46.4	167.4	148.8			66.5				
Level of Service	D		D	F	F			E				
Approach Delay (s)	53.3		163.4			148.8			66.5			
Approach LOS	D		F			F			E			

Intersection Summary

HCM Average Control Delay	137.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	114.7%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th Street

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	46	210	199	545	523	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3451	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3451	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	210	199	545	523	40
RTOR Reduction (vph)	0	171	0	0	5	0
Lane Group Flow (vph)	46	39	199	545	558	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.7	18.7	26.5	72.3	41.3	
Effective Green, g (s)	18.7	18.7	26.5	72.3	41.3	
Actuated g/C Ratio	0.19	0.19	0.26	0.72	0.41	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	331	269	469	2559	1425	
v/s Ratio Prot	0.03		c0.11	0.15	c0.16	
v/s Ratio Perm		c0.03				
v/c Ratio	0.14	0.15	0.42	0.21	0.39	
Uniform Delay, d1	33.9	34.0	30.4	4.5	20.6	
Progression Factor	1.00	1.00	0.56	0.31	0.85	
Incremental Delay, d2	0.2	0.3	0.6	0.2	0.8	
Delay (s)	34.1	34.2	17.6	1.6	18.3	
Level of Service	C	C	B	A	B	
Approach Delay (s)	34.2			5.9	18.3	
Approach LOS	C			A	B	

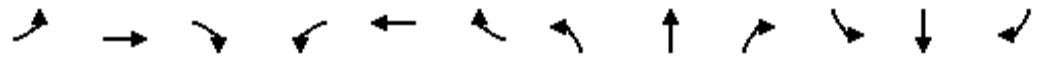
Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	129	389	434	234	245	32	388	560	221	8	553	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	129	389	434	234	245	32	388	560	221	8	553	74
RTOR Reduction (vph)	0	0	243	0	0	24	0	0	127	0	0	53
Lane Group Flow (vph)	129	389	191	234	245	8	388	560	94	8	553	21
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.4	25.0	25.0	13.6	24.2	24.2	15.3	42.4	42.4	1.0	28.1	28.1
Effective Green, g (s)	14.4	25.0	25.0	13.6	24.2	24.2	15.3	42.4	42.4	1.0	28.1	28.1
Actuated g/C Ratio	0.14	0.25	0.25	0.14	0.24	0.24	0.15	0.42	0.42	0.01	0.28	0.28
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	255	885	366	241	856	355	525	1501	616	34	994	412
v/s Ratio Prot	0.07	0.11		c0.13	0.07		c0.11	0.16		0.00	c0.16	
v/s Ratio Perm			c0.13			0.01			0.06			0.01
v/c Ratio	0.51	0.44	0.52	0.97	0.29	0.02	0.74	0.37	0.15	0.24	0.56	0.05
Uniform Delay, d1	39.5	31.6	32.3	43.0	30.9	28.9	40.4	19.7	17.7	49.1	30.6	26.2
Progression Factor	1.00	1.00	1.00	0.76	0.75	0.44	1.00	1.00	1.00	0.98	0.45	0.12
Incremental Delay, d2	1.6	0.4	1.3	38.1	0.1	0.0	5.4	0.7	0.5	3.3	2.1	0.2
Delay (s)	41.1	31.9	33.7	71.0	23.2	12.7	45.8	20.4	18.3	51.6	15.9	3.3
Level of Service	D	C	C	E	C	B	D	C	B	D	B	A
Approach Delay (s)		34.0			44.4			28.4			14.9	
Approach LOS		C			D			C			B	

Intersection Summary

HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	404	219	80	819	1055	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	0.92	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3304	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3304	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	404	219	80	819	1055	451
RTOR Reduction (vph)	0	140	0	0	43	0
Lane Group Flow (vph)	404	79	80	819	1463	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.9	24.9	6.2	66.1	55.4	
Effective Green, g (s)	24.9	24.9	6.2	66.1	55.4	
Actuated g/C Ratio	0.25	0.25	0.06	0.66	0.55	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	855	365	110	2339	1830	
v/s Ratio Prot	c0.12		c0.05	0.23	c0.44	
v/s Ratio Perm		0.05				
v/c Ratio	0.47	0.22	0.73	0.35	0.80	
Uniform Delay, d1	32.0	29.8	46.1	7.5	17.9	
Progression Factor	0.56	0.23	0.23	0.48	0.41	
Incremental Delay, d2	0.4	0.3	2.2	0.0	1.0	
Delay (s)	18.3	7.3	12.6	3.6	8.3	
Level of Service	B	A	B	A	A	
Approach Delay (s)	14.4			4.4	8.3	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

21: F Street & 7th Street

2013+Proj(Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	40	0	55	137	34	25	1025	39	321	1156	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1770			3496			3342	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1770			3496			3342	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	40	0	55	137	34	25	1025	39	321	1156	228
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	12	0
Lane Group Flow (vph)	56	40	0	55	162	0	0	1087	0	0	1693	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	4.0	18.0		5.0	19.0			21.0			39.0	
Effective Green, g (s)	4.0	18.0		5.0	19.0			21.0			39.0	
Actuated g/C Ratio	0.04	0.18		0.05	0.19			0.21			0.39	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	71	335		89	336			734			1303	
v/s Ratio Prot	c0.03	0.02		0.03	c0.09			c0.31			c0.51	
v/s Ratio Perm												
v/c Ratio	0.79	0.12		0.62	0.48			1.48			1.30	
Uniform Delay, d1	47.6	34.4		46.6	36.1			39.5			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.93	
Incremental Delay, d2	58.6	0.7		28.1	4.9			223.5			139.5	
Delay (s)	106.1	35.1		74.7	41.0			263.0			167.8	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		76.5			49.2			263.0			167.8	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	189.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	112.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: G Street & 6th Street

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↗	↖	↖	↖↗		↖	↖↗	
Volume (vph)	37	199	52	118	264	621	67	918	104	127	1403	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.87	1.00	1.00	0.87	1.00	0.98		1.00	0.99	
Flpb, ped/bikes		0.99	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1378	1770	1863	1378	1770	3409		1770	3488	
Flt Permitted		0.91	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1676	1378	1770	1863	1378	1770	3409		1770	3488	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	199	52	118	264	621	67	918	104	127	1403	77
RTOR Reduction (vph)	0	0	44	0	0	310	0	8	0	0	4	0
Lane Group Flow (vph)	0	236	8	118	264	311	67	1014	0	127	1476	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		15.0	15.0	26.0	26.0	26.0	4.0	35.0		10.0	42.0	
Effective Green, g (s)		15.0	15.0	26.0	26.0	26.0	4.0	35.0		10.0	42.0	
Actuated g/C Ratio		0.15	0.15	0.26	0.26	0.26	0.04	0.35		0.10	0.42	
Clearance Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		251	207	460	484	358	71	1193		177	1465	
v/s Ratio Prot				0.07	0.14		0.04	c0.30		0.07	c0.42	
v/s Ratio Perm		c0.14	0.01			c0.23						
v/c Ratio		0.94	0.04	0.26	0.55	0.87	0.94	0.85		0.72	1.01	
Uniform Delay, d1		42.1	36.3	29.3	31.9	35.4	47.9	30.1		43.6	29.0	
Progression Factor		0.82	0.82	0.84	0.87	1.10	1.32	1.56		1.00	1.00	
Incremental Delay, d2		36.4	0.3	1.1	3.7	20.7	20.9	0.8		22.0	25.3	
Delay (s)		70.7	30.0	25.7	31.3	59.6	84.1	47.5		65.6	54.3	
Level of Service		E	C	C	C	E	F	D		E	D	
Approach Delay (s)		63.3			48.1			49.8			55.2	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM Average Control Delay	52.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	0	22	224	540	424	237	714	0	0	1014	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	0	22	224	540	424	237	714	0	0	1014	197
RTOR Reduction (vph)	0	0	18	0	0	149	0	0	0	0	0	93
Lane Group Flow (vph)	63	0	4	224	540	275	237	714	0	0	1014	104
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0		18.0	16.0	28.0	28.0	16.0	54.5			34.5	34.5
Effective Green, g (s)	6.0		18.0	15.5	28.0	27.5	16.0	54.5			34.0	34.5
Actuated g/C Ratio	0.06		0.18	0.16	0.28	0.28	0.16	0.55			0.34	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	106		285	274	991	379	283	1015			1203	546
v/s Ratio Prot	0.04			c0.13	0.15		c0.13	0.38			c0.29	
v/s Ratio Perm			0.00			c0.20						0.07
v/c Ratio	0.59		0.01	0.82	0.54	0.73	0.84	0.70			0.84	0.19
Uniform Delay, d1	45.8		33.7	40.9	30.6	32.8	40.7	16.8			30.5	23.0
Progression Factor	1.23		1.28	1.01	0.85	0.77	1.07	0.80			0.92	0.70
Incremental Delay, d2	11.5		0.0	21.5	2.0	10.7	20.8	3.3			6.8	0.7
Delay (s)	67.9		43.3	62.8	27.9	36.0	64.3	16.8			34.9	16.9
Level of Service	E		D	E	C	D	E	B			C	B
Approach Delay (s)		61.6			37.4			28.7			32.0	
Approach LOS		E			D			C			C	

Intersection Summary

HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	426	316	55	0	0	0	0	578	539	1057	618	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3239						3040		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3239						3040		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	426	316	55	0	0	0	0	578	539	1057	618	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	264	525	0	0	0	0	0	1088	0	1057	618	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.0	16.0						27.5		45.5	76.5	
Effective Green, g (s)	16.0	15.5						27.0		45.0	76.0	
Actuated g/C Ratio	0.16	0.16						0.27		0.45	0.76	
Clearance Time (s)	4.0	4.0						3.5		3.5	3.5	
Lane Grp Cap (vph)	258	502						821		797	2690	
v/s Ratio Prot	c0.16	0.16						c0.36		c0.60	0.17	
v/s Ratio Perm												
v/c Ratio	1.02	1.04						1.32		1.33	0.23	
Uniform Delay, d1	42.0	42.2						36.5		27.5	3.5	
Progression Factor	0.81	0.81						0.92		1.07	0.43	
Incremental Delay, d2	49.0	43.2						150.4		151.0	0.1	
Delay (s)	82.9	77.5						184.1		180.3	1.6	
Level of Service	F	E						F		F	A	
Approach Delay (s)		79.3			0.0			184.1			114.4	
Approach LOS		E			A			F			F	

Intersection Summary

HCM Average Control Delay	128.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↙	↕↕		
Volume (vph)	604	892	209	0	0	0	0	0	0	166	845	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3379								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3379								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	604	892	209	0	0	0	0	0	0	166	845	0	
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1695	0	0	0	0	0	0	0	166	845	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		27.7								15.3	15.3		
Effective Green, g (s)		27.2								14.8	14.8		
Actuated g/C Ratio		0.54								0.30	0.30		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1838								524	1048		
v/s Ratio Prot		c0.50								0.09	c0.24		
v/s Ratio Perm													
v/c Ratio		0.92								0.32	0.81		
Uniform Delay, d1		10.4								13.7	16.3		
Progression Factor		0.93								0.51	1.12		
Incremental Delay, d2		1.0								0.9	3.7		
Delay (s)		10.7								7.8	21.9		
Level of Service		B								A	C		
Approach Delay (s)		10.7			0.0			0.0			19.6		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM Average Control Delay			14.0		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.88										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			79.5%		ICU Level of Service						D		
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	57	1098	304	40	804	0	0	269	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			0.96	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6134		1770	3539			1704	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6134		1770	3539			1704	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	57	1098	304	40	804	0	0	269	405
RTOR Reduction (vph)	0	0	0	0	95	0	0	0	0	0	24	249
Lane Group Flow (vph)	0	0	0	0	1364	0	40	804	0	0	334	67
Confl. Peds. (#/hr)							36					
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					15.4		13.0	13.0			11.1	11.1
Effective Green, g (s)					14.9		12.5	12.5			10.6	10.6
Actuated g/C Ratio					0.30		0.25	0.25			0.21	0.21
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1828		443	885			361	319
v/s Ratio Prot							0.02	c0.23			c0.20	0.04
v/s Ratio Perm					0.22							
v/c Ratio					0.75		0.09	0.91			0.93	0.21
Uniform Delay, d1					15.8		14.4	18.2			19.3	16.2
Progression Factor					0.54		0.85	0.96			1.16	3.01
Incremental Delay, d2					2.5		0.0	1.7			31.3	1.4
Delay (s)					11.0		12.3	19.3			53.6	50.4
Level of Service					B		B	B			D	D
Approach Delay (s)		0.0			11.0			18.9			52.1	
Approach LOS		A			B			B			D	

Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 27: I Street & 7th Street

2013+Proj(Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	272	1089	0	0	0	0	0	705	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.95
Flpb, ped/bikes				0.96	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1467	4796						3539	2655
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1467	4796						3539	2655
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	272	1089	0	0	0	0	0	705	413
RTOR Reduction (vph)	0	0	0	59	5	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	0	0	186	1111	0	0	0	0	0	705	372
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				22.5	22.5						20.5	20.5
Effective Green, g (s)				22.0	22.0						20.0	20.0
Actuated g/C Ratio				0.44	0.44						0.40	0.40
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				645	2110						1416	1062
v/s Ratio Prot											c0.20	
v/s Ratio Perm				0.13	0.23							0.14
v/c Ratio				0.29	0.53						0.50	0.35
Uniform Delay, d1				9.0	10.2						11.2	10.5
Progression Factor				1.00	1.00						0.32	0.23
Incremental Delay, d2				1.1	0.9						0.8	0.5
Delay (s)				10.1	11.1						4.3	3.0
Level of Service				B	B						A	A
Approach Delay (s)		0.0			11.0			0.0			3.8	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	861	2454	0	0	0	0	0	65	8	214	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.99		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.95		
Frt	1.00	1.00						0.99		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4788						1821		1674		
Flt Permitted	0.95	1.00						1.00		0.71		
Satd. Flow (perm)	1431	4788						1821		1250		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	861	2454	0	0	0	0	0	65	8	214	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	775	2540	0	0	0	0	0	72	0	214	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	25.0	25.0						18.0		18.0		
Effective Green, g (s)	24.5	24.5						17.5		17.5		
Actuated g/C Ratio	0.49	0.49						0.35		0.35		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	701	2346						637		438		
v/s Ratio Prot								0.04				
v/s Ratio Perm	c0.54	0.53								c0.17		
v/c Ratio	1.11	1.08						0.11		0.49		
Uniform Delay, d1	12.8	12.8						11.0		12.7		
Progression Factor	1.02	1.03						1.00		1.31		
Incremental Delay, d2	59.0	41.9						0.4		1.6		
Delay (s)	71.9	55.0						11.4		18.4		
Level of Service	E	E						B		B		
Approach Delay (s)		59.0			0.0			11.4			18.4	
Approach LOS		E			A			B			B	

Intersection Summary

HCM Average Control Delay	55.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013+Proj(Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2471	404	0	0	0	0	0	0	221	613	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									0.97	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4887									4859	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4887									4859	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2471	404	0	0	0	0	0	0	221	613	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	2868	0	0	0	0	0	0	0	0	828	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		70.5									22.5	
Effective Green, g (s)		70.0									22.0	
Actuated g/C Ratio		0.70									0.22	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3421									1069	
v/s Ratio Prot		0.59										
v/s Ratio Perm											0.17	
v/c Ratio		0.84									0.77	
Uniform Delay, d1		10.9									36.7	
Progression Factor		1.08									0.86	
Incremental Delay, d2		0.8									5.0	
Delay (s)		12.5									36.4	
Level of Service		B									D	
Approach Delay (s)		12.5			0.0			0.0			36.4	
Approach LOS		B			A			A			D	

Intersection Summary

HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2013+Proj(Off) AM Peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	65	0	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	65	0	0	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		130	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		130	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	97
cM capacity (veh/h)			1623		830	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	65	31
Volume Left	0	65	0
Volume Right	0	0	31
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization	13.6%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2013+Proj(Off) AM Peak
 12/27/2006



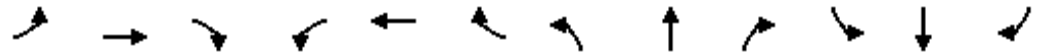
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	65	0	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	65	0	0	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		130	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		130	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	97
cM capacity (veh/h)			1623		830	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	65	31
Volume Left	0	65	0
Volume Right	0	0	31
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		13.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	407	652	1032	329	0	0	0	0	1486	3	556
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.87		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.91		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		2805		3433	1863					1681	1686	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		2805		3433	1863					1681	1686	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	407	652	1032	329	0	0	0	0	1486	3	556
RTOR Reduction (vph)	0	242	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	817	0	1032	329	0	0	0	0	743	746	556
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		27.0		36.5	66.5					46.0	46.0	120.0
Effective Green, g (s)		27.0		35.0	66.0					46.0	46.0	120.0
Actuated g/C Ratio		0.22		0.29	0.55					0.38	0.38	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		631		1001	1025					644	646	1539
v/s Ratio Prot		c0.29		c0.30	0.18					0.44	c0.44	
v/s Ratio Perm												0.36
v/c Ratio		1.30		1.03	0.32					1.15	1.15	0.36
Uniform Delay, d1		46.5		42.5	14.8					37.0	37.0	0.0
Progression Factor		1.00		0.62	1.14					1.00	1.00	1.00
Incremental Delay, d2		144.3		23.4	0.1					86.0	86.4	0.7
Delay (s)		190.8		49.8	16.9					123.0	123.4	0.7
Level of Service		F		D	B					F	F	A
Approach Delay (s)		190.8			41.8			0.0			89.9	
Approach LOS		F			D			A			F	

Intersection Summary

HCM Average Control Delay	99.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	146.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	425	1468	0	0	1263	2798	98	9	863	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1546	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1546	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	1468	0	0	1263	2798	98	9	863	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	109	11	0	0	0
Lane Group Flow (vph)	425	1468	0	0	1263	2798	0	386	464	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	24.3	59.6			43.5	120.0		33.7	53.4			
Effective Green, g (s)	23.3	59.1			40.0	120.0		33.2	48.4			
Actuated g/C Ratio	0.19	0.49			0.33	1.00		0.28	0.40			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	344	1743			1180	2708		428	607			
v/s Ratio Prot	c0.24	0.41			0.36			0.25	0.31			
v/s Ratio Perm						c1.03						
v/c Ratio	1.24	0.84			1.07	1.03		0.90	0.76			
Uniform Delay, d1	48.4	26.4			40.0	60.0		41.8	30.9			
Progression Factor	0.55	0.14			0.97	1.00		1.00	1.00			
Incremental Delay, d2	108.4	0.4			33.6	16.6		22.8	6.7			
Delay (s)	135.1	4.1			72.2	76.6		64.7	37.6			
Level of Service	F	A			E	E		E	D			
Approach Delay (s)		33.5			75.3			51.4			0.0	
Approach LOS		C			E			D			A	

Intersection Summary

HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	146.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

2013+Proj(Off) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗			↖	↗
Volume (vph)	164	1481	686	29	2697	35	1181	61	26	54	137	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.6	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00		1.00	0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1770	3539	1408	1770	5064		3433	1742			1837	1583
Flt Permitted	0.07	1.00	1.00	0.08	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	131	3539	1408	141	5064		3433	1742			1837	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	1481	686	29	2697	35	1181	61	26	54	137	183
RTOR Reduction (vph)	0	0	185	0	1	0	0	13	0	0	0	60
Lane Group Flow (vph)	164	1481	501	29	2731	0	1181	74	0	0	191	123
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	63.5	62.4	62.4	52.4	52.4		35.5	35.5			10.5	10.5
Effective Green, g (s)	63.0	63.0	62.4	53.0	53.0		35.0	35.0			10.0	10.0
Actuated g/C Ratio	0.52	0.52	0.52	0.44	0.44		0.29	0.29			0.08	0.08
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	151	1858	732	62	2237		1001	508			153	132
v/s Ratio Prot	0.05	c0.42			c0.54		c0.34	0.04			c0.10	
v/s Ratio Perm	0.52		0.36	0.21								0.08
v/c Ratio	1.09	0.80	0.68	0.47	1.22		1.18	0.15			1.25	0.93
Uniform Delay, d1	53.9	23.3	21.5	23.6	33.5		42.5	31.4			55.0	54.7
Progression Factor	0.78	0.65	0.36	0.41	0.47		0.90	0.90			1.00	1.00
Incremental Delay, d2	78.5	2.0	2.8	11.2	101.4		88.6	0.0			154.5	57.7
Delay (s)	120.3	17.1	10.5	21.0	117.2		126.8	28.2			209.5	112.4
Level of Service	F	B	B	C	F		F	C			F	F
Approach Delay (s)		22.4			116.2			120.1			162.0	
Approach LOS		C			F			F			F	

Intersection Summary

HCM Average Control Delay	87.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	119.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 4: Richard Blvd & 5th Street

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	1124	21	231	2192	73	13	251	17	99	127	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3510		1702	1836		1713	1694	
Flt Permitted	0.95	1.00		0.95	1.00		0.38	1.00		0.26	1.00	
Satd. Flow (perm)	1770	3523		1770	3510		672	1836		467	1694	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	231	1124	21	231	2192	73	13	251	17	99	127	88
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	21	0
Lane Group Flow (vph)	231	1144	0	231	2263	0	13	266	0	99	194	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	14.0	59.7		26.0	71.7		23.5	23.5		23.5	23.5	
Effective Green, g (s)	13.0	60.0		25.0	72.0		23.0	23.0		23.0	23.0	
Actuated g/C Ratio	0.11	0.50		0.21	0.60		0.19	0.19		0.19	0.19	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	192	1762		369	2106		129	352		90	325	
v/s Ratio Prot	c0.13	0.32		0.13	c0.64			0.14			0.11	
v/s Ratio Perm							0.02			c0.21		
v/c Ratio	1.20	0.65		0.63	1.07		0.10	0.75		1.10	0.60	
Uniform Delay, d1	53.5	22.2		43.2	24.0		40.0	45.8		48.5	44.3	
Progression Factor	1.02	0.16		0.89	0.63		1.00	1.00		1.00	1.00	
Incremental Delay, d2	116.3	1.1		0.2	34.6		0.1	7.9		124.5	2.0	
Delay (s)	170.7	4.7		38.8	49.7		40.1	53.7		173.0	46.2	
Level of Service	F	A		D	D		D	D		F	D	
Approach Delay (s)		32.6			48.7			53.1			86.2	
Approach LOS		C			D			D			F	

Intersection Summary

HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕	↗	↖	↕	↗
Volume (vph)	132	813	315	332	1348	212	464	491	800	514	880	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3346		1770	3430		1681	1762	1532	1770	3369	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3346		1770	3430		1681	1762	1532	1770	3369	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	132	813	315	332	1348	212	464	491	800	514	880	415
RTOR Reduction (vph)	0	31	0	0	10	0	0	0	64	0	47	0
Lane Group Flow (vph)	132	1097	0	332	1550	0	418	537	736	514	1248	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		pm+ov	Split		
Protected Phases	1	6		5	2		8	8	5	7	7	
Permitted Phases									8			
Actuated Green, G (s)	6.0	41.0		13.0	48.0		28.5	28.5	41.5	23.5	23.5	
Effective Green, g (s)	5.0	41.0		12.0	48.0		28.0	28.0	40.5	23.0	23.0	
Actuated g/C Ratio	0.04	0.34		0.10	0.40		0.23	0.23	0.34	0.19	0.19	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.0	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	74	1143		177	1372		392	411	517	339	646	
v/s Ratio Prot	c0.07	0.33		c0.19	c0.45		0.25	0.30	c0.15	0.29	c0.37	
v/s Ratio Perm									0.33			
v/c Ratio	1.78	0.96		1.88	1.13		1.07	1.31	1.42	1.52	1.93	
Uniform Delay, d1	57.5	38.7		54.0	36.0		46.0	46.0	39.8	48.5	48.5	
Progression Factor	0.75	0.61		1.24	0.77		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	389.2	14.0		411.8	67.0		64.2	154.6	201.5	247.0	425.1	
Delay (s)	432.4	37.7		478.9	94.7		110.2	200.6	241.2	295.5	473.6	
Level of Service	F	D		F	F		F	F	F	F	F	
Approach Delay (s)		79.0			162.1			197.6			423.0	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	226.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	132.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	2027	99	90	1504	26	115	30	176	71	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3524		1685	1863	1583	1770	1863	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3524		1300	1863	1583	1374	1863	1459
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	2027	99	90	1504	26	115	30	176	71	37	170
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	107	0	0	107
Lane Group Flow (vph)	26	2027	87	90	1529	0	115	30	69	71	37	63
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	3.8	79.4	79.4	10.1	85.7		19.0	19.0	19.0	19.0	19.0	19.0
Effective Green, g (s)	3.3	79.9	79.9	9.6	86.2		18.5	18.5	18.5	18.5	18.5	18.5
Actuated g/C Ratio	0.03	0.67	0.67	0.08	0.72		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	49	2356	989	142	2531		200	287	244	212	287	225
v/s Ratio Prot	0.01	c0.57		0.05	c0.43			0.02			0.02	
v/s Ratio Perm			0.06				c0.09		0.04	0.05		0.04
v/c Ratio	0.53	0.86	0.09	0.63	0.60		0.57	0.10	0.28	0.33	0.13	0.28
Uniform Delay, d1	57.6	15.7	7.1	53.5	8.4		47.1	43.6	44.9	45.3	43.8	44.8
Progression Factor	0.96	0.92	0.83	0.85	0.69		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.4	0.0	5.6	0.9		2.5	0.1	0.2	0.3	0.1	0.2
Delay (s)	56.1	14.8	5.9	50.9	6.7		49.6	43.7	45.1	45.6	43.9	45.1
Level of Service	E	B	A	D	A		D	D	D	D	D	D
Approach Delay (s)		14.9			9.2			46.6			45.1	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	2029	39	7	1449	5	42	38	144	24	25	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.94			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Frt	1.00	1.00		1.00	1.00			0.91			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3515		1770	3535			1565			1613	
Flt Permitted	0.13	1.00		0.05	1.00			0.93			0.91	
Satd. Flow (perm)	239	3515		91	3535			1468			1487	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	58	2029	39	7	1449	5	42	38	144	24	25	52
RTOR Reduction (vph)	0	1	0	0	0	0	0	11	0	0	32	0
Lane Group Flow (vph)	58	2067	0	7	1454	0	0	213	0	0	70	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	81.5	81.5		81.5	81.5			30.5			30.5	
Effective Green, g (s)	82.0	82.0		82.0	82.0			30.0			30.0	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.25			0.25	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	163	2402		62	2416			367			372	
v/s Ratio Prot		c0.59			0.41							
v/s Ratio Perm	0.24			0.08				c0.14			0.05	
v/c Ratio	0.36	0.86		0.11	0.60			0.58			0.19	
Uniform Delay, d1	7.9	14.6		6.5	10.2			39.5			35.4	
Progression Factor	0.25	0.56		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.5	2.6		3.7	1.1			6.5			1.1	
Delay (s)	5.5	10.8		10.2	11.3			46.0			36.5	
Level of Service	A	B		B	B			D			D	
Approach Delay (s)		10.6			11.3			46.0			36.5	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+Proj(Off) PM Peak

12/22/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	2109	262	50	0	50	110	5113	20	2953	1101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		3.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.93		1.00		1.00	1.00	0.88	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1466		1695		1770	6408	1396	6408	1471
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1466		1695		1770	6408	1396	6408	1471
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2109	262	50	0	50	110	5113	20	2953	1101
RTOR Reduction (vph)	0	95	0	0	0	0	0	6	0	548
Lane Group Flow (vph)	2109	167	0	100	0	110	5113	14	2953	553
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Effective Green, g (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Actuated g/C Ratio	0.20	0.20		0.12		0.05	0.52	0.34	0.43	0.43
Clearance Time (s)	4.0	4.0		4.0		3.5		4.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	687	293		205		89	3326	473	2781	638
v/s Ratio Prot	c0.61			c0.06		0.06	c0.80		0.46	
v/s Ratio Perm		0.11						0.01		0.38
v/c Ratio	3.07	0.57		0.49		1.24	1.54	0.03	1.06	0.87
Uniform Delay, d1	40.0	36.1		41.1		47.5	24.1	22.1	28.3	25.7
Progression Factor	1.00	1.00		1.00		0.91	1.30	0.70	1.00	1.00
Incremental Delay, d2	935.3	2.5		1.8		115.0	241.9	0.0	36.3	11.9
Delay (s)	975.3	38.6		42.9		158.0	273.2	15.4	64.6	37.6
Level of Service	F	D		D		F	F	B	E	D
Approach Delay (s)				42.9			269.8			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	316.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	147.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+Proj(Off) PM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Volume (vph)	0	557	606	1	181	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	557	606	1	181	662
RTOR Reduction (vph)	303	0	0	0	0	0
Lane Group Flow (vph)	254	0	607	0	181	662
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		26.9		8.5	39.4
Effective Green, g (s)	12.6		26.9		8.5	39.4
Actuated g/C Ratio	0.21		0.45		0.14	0.66
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	338		835		251	1223
v/s Ratio Prot	c0.16		c0.33		c0.10	0.36
v/s Ratio Perm						
v/c Ratio	0.75		0.73		0.72	0.54
Uniform Delay, d1	22.2		13.5		24.6	5.5
Progression Factor	1.00		1.00		1.20	1.28
Incremental Delay, d2	9.0		5.5		5.5	0.9
Delay (s)	31.3		19.0		35.1	8.0
Level of Service	C		B		D	A
Approach Delay (s)	31.3		19.0			13.8
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th St

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	232	192	499	190	514	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.88
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1571
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1571
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	232	192	499	190	514	519
RTOR Reduction (vph)	0	140	0	0	0	78
Lane Group Flow (vph)	232	52	499	190	514	441
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	26.9	26.9	29.4	60.8	30.2	59.6
Effective Green, g (s)	26.9	26.9	29.4	60.8	30.2	59.6
Actuated g/C Ratio	0.27	0.27	0.29	0.61	0.30	0.60
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	501	391	520	1133	535	1007
v/s Ratio Prot	c0.12		c0.28	0.10	c0.29	0.13
v/s Ratio Perm		0.04				0.15
v/c Ratio	0.46	0.13	0.96	0.17	0.96	0.44
Uniform Delay, d1	30.5	27.7	34.7	8.6	34.3	11.0
Progression Factor	1.00	1.00	0.68	0.38	0.83	0.21
Incremental Delay, d2	0.7	0.2	20.6	0.2	27.6	0.3
Delay (s)	31.2	27.9	44.4	3.4	56.0	2.7
Level of Service	C	C	D	A	E	A
Approach Delay (s)	29.7			33.1	29.2	
Approach LOS	C			C	C	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: North B Street & 7th Street

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↑	↗	↘	↗	↗	↘	↗	
Volume (vph)	173	330	0	1041	474	308	54	1360	1036	384	943	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539		3433	1863	1437	1770	3539	1496	1770	3430	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539		3433	1863	1437	1770	3539	1496	1770	3430	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	330	0	1041	474	308	54	1360	1036	384	943	80
RTOR Reduction (vph)	0	0	0	0	0	164	0	0	92	0	6	0
Lane Group Flow (vph)	173	330	0	1041	474	144	54	1360	944	384	1017	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	6.0	6.0		25.5	25.5	25.5	6.9	37.6	63.1	13.4	44.1	
Effective Green, g (s)	6.0	6.0		25.5	25.5	25.5	6.9	37.6	63.1	13.4	44.1	
Actuated g/C Ratio	0.06	0.06		0.26	0.26	0.26	0.07	0.38	0.63	0.13	0.44	
Clearance Time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	106	212		875	475	366	122	1331	1011	237	1513	
v/s Ratio Prot	c0.10	0.09		c0.30	0.25		0.03	c0.38	0.24	c0.22	0.30	
v/s Ratio Perm						0.10			0.39			
v/c Ratio	1.63	1.56		1.19	1.00	0.39	0.44	1.02	0.93	1.62	0.67	
Uniform Delay, d1	47.0	47.0		37.2	37.2	30.8	44.7	31.2	16.6	43.3	22.2	
Progression Factor	0.89	0.90		0.79	0.77	0.80	0.97	0.68	0.56	1.00	1.00	
Incremental Delay, d2	318.9	269.9		94.2	35.2	0.5	2.4	29.6	14.2	297.7	2.4	
Delay (s)	360.8	312.3		123.5	63.8	25.2	45.6	50.8	23.4	341.0	24.6	
Level of Service	F	F		F	E	C	D	D	C	F	C	
Approach Delay (s)		329.0			91.4			39.1			111.0	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	94.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	115.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	1341	481	38	350	38	54	2201	1425	18	40	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.99		1.00	0.99			1.00		0.91		
Flpb, ped/bikes	1.00		1.00	1.00			1.00		1.00		
Frt	0.96		1.00	0.99			0.94		0.90		
Flt Protected	1.00		0.95	1.00			1.00		0.99		
Satd. Flow (prot)	3350		1770	1819			6031		1515		
Flt Permitted	1.00		0.15	1.00			1.00		0.99		
Satd. Flow (perm)	3350		287	1819			6031		1515		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1341	481	38	350	38	54	2201	1425	18	40	4
RTOR Reduction (vph)	36	0	0	0	0	0	0	0	3	0	0
Lane Group Flow (vph)	1786	0	38	388	0	0	3680	0	59	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	26.0		26.0	26.0			41.7		13.3		
Effective Green, g (s)	26.0		26.0	26.0			44.7		13.3		
Actuated g/C Ratio	0.26		0.26	0.26			0.45		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	871		75	473			2696		201		
v/s Ratio Prot	c0.53			0.21							
v/s Ratio Perm			0.13				0.61		c0.04		
v/c Ratio	2.05		0.51	0.82			1.91dr		0.30		
Uniform Delay, d1	37.0		31.5	34.8			27.6		39.1		
Progression Factor	0.89		1.12	1.11			0.91		1.00		
Incremental Delay, d2	473.9		10.1	11.4			166.3		1.7		
Delay (s)	506.9		45.5	50.2			191.5		40.8		
Level of Service	F		D	D			F		D		
Approach Delay (s)	506.9			49.8			191.5		40.8		
Approach LOS	F			D			F		D		

Intersection Summary

HCM Average Control Delay	275.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th St

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	153	415	264	1130	847	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3311	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3311	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	415	264	1130	847	193
RTOR Reduction (vph)	0	335	0	0	17	0
Lane Group Flow (vph)	153	80	264	1130	1023	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	19.3	19.1	71.7	48.1	
Effective Green, g (s)	19.3	19.3	19.1	71.7	48.1	
Actuated g/C Ratio	0.19	0.19	0.19	0.72	0.48	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	277	338	2537	1593	
v/s Ratio Prot	c0.09		c0.15	0.32	c0.31	
v/s Ratio Perm		0.06				
v/c Ratio	0.45	0.29	0.78	0.45	0.64	
Uniform Delay, d1	35.6	34.5	38.5	5.9	19.5	
Progression Factor	0.88	1.32	0.79	0.32	0.66	
Incremental Delay, d2	0.9	0.6	7.1	0.3	1.7	
Delay (s)	32.3	46.2	37.5	2.2	14.6	
Level of Service	C	D	D	A	B	
Approach Delay (s)	42.5			8.9	14.6	
Approach LOS	D			A	B	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↘	↘	↑↑	↘	↘↘	↑↑	↘	↘↘	↑↑	↘
Volume (vph)	365	530	497	314	515	102	472	826	390	134	1025	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.93	1.00	1.00	0.92	1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	365	530	497	314	515	102	472	826	390	134	1025	142
RTOR Reduction (vph)	0	0	186	0	0	76	0	0	217	0	0	64
Lane Group Flow (vph)	365	530	311	314	515	26	472	826	173	134	1025	78
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.5	26.5	26.5	13.4	25.4	25.4	10.5	35.9	35.9	6.2	31.6	31.6
Effective Green, g (s)	14.5	26.5	26.5	13.4	25.4	25.4	10.5	35.9	35.9	6.2	31.6	31.6
Actuated g/C Ratio	0.14	0.26	0.26	0.13	0.25	0.25	0.10	0.36	0.36	0.06	0.32	0.32
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	257	938	388	237	899	372	360	1271	522	213	1118	463
v/s Ratio Prot	c0.21	0.15		c0.18	0.15		c0.14	0.23		0.04	c0.29	
v/s Ratio Perm			c0.21			0.02			0.12			0.05
v/c Ratio	1.42	0.57	0.80	1.32	0.57	0.07	1.31	0.65	0.33	0.63	0.92	0.17
Uniform Delay, d1	42.8	31.8	34.3	43.3	32.6	28.3	44.8	26.8	23.3	45.8	32.9	24.7
Progression Factor	1.00	1.00	1.00	0.70	0.61	1.38	1.00	1.00	1.00	0.71	0.91	0.98
Incremental Delay, d2	210.4	0.8	11.3	148.9	0.1	0.0	158.6	2.6	1.7	4.5	10.8	0.6
Delay (s)	253.1	32.6	45.6	179.4	19.9	39.0	203.4	29.4	25.0	37.2	40.8	24.9
Level of Service	F	C	D	F	B	D	F	C	C	D	D	C
Approach Delay (s)		95.1			75.8			77.0			38.7	
Approach LOS		F			E			E			D	

Intersection Summary

HCM Average Control Delay	72.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 20: Big Four Blvd & 7th Street

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	600	478	374	1127	1356	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.93	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3303	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3303	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	478	374	1127	1356	586
RTOR Reduction (vph)	0	206	0	0	46	0
Lane Group Flow (vph)	600	272	374	1127	1896	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	14.5	65.0	46.0	
Effective Green, g (s)	26.0	26.0	14.5	65.0	46.0	
Actuated g/C Ratio	0.26	0.26	0.14	0.65	0.46	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	893	381	257	2300	1519	
v/s Ratio Prot	0.17		c0.21	0.32	c0.57	
v/s Ratio Perm		c0.19				
v/c Ratio	0.67	0.71	1.46	0.49	1.25	
Uniform Delay, d1	33.2	33.6	42.8	9.0	27.0	
Progression Factor	0.71	0.68	0.45	1.12	0.49	
Incremental Delay, d2	1.7	5.4	206.9	0.1	113.6	
Delay (s)	25.4	28.2	225.9	10.2	126.7	
Level of Service	C	C	F	B	F	
Approach Delay (s)	26.7			63.9	126.7	
Approach LOS	C			E	F	

Intersection Summary

HCM Average Control Delay	82.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	152	0	93	46	363	0	1503	118	464	1372	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.91			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.87			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1465			3463			3451	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1465			3463			3451	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	152	0	93	46	363	0	1503	118	464	1372	70
RTOR Reduction (vph)	0	0	0	0	284	0	0	6	0	0	3	0
Lane Group Flow (vph)	190	152	0	93	125	0	0	1615	0	0	1903	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	6.0	17.0		8.0	19.0			23.0			35.0	
Effective Green, g (s)	6.0	17.0		8.0	19.0			23.0			35.0	
Actuated g/C Ratio	0.06	0.17		0.08	0.19			0.23			0.35	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	106	317		142	278			796			1208	
v/s Ratio Prot	c0.11	0.08		0.05	c0.09			c0.47			c0.55	
v/s Ratio Perm												
v/c Ratio	1.79	0.48		0.65	0.45			2.03			1.58	
Uniform Delay, d1	47.0	37.5		44.7	35.9			38.5			32.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.84	
Incremental Delay, d2	391.6	5.1		21.2	5.2			467.3			259.4	
Delay (s)	438.6	42.6		65.8	41.0			505.8			286.6	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		262.6			45.6			505.8			286.6	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	338.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	152.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	108	216	212	436	564	1002	42	815	39	95	1956	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.90	1.00	1.00	0.83	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1832	1425	1770	1863	1321	1770	3484		1770	3514	
Flt Permitted		0.29	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		549	1425	1770	1863	1321	1770	3484		1770	3514	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	216	212	436	564	1002	42	815	39	95	1956	58
RTOR Reduction (vph)	0	0	77	0	0	364	0	3	0	0	2	0
Lane Group Flow (vph)	0	324	135	436	564	638	42	851	0	95	2012	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		31.5	31.5	11.5	47.5	11.5	5.0	32.5		7.0	34.5	
Effective Green, g (s)		31.5	31.5	11.5	47.5	11.5	5.0	32.5		7.0	34.5	
Actuated g/C Ratio		0.32	0.32	0.12	0.48	0.12	0.05	0.32		0.07	0.34	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Grp Cap (vph)		173	449	204	885	152	89	1132		124	1212	
v/s Ratio Prot				0.25	0.30		0.02	0.24		c0.05	c0.57	
v/s Ratio Perm		c0.59	0.09			c0.48						
v/c Ratio		1.87	0.30	2.14	0.64	4.20	0.47	0.75		0.77	1.66	
Uniform Delay, d1		34.2	25.9	44.2	19.8	44.2	46.2	30.1		45.7	32.8	
Progression Factor		0.83	0.55	1.00	1.00	2.28	1.56	1.48		1.00	1.00	
Incremental Delay, d2		403.2	0.8	519.8	1.7	1447.2	1.6	0.4		35.5	300.7	
Delay (s)		431.8	15.2	564.0	21.5	1548.0	73.7	45.1		81.2	333.5	
Level of Service		F	B	F	C	F	E	D		F	F	
Approach Delay (s)		267.0			903.7			46.5			322.1	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	482.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	121.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	278	0	96	98	997	486	310	893	0	0	930	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	278	0	96	98	997	486	310	893	0	0	930	465
RTOR Reduction (vph)	0	0	70	0	0	64	0	0	0	0	0	240
Lane Group Flow (vph)	278	0	26	98	997	422	310	893	0	0	930	225
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	15.0		27.5	15.0	27.0	27.0	16.0	46.5			26.5	26.5
Effective Green, g (s)	15.0		27.5	14.5	27.0	26.5	16.0	46.5			26.0	26.5
Actuated g/C Ratio	0.15		0.28	0.14	0.27	0.26	0.16	0.46			0.26	0.26
Clearance Time (s)	4.0		4.0	3.5	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	266		435	257	956	365	283	866			920	419
v/s Ratio Prot	c0.16			0.06	0.28		0.18	c0.48			0.26	
v/s Ratio Perm			0.02			c0.31						0.14
v/c Ratio	1.05		0.06	0.38	1.04	1.16	1.10	1.03			1.01	0.54
Uniform Delay, d1	42.5		26.7	38.7	36.5	36.8	42.0	26.8			37.0	31.5
Progression Factor	0.91		2.32	0.87	0.85	0.81	0.87	0.79			1.17	1.59
Incremental Delay, d2	29.9		0.0	4.0	40.0	95.5	63.7	28.4			31.2	4.5
Delay (s)	68.4		61.9	37.5	71.0	125.3	100.2	49.4			74.4	54.6
Level of Service	E		E	D	E	F	F	D			E	D
Approach Delay (s)		66.7			85.6			62.5			67.8	
Approach LOS		E			F			E			E	

Intersection Summary

HCM Average Control Delay	72.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	373	324	79	0	0	0	0	642	501	1223	1889	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3200						3085		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3200						3085		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	373	324	79	0	0	0	0	642	501	1223	1889	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	257	505	0	0	0	0	0	1122	0	1223	1889	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.0	15.0						26.5		48.0	78.0	
Effective Green, g (s)	15.0	14.5						26.0		47.5	77.5	
Actuated g/C Ratio	0.15	0.14						0.26		0.48	0.78	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	242	464						802		841	2743	
v/s Ratio Prot	c0.16	0.16						c0.36		c0.69	0.53	
v/s Ratio Perm												
v/c Ratio	1.06	1.09						1.40		1.45	0.69	
Uniform Delay, d1	42.5	42.8						37.0		26.2	5.4	
Progression Factor	1.23	1.23						0.59		0.70	1.59	
Incremental Delay, d2	56.0	55.3						180.0		205.0	0.1	
Delay (s)	108.5	108.0						201.9		223.5	8.8	
Level of Service	F	F						F		F	A	
Approach Delay (s)		108.1			0.0			201.9			93.1	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	120.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	129.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↙	↕↕	
Volume (vph)	881	1026	357	0	0	0	0	0	0	121	804	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		0.98								0.95	1.00	
Satd. Flow (prot)		3345								1770	3539	
Flt Permitted		0.98								0.95	1.00	
Satd. Flow (perm)		3345								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	881	1026	357	0	0	0	0	0	0	121	804	0
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2253	0	0	0	0	0	0	0	121	804	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		28.0								15.0	15.0	
Effective Green, g (s)		27.5								14.5	14.5	
Actuated g/C Ratio		0.55								0.29	0.29	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1840								513	1026	
v/s Ratio Prot		c0.67								0.07	c0.23	
v/s Ratio Perm												
v/c Ratio		1.22								0.24	0.78	
Uniform Delay, d1		11.2								13.5	16.3	
Progression Factor		1.18								1.64	2.15	
Incremental Delay, d2		101.4								0.5	2.7	
Delay (s)		114.7								22.6	37.8	
Level of Service		F								C	D	
Approach Delay (s)		114.7			0.0			0.0			35.8	
Approach LOS		F			A			A			D	
Intersection Summary												
HCM Average Control Delay			91.8		HCM Level of Service					F		
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			95.1%		ICU Level of Service					F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	42	2101	366	275	780	0	0	640	1531
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6187		1770	3539			1655	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6187		1770	3539			1655	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	42	2101	366	275	780	0	0	640	1531
RTOR Reduction (vph)	0	0	0	0	31	0	0	0	0	0	23	23
Lane Group Flow (vph)	0	0	0	0	2478	0	275	780	0	0	1107	1018
Confl. Peds. (#/hr)						36						
Turn Type				Perm			Split					Prot
Protected Phases					4		1	1			2	2
Permitted Phases				4								
Actuated Green, G (s)					31.5		16.5	16.5			41.5	41.5
Effective Green, g (s)					31.0		16.0	16.0			41.0	41.0
Actuated g/C Ratio					0.31		0.16	0.16			0.41	0.41
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1918		283	566			679	617
v/s Ratio Prot							0.16	c0.22			0.67	c0.68
v/s Ratio Perm					0.40							
v/c Ratio					1.29		0.97	1.38			1.63	1.65
Uniform Delay, d1					34.5		41.8	42.0			29.5	29.5
Progression Factor					0.71		0.95	0.94			1.10	1.10
Incremental Delay, d2					134.2		37.3	177.6			288.8	298.0
Delay (s)					158.6		77.0	217.2			321.3	330.5
Level of Service					F		E	F			F	F
Approach Delay (s)		0.0			158.6			180.7			325.7	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	225.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	161.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013+Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	240	2000	0	0	0	0	0	889	506
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4799						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4799						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	240	2000	0	0	0	0	0	889	506
RTOR Reduction (vph)	0	0	0	17	1	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	0	0	199	2023	0	0	0	0	0	889	497
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				56.5	56.5						36.5	36.5
Effective Green, g (s)				56.0	56.0						36.0	36.0
Actuated g/C Ratio				0.56	0.56						0.36	0.36
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				791	2687						1274	921
v/s Ratio Prot											c0.25	
v/s Ratio Perm				0.14	0.42							0.19
v/c Ratio				0.25	0.75						0.70	0.54
Uniform Delay, d1				11.3	16.7						27.4	25.4
Progression Factor				1.00	1.00						0.67	0.68
Incremental Delay, d2				0.8	2.0						2.0	1.4
Delay (s)				12.0	18.7						20.4	18.8
Level of Service				B	B						C	B
Approach Delay (s)		0.0			18.1			0.0			19.8	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 28: J St & 6th Street

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↙↙						↘		↘		
Volume (vph)	618	1605	0	0	0	0	0	228	214	577	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.97		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.97		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4781						1681		1719		
Flt Permitted	0.95	1.00						1.00		0.41		
Satd. Flow (perm)	1431	4781						1681		746		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	618	1605	0	0	0	0	0	228	214	577	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	538	1685	0	0	0	0	0	441	0	577	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	18.5	18.5						24.5		24.5		
Effective Green, g (s)	18.0	18.0						24.0		24.0		
Actuated g/C Ratio	0.36	0.36						0.48		0.48		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	515	1721						807		358		
v/s Ratio Prot								0.26				
v/s Ratio Perm	c0.38	0.35								c0.77		
v/c Ratio	1.04	0.98						0.55		1.61		
Uniform Delay, d1	16.0	15.8						9.2		13.0		
Progression Factor	0.68	0.67						1.00		1.56		
Incremental Delay, d2	41.5	11.8						2.7		276.5		
Delay (s)	52.5	22.4						11.8		296.7		
Level of Service	D	C						B		F		
Approach Delay (s)		29.7			0.0			11.8			296.7	
Approach LOS		C			A			B			F	

Intersection Summary			
HCM Average Control Delay	74.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	161.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 29: J St & 7th Street

2013+Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2062	442	0	0	0	0	0	0	232	945	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4889									4976	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4889									4976	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2062	442	0	0	0	0	0	0	232	945	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2490	0	0	0	0	0	0	0	0	1175	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		25.0									18.0	
Effective Green, g (s)		24.5									17.5	
Actuated g/C Ratio		0.49									0.35	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2396									1742	
v/s Ratio Prot		0.51										
v/s Ratio Perm											0.24	
v/c Ratio		1.04									0.67	
Uniform Delay, d1		12.8									13.8	
Progression Factor		0.47									0.99	
Incremental Delay, d2		19.2									1.7	
Delay (s)		25.2									15.4	
Level of Service		C									B	
Approach Delay (s)		25.2			0.0			0.0			15.4	
Approach LOS		C			A			A			B	
Intersection Summary												
HCM Average Control Delay			22.1		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			80.2%		ICU Level of Service						D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 33: Riverfront Dr & 5th Street

2013+Proj(Off) PM Peak
 12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	52	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		104	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		104	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	93
cM capacity (veh/h)			1623		865	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		14.4%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2013+Proj(Off) PM Peak
 12/27/2006



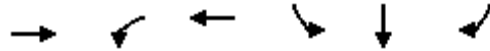
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	52	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		104	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		104	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	93
cM capacity (veh/h)			1623		865	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		14.4%	ICU Level of Service A
Analysis Period (min)		15	

Queues

1: Richard Blvd & I-5 SB Off



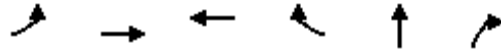
Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	445	360	193	927	927	686
v/c Ratio	0.51	0.50	0.21	1.27	1.27	0.45
Control Delay	30.3	50.2	41.7	164.7	164.7	0.9
Queue Delay	0.7	0.0	0.0	7.1	7.1	0.0
Total Delay	30.9	50.2	41.7	171.8	171.8	0.9
Queue Length 50th (ft)	115	151	145	-954	-954	0
Queue Length 95th (ft)	168	m193	m205	#1215	#1215	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	876	715	932	728	728	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	169	0	0	9	9	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.50	0.21	1.29	1.29	0.45

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

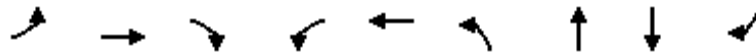
2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	147	1980	488	889	716	705
v/c Ratio	0.59	1.10	0.36	0.33	1.42	1.29
Control Delay	24.2	57.4	14.2	1.0	230.4	176.5
Queue Delay	0.0	37.2	0.3	0.0	480.9	414.4
Total Delay	24.2	94.6	14.5	1.0	711.3	590.9
Queue Length 50th (ft)	78	-878	117	21	-732	-735
Queue Length 95th (ft)	m65	m76	170	11	#982	#986
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	251	1793	1342	2708	503	545
Starvation Cap Reductn	0	128	333	0	0	0
Spillback Cap Reductn	0	47	0	0	234	227
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.19	0.48	0.33	2.66	2.22

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	205	2368	763	26	838	505	79	102	79
v/c Ratio	0.25	1.01	0.72	0.42	0.76	0.86	0.25	0.94	0.47
Control Delay	11.1	23.9	3.3	56.6	44.4	57.0	33.3	129.4	21.6
Queue Delay	0.0	106.9	13.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	130.8	16.7	56.6	44.4	57.0	33.3	129.4	21.6
Queue Length 50th (ft)	42	~1048	95	12	154	191	37	80	0
Queue Length 95th (ft)	m34	m455	m37	m17	154	202	74	#194	50
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	806	2339	1057	153	2708	672	357	108	167
Starvation Cap Reductn	0	466	283	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	14	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	1.26	0.99	0.17	0.31	0.75	0.22	0.94	0.47

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

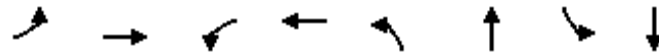
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
4: Richard Blvd & 5th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	289	1797	66	1069	17	286	126	306
v/c Ratio	0.90	0.85	0.64	0.64	0.14	0.65	0.94	0.72
Control Delay	67.0	9.6	59.4	21.1	37.2	47.7	108.5	46.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	67.0	9.6	59.4	21.1	37.2	47.7	108.5	46.9
Queue Length 50th (ft)	199	120	47	272	10	192	92	187
Queue Length 95th (ft)	m191	m118	m55	m334	31	284	#208	288
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	369	2116	103	1664	134	495	150	472
Starvation Cap Reductn	0	0	0	0	0	0	0	19
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.85	0.64	0.64	0.13	0.58	0.84	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	495	1517	604	1177	329	648	525	203	525
v/c Ratio	2.24	1.17	2.27	0.87	0.76	1.42	0.75	1.37	1.72
Control Delay	587.9	105.0	607.9	32.6	53.6	236.5	29.5	245.2	370.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	587.9	105.0	607.9	32.6	53.6	236.5	29.5	245.2	370.0
Queue Length 50th (ft)	~621	~725	~768	363	248	~712	258	~208	~310
Queue Length 95th (ft)	m#763	#860	#982	431	#383	#951	391	#361	#425
Internal Link Dist (ft)		1060		1154		615			370
Turn Bay Length (ft)	200		200		200			200	
Base Capacity (vph)	221	1292	266	1356	434	456	701	148	305
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.24	1.17	2.27	0.87	0.76	1.42	0.75	1.37	1.72

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak

6: Richard Blvd & 10th St

1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1470	195	206	1463	55	38	63	21	28	36
v/c Ratio	0.79	0.67	0.21	0.77	0.65	0.31	0.15	0.23	0.11	0.11	0.15
Control Delay	53.0	13.7	4.1	63.8	18.5	47.1	42.2	11.8	41.5	41.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	13.7	4.1	63.8	18.5	47.1	42.2	11.8	41.5	41.3	13.7
Queue Length 50th (ft)	124	192	13	132	375	36	24	0	13	18	0
Queue Length 95th (ft)	m109	m455	m16	212	292	75	55	38	36	44	29
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	280	2179	944	325	2239	267	380	373	278	380	332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.67	0.21	0.63	0.65	0.21	0.10	0.17	0.08	0.07	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
7: Richard Blvd & Dos Rios St

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	1495	24	1567	81	128
v/c Ratio	0.33	0.64	0.17	0.67	0.21	0.29
Control Delay	10.8	11.8	10.8	13.8	29.1	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	11.8	10.8	13.8	29.1	26.6
Queue Length 50th (ft)	22	639	6	351	39	54
Queue Length 95th (ft)	m3	199	20	424	82	110
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	129	2333	145	2343	386	436
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.64	0.17	0.67	0.21	0.29

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Richard Blvd & 12th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1306	76	40	106	1395	50	3860	1535
v/c Ratio	1.54	0.20	0.21	1.28	0.40	0.09	1.27	1.42
Control Delay	287.2	24.6	44.4	243.4	12.0	7.3	148.9	212.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	287.2	24.6	44.4	243.4	12.0	7.3	148.9	212.8
Queue Length 50th (ft)	~922	27	22	~131	144	0	~1204	~1915
Queue Length 95th (ft)	#1059	73	61	#261	161	28	#1241	#2185
Internal Link Dist (ft)			487		826			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	847	382	216	83	3520	586	3051	1078
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.54	0.20	0.19	1.28	0.40	0.09	1.27	1.42

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: Bannon St & Bercut Dr

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	368	212	601
v/c Ratio	0.25	0.37	0.59	0.39
Control Delay	0.9	11.2	26.7	2.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.9	11.2	26.7	2.0
Queue Length 50th (ft)	0	76	86	51
Queue Length 95th (ft)	0	153	m118	m75
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	859	999	412	1528
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.37	0.51	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	110	182	212	134	177
v/c Ratio	0.10	0.18	0.66	0.15	0.30
Control Delay	11.9	2.8	45.9	1.4	35.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.8	45.9	1.4	35.9
Queue Length 50th (ft)	29	0	61	5	85
Queue Length 95th (ft)	70	34	m155	m12	127
Internal Link Dist (ft)	182		1020	470	
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	1073	906	504	1447	416
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.36	0.15	0.32

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013+Proj(Off) AM Peak
1/9/2007



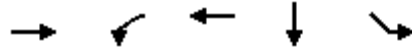
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	134	988	206	533	4	943	328	215	1094
v/c Ratio	0.32	0.20	1.22	0.47	0.80	0.04	0.80	0.33	1.87	0.76
Control Delay	37.2	32.8	139.8	30.3	18.2	66.5	20.5	1.4	450.8	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	32.8	139.8	30.3	18.2	66.5	20.5	1.4	450.8	30.5
Queue Length 50th (ft)	60	34	~404	114	147	3	170	1	~210	308
Queue Length 95th (ft)	90	64	#521	185	#241	m7	#399	0	#356	#518
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	389	768	807	438	667	89	1172	980	115	1445
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.17	1.22	0.47	0.80	0.04	0.80	0.33	1.87	0.76

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	675	20	593	3898	84
v/c Ratio	0.73	0.24	1.21	1.38dr	0.48
Control Delay	49.5	52.6	158.4	137.4	69.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	52.6	158.4	137.4	69.7
Queue Length 50th (ft)	284	16	-706	-1159	75
Queue Length 95th (ft)	359	43	#943	#1195	134
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	923	82	490	3138	192
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.24	1.21	1.24	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	46	210	199	545	563
v/c Ratio	0.14	0.48	0.42	0.21	0.39
Control Delay	32.6	8.6	20.0	1.8	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	8.6	20.0	1.8	19.1
Queue Length 50th (ft)	24	0	112	14	160
Queue Length 95th (ft)	54	58	98	19	168
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	487	547	469	2559	1430
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.38	0.42	0.21	0.39

Intersection Summary

Queues
19: Big Four Blvd & 6th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	389	434	234	245	32	388	560	221	8	553	74
v/c Ratio	0.51	0.44	0.71	0.97	0.29	0.08	0.97	0.34	0.28	0.05	0.49	0.14
Control Delay	47.7	32.5	15.7	75.2	22.8	4.5	82.1	19.6	3.9	45.1	14.6	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	32.5	15.7	75.2	22.8	4.5	82.1	19.6	3.9	45.1	14.6	1.3
Queue Length 50th (ft)	78	105	55	160	50	3	128	119	0	1	105	0
Queue Length 95th (ft)	138	148	168	m#253	m61	m4	#222	192	48	m5	162	1
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	255	991	643	241	1094	475	402	1628	788	172	1122	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.39	0.67	0.97	0.22	0.07	0.97	0.34	0.28	0.05	0.49	0.14

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	404	219	80	819	1506
v/c Ratio	0.47	0.43	0.61	0.35	0.79
Control Delay	19.3	4.2	13.8	4.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	4.2	13.8	4.0	8.9
Queue Length 50th (ft)	38	0	29	2	249
Queue Length 95th (ft)	58	2	m20	m0	m41
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	972	548	136	2339	1903
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.40	0.59	0.35	0.79

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	56	40	55	171	1089	1705
v/c Ratio	0.79	0.12	0.62	0.50	1.48	1.30
Control Delay	108.6	35.6	76.2	39.5	253.4	165.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	108.6	35.6	76.2	39.5	253.4	165.5
Queue Length 50th (ft)	36	22	35	92	-510	-721
Queue Length 95th (ft)	#109	51	#94	159	#642	#863
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	71	335	89	345	737	1316
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.12	0.62	0.50	1.48	1.30

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	236	52	118	264	621	67	1022	127	1480
v/c Ratio	0.94	0.21	0.26	0.55	0.93	0.94	0.85	0.72	1.01
Control Delay	73.3	10.5	26.1	31.9	32.7	83.2	47.4	66.9	55.0
Queue Delay	0.0	1.9	2.0	0.0	6.9	0.0	25.6	0.0	41.9
Total Delay	73.3	12.4	28.1	31.9	39.5	83.2	73.0	66.9	96.9
Queue Length 50th (ft)	114	0	53	153	224	40	316	80	~494
Queue Length 95th (ft)	m#268	m11	m90	m231	m#388	m38	m275	#167	#661
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	251	251	460	484	668	71	1202	177	1469
Starvation Cap Reductn	0	0	0	0	34	0	221	0	0
Spillback Cap Reductn	0	116	230	0	0	0	0	0	145
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.39	0.51	0.55	0.98	0.94	1.04	0.72	1.12

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	63	22	224	540	424	237	714	1014	197
v/c Ratio	0.59	0.07	0.82	0.54	0.80	0.84	0.70	0.84	0.31
Control Delay	68.7	18.3	64.0	28.2	25.6	65.4	17.4	35.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0	5.8	2.5	0.0
Total Delay	68.7	18.3	64.0	28.2	26.2	65.4	23.1	38.0	6.7
Queue Length 50th (ft)	44	3	150	131	98	159	271	335	22
Queue Length 95th (ft)	m52	m4	#273	176	#200	m#204	m311	m357	m51
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	106	303	274	991	528	283	1015	1203	639
Starvation Cap Reductn	0	0	0	0	12	0	242	98	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.07	0.82	0.54	0.82	0.84	0.92	0.92	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	264	533	1117	1057	618
v/c Ratio	1.02	1.04	1.31	1.33	0.23
Control Delay	85.4	77.2	174.3	178.8	1.6
Queue Delay	40.7	19.8	28.9	10.6	0.2
Total Delay	126.2	96.9	203.2	189.4	1.9
Queue Length 50th (ft)	~178	~130	~494	~854	19
Queue Length 95th (ft)	m#297	m#297	m#592	m#884	m19
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	258	511	851	797	2690
Starvation Cap Reductn	0	0	0	14	1273
Spillback Cap Reductn	26	25	40	14	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.14	1.10	1.38	1.35	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2013+Proj(Off) AM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1705	166	845
v/c Ratio	0.92	0.32	0.81
Control Delay	11.5	7.9	22.3
Queue Delay	0.1	0.0	0.0
Total Delay	11.7	7.9	22.3
Queue Length 50th (ft)	220	48	242
Queue Length 95th (ft)	m117	m49	m292
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1850	524	1048
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	7	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	0.32	0.81

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

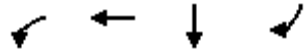
2013+Proj(Off) AM Peak
1/9/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1459	40	804	358	316
v/c Ratio	0.76	0.09	0.91	0.93	0.56
Control Delay	10.3	12.4	20.7	54.1	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	12.4	20.7	54.1	10.1
Queue Length 50th (ft)	52	10	142	143	45
Queue Length 95th (ft)	64	m10	m128	m#348	m114
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	1923	443	885	385	568
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.09	0.91	0.93	0.56

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	245	1116	705	413
v/c Ratio	0.35	0.53	0.50	0.37
Control Delay	6.9	11.3	4.4	2.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.9	11.3	4.4	2.6
Queue Length 50th (ft)	27	85	27	10
Queue Length 95th (ft)	69	118	m31	m11
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	705	2116	1416	1103
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.50	0.37

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	775	2540	73	214
v/c Ratio	1.11	1.08	0.11	0.49
Control Delay	76.1	57.8	11.5	18.9
Queue Delay	0.0	5.4	0.0	5.0
Total Delay	76.1	63.2	11.5	23.9
Queue Length 50th (ft)	~369	~380	14	74
Queue Length 95th (ft)	m#898	#535	35	m76
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	701	2346	638	437
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	27	0	159
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.11	1.10	0.11	0.77

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2875	834
v/c Ratio	0.84	0.78
Control Delay	12.8	36.4
Queue Delay	21.7	0.0
Total Delay	34.5	36.4
Queue Length 50th (ft)	367	194
Queue Length 95th (ft)	m348	234
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	3429	1075
Starvation Cap Reductn	667	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.04	0.78

Intersection Summary

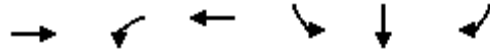
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) PM Peak

1/9/2007

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1059	1032	329	743	746	556
v/c Ratio	1.21	1.03	0.32	1.15	1.15	0.36
Control Delay	135.4	51.1	17.4	120.9	121.2	0.7
Queue Delay	1.8	71.2	3.7	15.1	15.1	0.0
Total Delay	137.3	122.4	21.1	136.0	136.3	0.7
Queue Length 50th (ft)	~424	~455	122	~713	~717	0
Queue Length 95th (ft)	#561	m#468	m124	#963	#966	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	873	1001	1025	644	646	1539
Starvation Cap Reductn	0	144	596	0	0	0
Spillback Cap Reductn	3	0	0	19	19	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.22	1.20	0.77	1.19	1.19	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

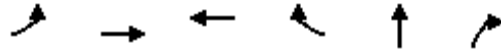
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

2013+Proj(Off) PM Peak
1/9/2007



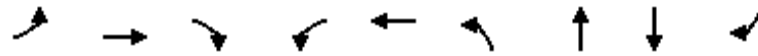
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	425	1468	1263	2798	495	475
v/c Ratio	1.24	0.84	0.98	1.03	0.92	0.71
Control Delay	136.4	4.2	28.4	28.8	53.5	33.0
Queue Delay	0.0	27.2	120.0	0.0	27.8	0.8
Total Delay	136.4	31.5	148.4	28.8	81.2	33.7
Queue Length 50th (ft)	~389	92	288	~1309	288	295
Queue Length 95th (ft)	m#292	m74	m210	m179	#510	433
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	343	1743	1283	2708	540	677
Starvation Cap Reductn	0	270	165	0	0	0
Spillback Cap Reductn	0	345	300	0	68	50
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.24	1.05	1.28	1.03	1.05	0.76

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
3: Richard Blvd & Bercut Dr

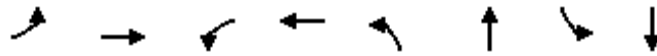
2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	164	1481	686	29	2732	1181	87	191	183
v/c Ratio	1.09	0.80	0.75	0.47	1.22	1.18	0.17	1.25	0.95
Control Delay	115.9	17.4	6.5	24.6	120.9	123.9	23.2	199.5	89.5
Queue Delay	0.0	28.1	1.9	0.0	93.6	7.3	0.0	0.0	7.9
Total Delay	115.9	45.5	8.3	24.6	214.5	131.2	23.2	199.5	97.5
Queue Length 50th (ft)	~90	322	58	9	-943	~555	33	~185	93
Queue Length 95th (ft)	m#151	m436	m100	m12	m#872	#694	m54	#334	#242
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	150	1858	917	62	2238	1001	521	153	192
Starvation Cap Reductn	0	449	110	0	0	14	0	0	0
Spillback Cap Reductn	0	0	0	0	327	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.05	0.85	0.47	1.43	1.20	0.17	1.25	0.99

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	231	1145	231	2265	13	268	99	215
v/c Ratio	1.20	0.65	0.63	1.07	0.10	0.76	1.10	0.62
Control Delay	162.4	4.8	40.0	51.9	42.5	60.1	170.6	47.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.4	4.8	40.0	51.9	42.5	60.1	170.6	47.8
Queue Length 50th (ft)	~225	32	172	~1013	8	196	-87	135
Queue Length 95th (ft)	m#318	m36	m150	m423	28	#316	#202	220
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	192	1762	369	2108	129	354	90	346
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.65	0.63	1.07	0.10	0.76	1.10	0.62

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	1128	332	1560	418	537	800	514	1295
v/c Ratio	1.78	0.96	1.88	1.13	1.07	1.31	1.36	1.52	1.87
Control Delay	417.9	38.7	445.8	94.2	108.4	192.3	196.6	281.5	424.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	417.9	38.7	445.8	94.2	108.4	192.3	196.6	281.5	424.1
Queue Length 50th (ft)	~154	343	~400	~738	~376	~562	~632	~555	~793
Queue Length 95th (ft)	m#254	m#550	#589	#866	#587	#789	#1048	#768	#932
Internal Link Dist (ft)		1060		1154		615			370
Turn Bay Length (ft)	200		200		200			200	
Base Capacity (vph)	74	1174	177	1382	392	411	587	339	693
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.78	0.96	1.88	1.13	1.07	1.31	1.36	1.52	1.87

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richard Blvd & 10th St

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	2027	99	90	1530	115	30	176	71	37	170
v/c Ratio	0.33	0.85	0.10	0.73	0.60	0.57	0.10	0.50	0.33	0.13	0.50
Control Delay	54.8	16.2	4.7	74.6	7.8	56.7	40.7	18.6	47.0	41.3	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	16.2	4.7	74.6	7.8	56.7	40.7	18.6	47.0	41.3	18.2
Queue Length 50th (ft)	19	617	15	69	191	78	19	31	47	23	28
Queue Length 95th (ft)	m16	m426	m11	m#136	212	139	46	97	91	54	92
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	89	2393	1017	133	2570	265	380	424	281	380	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.85	0.10	0.68	0.60	0.43	0.08	0.42	0.25	0.10	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
7: Richard Blvd & Dos Rios St

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	58	2068	7	1454	224	101
v/c Ratio	0.36	0.86	0.11	0.60	0.59	0.25
Control Delay	5.8	11.1	11.4	11.5	44.3	23.4
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	5.8	11.2	11.4	11.5	44.3	23.4
Queue Length 50th (ft)	3	61	2	289	143	36
Queue Length 95th (ft)	m5	79	9	348	230	85
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	163	2403	62	2415	378	403
Starvation Cap Reductn	0	36	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.87	0.11	0.60	0.59	0.25

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Richard Blvd & 12th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	2109	262	100	110	5113	20	2953	1101
v/c Ratio	3.07	0.68	0.44	1.24	1.49	0.04	1.02	0.92
Control Delay	952.7	29.5	44.7	154.1	242.9	12.8	44.2	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	952.7	29.5	44.7	154.1	242.9	12.8	44.2	17.2
Queue Length 50th (ft)	~1214	84	57	~87	~1453	5	~429	31
Queue Length 95th (ft)	#1349	174	107	m#80	m#1305	m5	#499	#775
Internal Link Dist (ft)			371		802			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	687	388	288	89	3430	491	2885	1195
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	3.07	0.68	0.35	1.24	1.49	0.04	1.02	0.92

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Bannon St & Bercut Dr

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	557	607	181	662
v/c Ratio	0.87	0.73	0.72	0.54
Control Delay	23.0	21.8	40.8	9.0
Queue Delay	5.1	7.3	0.0	0.2
Total Delay	28.1	29.1	40.8	9.2
Queue Length 50th (ft)	53	178	74	176
Queue Length 95th (ft)	#209	#355	m106	m231
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	711	837	250	1224
Starvation Cap Reductn	0	0	0	115
Spillback Cap Reductn	101	187	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.93	0.72	0.60

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th St

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	232	192	499	190	514	519
v/c Ratio	0.46	0.36	0.96	0.17	0.96	0.51
Control Delay	34.3	6.5	47.7	3.5	59.3	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	6.5	47.7	3.5	59.3	2.8
Queue Length 50th (ft)	124	0	332	22	347	23
Queue Length 95th (ft)	198	53	m#388	m19	#539	24
Internal Link Dist (ft)	182			1020	470	
Turn Bay Length (ft)		150	150			
Base Capacity (vph)	501	531	522	1133	540	1015
Starvation Cap Reductn	0	0	0	0	0	1
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.36	0.96	0.17	0.95	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013+Proj(Off) PM Peak
1/9/2007



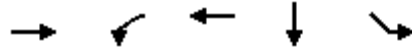
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	173	330	1041	474	308	54	1360	1036	384	1023
v/c Ratio	1.63	1.56	1.19	1.00	0.58	0.38	1.00	0.99	1.74	0.66
Control Delay	349.3	301.3	123.2	66.5	11.6	51.4	45.7	33.6	379.2	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	349.3	301.3	123.2	66.5	11.6	51.4	45.7	33.6	379.2	24.4
Queue Length 50th (ft)	~164	~161	~407	264	45	36	382	325	~365	278
Queue Length 95th (ft)	#296	#248	#535	m#496	m64	m#81	#603	#864	#545	325
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	106	212	875	475	530	141	1363	1047	221	1548
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.63	1.56	1.19	1.00	0.58	0.38	1.00	0.99	1.74	0.66

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	1822	38	388	3680	62
v/c Ratio	2.01	0.51	0.82	1.91dr	0.27
Control Delay	478.0	60.5	53.6	166.7	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	478.0	60.5	53.6	166.7	37.2
Queue Length 50th (ft)	~957	21	223	~990	32
Queue Length 95th (ft)	m#931	m42	m281	#1031	70
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	907	75	473	2791	290
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	2.01	0.51	0.82	1.32	0.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th St

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	153	415	264	1130	1040
v/c Ratio	0.45	0.68	0.78	0.45	0.65
Control Delay	34.8	10.8	40.9	2.4	15.5
Queue Delay	0.0	0.0	0.0	0.5	0.2
Total Delay	34.8	10.8	40.9	2.9	15.7
Queue Length 50th (ft)	72	18	116	12	250
Queue Length 95th (ft)	m118	69	m153	m13	m385
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	434	665	398	2537	1609
Starvation Cap Reductn	0	0	0	833	125
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.62	0.66	0.66	0.70

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	365	530	497	314	515	102	472	826	390	134	1025	142
v/c Ratio	1.42	0.56	0.86	1.33	0.57	0.23	1.31	0.65	0.53	0.63	0.92	0.27
Control Delay	244.2	33.6	32.8	180.1	19.8	8.2	195.7	30.6	7.6	43.9	42.8	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	244.2	33.6	32.8	180.1	19.8	8.2	195.7	30.6	7.6	43.9	42.8	11.7
Queue Length 50th (ft)	~316	149	152	~254	129	14	~200	239	22	45	350	48
Queue Length 95th (ft)	#495	197	#327	m#169	m92	m7	#300	308	102	m67	#492	m84
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	257	1062	617	236	991	484	360	1271	739	213	1119	528
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.50	0.81	1.33	0.52	0.21	1.31	0.65	0.53	0.63	0.92	0.27

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	600	478	374	1127	1942
v/c Ratio	0.67	0.81	1.46	0.49	1.24
Control Delay	27.0	20.2	229.2	10.8	128.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	20.2	229.2	10.8	128.8
Queue Length 50th (ft)	185	166	~309	351	-808
Queue Length 95th (ft)	246	#317	m104	m142	m#768
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	961	611	257	2299	1564
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.78	1.46	0.49	1.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	190	152	93	409	1621	1906
v/c Ratio	1.79	0.48	0.65	0.73	2.02	1.58
Control Delay	421.1	43.3	67.1	15.4	487.2	284.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	421.1	43.3	67.1	15.4	487.2	284.0
Queue Length 50th (ft)	~183	89	59	32	-865	~928
Queue Length 95th (ft)	#320	152	#131	141	#1005	m#782
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	106	317	142	563	803	1210
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.79	0.48	0.65	0.73	2.02	1.58

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	324	212	436	564	1002	42	854	95	2014
v/c Ratio	1.87	0.40	2.14	0.64	1.94	0.47	0.75	0.77	1.66
Control Delay	426.3	8.2	544.4	22.1	447.8	74.5	45.4	82.9	325.9
Queue Delay	0.0	4.8	158.3	19.3	22.6	1.9	11.9	0.0	34.0
Total Delay	426.3	13.0	702.7	41.3	470.4	76.4	57.4	82.9	359.9
Queue Length 50th (ft)	~287	42	~449	303	-996	0	309	61	~998
Queue Length 95th (ft)	m#283	m47	m#496	m310	m#1039	m0	m247	#147	#1139
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	173	526	204	885	516	89	1135	124	1215
Starvation Cap Reductn	0	0	0	320	13	0	267	0	0
Spillback Cap Reductn	0	244	102	127	0	9	0	0	53
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.87	0.75	4.27	1.00	1.99	0.53	0.98	0.77	1.73

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	278	96	98	997	486	310	893	930	465
v/c Ratio	1.05	0.19	0.38	1.04	1.13	1.10	1.03	1.01	0.71
Control Delay	69.5	14.1	38.1	71.9	109.5	100.4	51.4	74.5	22.1
Queue Delay	0.0	0.0	0.0	27.0	0.0	0.0	84.9	0.0	43.4
Total Delay	69.5	14.1	38.1	98.9	109.5	100.4	136.4	74.5	65.5
Queue Length 50th (ft)	~201	26	51	~371	~323	~221	~511	~327	103
Queue Length 95th (ft)	m168	m20	94	#482	#507	m#211	m358	m#364	m150
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	266	505	257	956	429	283	866	920	659
Starvation Cap Reductn	0	0	0	0	0	0	144	0	0
Spillback Cap Reductn	0	0	0	59	0	0	0	0	225
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.19	0.38	1.11	1.13	1.10	1.24	1.01	1.07

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	257	519	1143	1223	1889
v/c Ratio	1.06	1.09	1.39	1.45	0.69
Control Delay	106.1	101.4	198.7	226.6	9.1
Queue Delay	0.0	17.0	69.8	258.0	50.6
Total Delay	106.1	118.3	268.6	484.6	59.7
Queue Length 50th (ft)	~206	~206	~510	~1047	246
Queue Length 95th (ft)	m#202	m#185	m#254	m#351	m133
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	242	478	823	841	2743
Starvation Cap Reductn	0	0	0	48	1036
Spillback Cap Reductn	0	18	83	238	713
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.06	1.13	1.54	2.03	1.11

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	2264	121	804
v/c Ratio	1.22	0.24	0.78
Control Delay	118.6	23.0	38.2
Queue Delay	40.6	0.0	0.0
Total Delay	159.2	23.0	38.2
Queue Length 50th (ft)	~741	68	239
Queue Length 95th (ft)	m247	m74	m241
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1851	513	1026
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	128	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.31	0.24	0.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2013+Proj(Off) PM Peak
1/9/2007



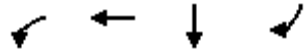
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2509	275	780	1130	1041
v/c Ratio	1.29	0.97	1.38	1.61	1.63
Control Delay	157.2	78.9	210.4	305.4	313.2
Queue Delay	544.2	17.3	0.0	7.3	8.1
Total Delay	701.3	96.2	210.4	312.7	321.3
Queue Length 50th (ft)	~598	160	~343	~1078	~996
Queue Length 95th (ft)	#659	m#229	m#380	m#1330	m#1241
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	1948	283	566	702	640
Starvation Cap Reductn	12	0	0	0	0
Spillback Cap Reductn	1052	18	0	7	7
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	2.80	1.04	1.38	1.63	1.64

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2013+Proj(Off) PM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	216	2024	889	506
v/c Ratio	0.27	0.75	0.70	0.54
Control Delay	10.2	19.0	20.7	18.6
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	10.2	19.0	21.0	18.6
Queue Length 50th (ft)	61	357	175	100
Queue Length 95th (ft)	111	422	m231	m141
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	808	2688	1274	929
Starvation Cap Reductn	0	0	75	0
Spillback Cap Reductn	0	40	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.76	0.74	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	538	1685	442	577
v/c Ratio	1.04	0.98	0.55	1.61
Control Delay	57.3	24.3	12.3	298.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	57.3	24.3	12.3	298.4
Queue Length 50th (ft)	~210	105	83	~424
Queue Length 95th (ft)	m#452	#284	151	m#130
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	515	1722	808	358
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.04	0.98	0.55	1.61

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2504	1177
v/c Ratio	1.04	0.68
Control Delay	28.0	15.5
Queue Delay	0.0	0.0
Total Delay	28.0	15.5
Queue Length 50th (ft)	~305	152
Queue Length 95th (ft)	m99	178
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	2411	1743
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.04	0.68

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Year 2030 Long Term

HCM Signalized Intersection Capacity Analysis

2030 No Proj AM Peak

1: Richards Blvd & I-5 SB Off

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔						↕	↕
Volume (vph)	0	0	0	448	303	0	0	0	0	0	2343	795
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	448	303	0	0	0	0	0	2343	795
RTOR Reduction (vph)	0	0	0	23	0	0	0	0	0	0	0	31
Lane Group Flow (vph)	0	0	0	425	303	0	0	0	0	0	2343	764
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6							4
Permitted Phases												4
Actuated Green, G (s)				18.5	18.5						74.0	74.0
Effective Green, g (s)				17.0	18.0						74.0	74.0
Actuated g/C Ratio				0.17	0.18						0.74	0.74
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				584	637						2619	1039
v/s Ratio Prot				c0.12	0.09						c0.66	
v/s Ratio Perm												0.54
v/c Ratio				0.73	0.48						0.89	0.74
Uniform Delay, d1				39.3	36.8						10.0	7.4
Progression Factor				0.76	0.75						1.00	1.00
Incremental Delay, d2				7.7	2.5						4.7	3.3
Delay (s)				37.4	30.0						14.7	10.7
Level of Service				D	C						B	B
Approach Delay (s)		0.0			34.4			0.0			13.7	
Approach LOS		A			C			A			B	

Intersection Summary

HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richards Blvd & I-5 NB Off

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	676	1218	74	240	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	676	1218	74	240	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	63	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	676	1218	11	240	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					76.5	100.0	16.0	16.0				
Effective Green, g (s)					76.5	100.0	15.5	15.5				
Actuated g/C Ratio					0.76	1.00	0.16	0.16				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3890	2708	274	549				
v/s Ratio Prot					0.13		0.01	0.07				
v/s Ratio Perm						c0.45						
v/c Ratio					0.17	0.45	0.04	0.44				
Uniform Delay, d1					3.2	0.0	35.9	38.3				
Progression Factor					1.43	1.00	0.64	0.87				
Incremental Delay, d2					0.1	0.5	0.1	1.1				
Delay (s)					4.6	0.5	23.1	34.4				
Level of Service					A	A	C	C				
Approach Delay (s)		0.0			2.0			31.7			0.0	
Approach LOS		A			A			C			A	

Intersection Summary

HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Richards Blvd & Bercut Dr

2030 No Proj AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘↘	↑			↑	↗
Volume (vph)	0	0	0	23	1336	65	466	249	0	0	90	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Fr t				1.00	0.99		1.00	1.00			1.00	0.85
Fl t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	6319		3433	1863			1863	1583
Fl t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	6319		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	23	1336	65	466	249	0	0	90	91
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	0	0	23	1396	0	466	249	0	0	90	37
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				61.1	61.1		19.0	30.8			7.8	7.8
Effective Green, g (s)				61.7	61.7		18.5	30.3			7.3	7.3
Actuated g/C Ratio				0.62	0.62		0.18	0.30			0.07	0.07
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				946	3899		635	564			136	116
v/s Ratio Prot					c0.22		c0.14	0.13			c0.05	
v/s Ratio Perm				0.01								0.02
v/c Ratio				0.02	0.36		0.73	0.44			0.66	0.32
Uniform Delay, d1				7.4	9.4		38.4	28.0			45.1	44.0
Progression Factor				0.51	0.43		0.57	0.56			1.00	1.00
Incremental Delay, d2				0.0	0.2		3.9	0.2			9.0	0.6
Delay (s)				3.9	4.3		25.7	15.8			54.1	44.6
Level of Service				A	A		C	B			D	D
Approach Delay (s)		0.0			4.3			22.2			49.3	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 No Proj AM Peak

4: Richards Blvd & 5th Street

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	151	827	27	433	156	0	0	48	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Fr _t				1.00	1.00		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6359		3433	1863			1863	1480
Fl _t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6359		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	151	827	27	433	156	0	0	48	302
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	36
Lane Group Flow (vph)	0	0	0	151	850	0	433	156	0	0	48	266
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				49.5	48.2		17.7	44.0			22.3	22.3
Effective Green, g (s)				48.5	48.5		17.2	43.5			21.8	22.3
Actuated g/C Ratio				0.48	0.48		0.17	0.44			0.22	0.22
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				858	3084		590	810			406	330
v/s Ratio Prot				0.09	c0.13		c0.13	0.08			0.03	
v/s Ratio Perm												c0.18
v/c Ratio				0.18	0.28		0.73	0.19			0.12	0.81
Uniform Delay, d ₁				14.5	15.3		39.2	17.4			31.4	36.8
Progression Factor				0.75	0.82		0.87	0.73			1.00	1.00
Incremental Delay, d ₂				0.0	0.2		3.9	0.0			0.0	12.7
Delay (s)				10.9	12.8		37.9	12.8			31.4	49.5
Level of Service				B	B		D	B			C	D
Approach Delay (s)		0.0			12.5			31.3			47.0	
Approach LOS		A			B			C			D	

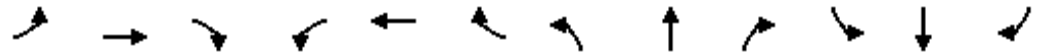
Intersection Summary

HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richards Blvd & 7th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↑↑↑	↗	↖	↑↑			↑↑	↗
Volume (vph)	0	0	0	304	836	177	251	730	0	0	634	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.91	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Fr _t				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	5085	1518	1610	3385			3539	1583
Fl _t Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	5085	1518	1610	3385			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	304	836	177	251	730	0	0	634	302
RTOR Reduction (vph)	0	0	0	0	0	104	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	304	836	73	226	755	0	0	634	302
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				42.1	41.1	41.1	26.4	26.4			21.5	100.0
Effective Green, g (s)				41.1	41.1	41.1	25.9	25.9			21.0	100.0
Actuated g/C Ratio				0.41	0.41	0.41	0.26	0.26			0.21	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				727	2090	624	417	877			743	1583
v/s Ratio Prot				c0.17	0.16		0.14	c0.22			c0.18	
v/s Ratio Perm						0.05						0.19
v/c Ratio				0.42	0.40	0.12	0.54	0.86			0.85	0.19
Uniform Delay, d ₁				20.9	20.8	18.2	31.9	35.3			38.0	0.0
Progression Factor				0.46	0.44	0.29	0.97	0.98			1.00	1.00
Incremental Delay, d ₂				0.1	0.5	0.3	0.7	7.8			9.0	0.3
Delay (s)				9.8	9.7	5.5	31.6	42.5			47.1	0.3
Level of Service				A	A	A	C	D			D	A
Approach Delay (s)		0.0			9.2			40.0			32.0	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑↑	↗
Volume (vph)	0	0	0	211	323	87	1092	34	0	0	24	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.74
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.97		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6204		3433	1863			3539	1176
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6204		3433	1863			3539	1176
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	211	323	87	1092	34	0	0	24	36
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	0	0	211	370	0	1092	34	0	0	24	2
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				43.9	42.9		40.4	49.1			4.7	4.7
Effective Green, g (s)				43.4	43.4		39.9	48.6			4.2	4.2
Actuated g/C Ratio				0.43	0.43		0.40	0.49			0.04	0.04
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				768	2693		1370	905			149	49
v/s Ratio Prot				c0.12	0.06		c0.32	0.02			c0.01	
v/s Ratio Perm												0.00
v/c Ratio				0.27	0.14		0.80	0.04			0.16	0.03
Uniform Delay, d1				18.2	17.0		26.5	13.5			46.2	45.9
Progression Factor				1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.1		3.3	0.0			0.2	0.1
Delay (s)				18.3	17.1		29.8	13.5			46.4	46.0
Level of Service				B	B		C	B			D	D
Approach Delay (s)		0.0			17.5			29.3			46.2	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	488	50	237	1108	199	35	150	64	21	75	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.97			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3490		1770	3381			1751			1739	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.95	
Satd. Flow (perm)	1770	3490		1770	3381			1662			1655	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	488	50	237	1108	199	35	150	64	21	75	67
RTOR Reduction (vph)	0	13	0	0	23	0	0	17	0	0	36	0
Lane Group Flow (vph)	43	525	0	237	1284	0	0	232	0	0	127	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	3.1	13.2		16.5	26.6			21.8			21.8	
Effective Green, g (s)	3.6	13.7		17.0	27.1			21.3			21.3	
Actuated g/C Ratio	0.06	0.21		0.26	0.42			0.33			0.33	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	98	736		463	1410			545			542	
v/s Ratio Prot	0.02	c0.15		0.13	c0.38							
v/s Ratio Perm								c0.14			0.08	
v/c Ratio	0.44	0.71		0.51	0.91			0.42			0.23	
Uniform Delay, d1	29.7	23.8		20.5	17.8			17.1			15.9	
Progression Factor	1.00	1.00		1.00	1.00			0.44			1.00	
Incremental Delay, d2	3.1	2.7		1.0	8.9			2.3			1.0	
Delay (s)	32.8	26.6		21.4	26.7			9.8			16.9	
Level of Service	C	C		C	C			A			B	
Approach Delay (s)		27.0			25.9			9.8			16.9	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 No Proj AM Peak
 12/22/2006

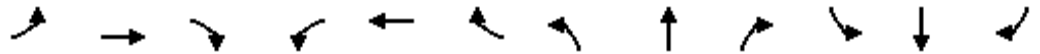


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	628	164	0	0	0	0	0	0	2029	762	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	628	164	0	0	0	0	0	0	2029	762	0
RTOR Reduction (vph)	0	0	99	0	0	0	0	0	0	71	0	0
Lane Group Flow (vph)	0	628	65	0	0	0	0	0	0	1958	762	0
Turn Type		Perm								Split		
Protected Phases		4								2	2	
Permitted Phases			4									
Actuated Green, G (s)		24.1	24.1							66.9	66.9	
Effective Green, g (s)		24.1	24.1							66.9	66.9	
Actuated g/C Ratio		0.24	0.24							0.67	0.67	
Clearance Time (s)		4.5	4.5							4.5	4.5	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		853	382							3338	2368	
v/s Ratio Prot		c0.18								c0.39	0.22	
v/s Ratio Perm			0.04									
v/c Ratio		0.74	0.17							0.59	0.32	
Uniform Delay, d1		35.0	30.0							9.0	7.0	
Progression Factor		1.00	1.00							0.64	0.68	
Incremental Delay, d2		3.3	0.2							0.4	0.2	
Delay (s)		38.4	30.3							6.2	4.9	
Level of Service		D	C							A	A	
Approach Delay (s)		36.7			0.0			0.0			5.8	
Approach LOS		D			A			A			A	

Intersection Summary		
HCM Average Control Delay	12.6	HCM Level of Service
HCM Volume to Capacity ratio	0.63	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	85.0%	9.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		E

HCM Signalized Intersection Capacity Analysis
 10: Bannon St & I-5 NB Off

2030 No Proj AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑↑						↑	↗↗↗			
Volume (vph)	240	2417	0	0	0	0	0	52	1730	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	2417	0	0	0	0	0	52	1730	0	0	0
RTOR Reduction (vph)	101	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	139	2417	0	0	0	0	0	52	1730	0	0	0
Turn Type	Split						Prot					
Protected Phases	2	2						1 4	1 4			
Permitted Phases												
Actuated Green, G (s)	36.2	36.2						55.8	55.8			
Effective Green, g (s)	36.2	36.2						55.8	55.8			
Actuated g/C Ratio	0.36	0.36						0.56	0.56			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	641	2731						1040	2014			
v/s Ratio Prot	0.08	c0.32						0.03	c0.48			
v/s Ratio Perm												
v/c Ratio	0.22	0.89						0.05	0.86			
Uniform Delay, d1	22.1	29.9						10.0	18.8			
Progression Factor	0.62	0.84						1.00	1.00			
Incremental Delay, d2	0.6	3.8						0.0	3.9			
Delay (s)	14.3	29.0						10.1	22.7			
Level of Service	B	C						B	C			
Approach Delay (s)		27.7			0.0			22.3			0.0	
Approach LOS		C			A			C			A	

Intersection Summary

HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
11: Bannon St & Bercut Dr

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	3052	878	0	0	0	0	404	42	146	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00	
Fr _t	1.00	1.00	0.85					0.99		1.00	1.00	
Fl _t Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	6408	1583					3489		3433	1863	
Fl _t Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	6408	1583					3489		3433	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	217	3052	878	0	0	0	0	404	42	146	6	0
RTOR Reduction (vph)	0	0	297	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	217	3052	581	0	0	0	0	443	0	146	6	0
Turn Type	Split		Perm					Prot				
Protected Phases	6	6						8		7	4	
Permitted Phases			6									
Actuated Green, G (s)	66.2	66.2	66.2					16.1		5.7	25.8	
Effective Green, g (s)	66.2	66.2	66.2					16.1		5.7	25.8	
Actuated g/C Ratio	0.66	0.66	0.66					0.16		0.06	0.26	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	1172	4242	1048					562		196	481	
v/s Ratio Prot	0.12	c0.48						c0.13		c0.04	0.00	
v/s Ratio Perm			0.37									
v/c Ratio	0.19	0.72	0.55					0.79		0.74	0.01	
Uniform Delay, d ₁	6.5	10.9	9.0					40.3		46.4	27.6	
Progression Factor	0.70	0.75	0.80					1.00		0.57	0.43	
Incremental Delay, d ₂	0.2	0.5	1.0					7.3		14.1	0.0	
Delay (s)	4.7	8.7	8.2					47.6		40.7	11.8	
Level of Service	A	A	A					D		D	B	
Approach Delay (s)		8.4			0.0			47.6			39.6	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑↑						↑↑	↗	↘	↑↑	
Volume (vph)	524	1713	1009	0	0	0	0	468	124	69	317	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6052						3377	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6052						3377	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	524	1713	1009	0	0	0	0	468	124	69	317	0
RTOR Reduction (vph)	0	100	0	0	0	0	0	2	88	0	0	0
Lane Group Flow (vph)	524	2622	0	0	0	0	0	478	24	69	317	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	53.4	53.4						21.6	21.6	12.0	37.6	
Effective Green, g (s)	53.4	53.4						21.6	21.6	12.0	37.6	
Actuated g/C Ratio	0.53	0.53						0.22	0.22	0.12	0.38	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	945	3232						729	311	212	1331	
v/s Ratio Prot	c0.43						c0.14			c0.04 0.09		
v/s Ratio Perm	0.30						0.02					
v/c Ratio	0.55	1.07dr						0.66	0.08	0.33	0.24	
Uniform Delay, d1	15.4	19.2						35.8	31.3	40.3	21.4	
Progression Factor	0.44	0.38						0.61	0.59	0.87	0.88	
Incremental Delay, d2	0.5	1.1						4.5	0.5	0.9	0.1	
Delay (s)	7.3	8.5						26.4	19.1	36.1	19.0	
Level of Service	A	A						C	B	D	B	
Approach Delay (s)	8.3		0.0				25.0			22.0		
Approach LOS	A		A				C			C		

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: Bannon St & 7th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	539	1311	28	0	0	0	0	234	341	125	750	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	539	1311	28	0	0	0	0	234	341	125	750	0
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	539	1311	11	0	0	0	0	234	341	125	750	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	40.4	40.4	40.4					33.8	100.0	12.3	50.6	
Effective Green, g (s)	40.4	40.4	40.4					33.8	100.0	12.3	50.6	
Actuated g/C Ratio	0.40	0.40	0.40					0.34	1.00	0.12	0.51	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	715	2054	640					1196	1583	218	1791	
v/s Ratio Prot		0.26						0.07		c0.07	c0.21	
v/s Ratio Perm	c0.30		0.01						0.22			
v/c Ratio	0.75	0.64	0.02					0.20	0.22	0.57	0.42	
Uniform Delay, d1	25.5	23.9	17.9					23.5	0.0	41.4	15.5	
Progression Factor	0.35	0.35	0.10					0.93	1.00	1.25	0.31	
Incremental Delay, d2	2.9	0.4	0.0					0.4	0.3	2.8	0.6	
Delay (s)	11.8	8.9	1.7					22.2	0.3	54.4	5.4	
Level of Service	B	A	A					C	A	D	A	
Approach Delay (s)		9.6			0.0			9.2			12.4	
Approach LOS		A			A			A			B	

Intersection Summary

























HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

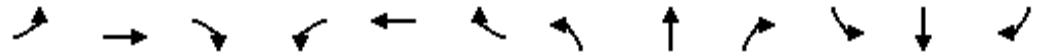
HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 No Proj AM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	46	72	142	195	17	73	487	79	89	872	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.47	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	880	1863	1583	1354	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	103	46	72	142	195	17	73	487	79	89	872	143
RTOR Reduction (vph)	0	0	56	0	0	13	0	0	40	0	0	60
Lane Group Flow (vph)	103	46	16	142	195	4	73	487	39	89	872	83
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	21.6	21.6	21.6	21.6	21.6	21.6	8.3	48.9	48.9	16.5	57.1	57.1
Effective Green, g (s)	21.6	21.6	21.6	21.6	21.6	21.6	8.3	48.9	48.9	16.5	57.1	57.1
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.08	0.49	0.49	0.16	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	190	402	342	292	402	342	147	1731	774	292	2021	904
v/s Ratio Prot		0.02			0.10		c0.04	0.14		0.05	c0.25	
v/s Ratio Perm	c0.12		0.01	0.10		0.00			0.02			0.05
v/c Ratio	0.54	0.11	0.05	0.49	0.49	0.01	0.50	0.28	0.05	0.30	0.43	0.09
Uniform Delay, d1	34.8	31.5	31.0	34.3	34.3	30.8	43.9	15.1	13.4	36.7	12.2	9.7
Progression Factor	1.00	1.00	1.00	1.05	1.05	1.32	0.90	0.61	0.19	1.11	0.59	0.83
Incremental Delay, d2	3.1	0.1	0.1	1.2	0.9	0.0	2.6	0.4	0.1	0.4	0.5	0.1
Delay (s)	37.9	31.6	31.1	37.4	37.1	40.8	42.1	9.7	2.7	41.1	7.7	8.2
Level of Service	D	C	C	D	D	D	D	A	A	D	A	A
Approach Delay (s)		34.4			37.4			12.5			10.5	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM Average Control Delay			17.4				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			58.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 No Proj AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	88	57	89	130	308	80	378	381	0	1040	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00		0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583		3506	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583		3506	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	88	57	89	130	308	80	378	381	0	1040	70
RTOR Reduction (vph)	0	0	49	0	0	248	0	0	106	0	4	0
Lane Group Flow (vph)	39	88	8	89	130	60	80	378	275	0	1106	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov		Prot	
Protected Phases	7	4		3	8		5	2	3		1	6
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.7	14.4	14.4	8.9	19.6	19.6	8.8	63.2	72.1		49.9	
Effective Green, g (s)	3.7	14.4	14.4	8.9	19.6	19.6	8.8	63.2	72.1		49.9	
Actuated g/C Ratio	0.04	0.14	0.14	0.09	0.20	0.20	0.09	0.63	0.72		0.50	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	65	510	228	306	694	310	156	2237	1213		1749	
v/s Ratio Prot	c0.02	0.02		c0.03	0.04		c0.05	0.11	0.02		c0.32	
v/s Ratio Perm			0.01			c0.04			0.15			
v/c Ratio	0.60	0.17	0.04	0.29	0.19	0.19	0.51	0.17	0.23		0.63	
Uniform Delay, d1	47.4	37.6	36.8	42.6	33.6	33.6	43.6	7.6	4.7		18.3	
Progression Factor	0.75	0.66	0.92	1.00	1.00	1.00	0.84	0.78	0.30		0.50	
Incremental Delay, d2	14.5	0.2	0.1	0.5	0.1	0.3	2.8	0.2	0.1		1.7	
Delay (s)	49.9	24.8	34.1	43.1	33.7	33.9	39.5	6.1	1.5		10.9	
Level of Service	D	C	C	D	C	C	D	A	A		B	
Approach Delay (s)		33.0			35.4			7.2			10.9	
Approach LOS		C			D			A			B	

Intersection Summary

HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 No Proj AM Peak
 12/22/2006

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕↕						←←←←	↗
Volume (vph)	1381	107	0	32	269	29	0	0	0	81	4474	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95		1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Frt	1.00	1.00		1.00	0.99						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539		1770	3488						7537	1583
Flt Permitted	0.95	1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539		1770	3488						7537	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1381	107	0	32	269	29	0	0	0	81	4474	383
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	55
Lane Group Flow (vph)	1381	107	0	32	291	0	0	0	0	0	4555	328
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	21.0	21.0		19.8	19.8						70.7	91.7
Effective Green, g (s)	21.0	21.0		19.8	19.8						73.7	91.7
Actuated g/C Ratio	0.16	0.16		0.15	0.15						0.57	0.71
Clearance Time (s)	5.0	5.0		4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0							5.0
Lane Grp Cap (vph)	806	572		270	531						4273	1238
v/s Ratio Prot	c0.28	0.03		0.02	c0.08							0.04
v/s Ratio Perm											0.60	0.16
v/c Ratio	1.71	0.19		0.12	0.55						1.07	0.26
Uniform Delay, d1	54.5	47.1		47.6	51.0						28.1	6.9
Progression Factor	0.84	0.82		1.00	1.00						0.96	2.24
Incremental Delay, d2	325.3	0.3		0.4	2.0						31.9	0.1
Delay (s)	371.1	38.9		48.0	53.0						59.0	15.6
Level of Service	F	D		D	D						E	B
Approach Delay (s)		347.2			52.5			0.0			55.7	
Approach LOS		F			D			A			E	

Intersection Summary			
HCM Average Control Delay	119.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
17: Canal St & 6th Street

2030 No Proj AM Peak
12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	65	204	76	7	20	211	504	0	83	917	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1656		1770	3539		1770	3475	
Flt Permitted	0.74	1.00	1.00	0.71	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1378	1863	1583	1331	1656		1770	3539		1770	3475	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	65	204	76	7	20	211	504	0	83	917	127
RTOR Reduction (vph)	0	0	172	0	17	0	0	0	0	0	9	0
Lane Group Flow (vph)	54	65	32	76	10	0	211	504	0	83	1035	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4				8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	15.6	15.6	15.6	15.6	15.6		17.1	62.3		8.6	53.8	
Effective Green, g (s)	15.6	15.6	15.6	15.6	15.6		17.1	62.3		8.6	53.8	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.17	0.62		0.09	0.54	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	215	291	247	208	258		303	2205		152	1870	
v/s Ratio Prot		0.03			0.01		c0.12	0.14		0.05	c0.30	
v/s Ratio Perm	0.04		0.02	c0.06								
v/c Ratio	0.25	0.22	0.13	0.37	0.04		0.70	0.23		0.55	0.55	
Uniform Delay, d1	37.1	36.9	36.3	37.8	35.8		39.0	8.3		43.8	15.2	
Progression Factor	1.00	1.00	1.00	0.70	0.47		0.92	0.77		1.20	0.45	
Incremental Delay, d2	0.6	0.4	0.2	0.9	0.1		6.5	0.2		3.7	1.1	
Delay (s)	37.7	37.3	36.6	27.3	17.0		42.3	6.6		56.3	8.0	
Level of Service	D	D	D	C	B		D	A		E	A	
Approach Delay (s)		36.9			24.6			17.1			11.6	
Approach LOS		D			C			B			B	

Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	11	46	187	4	5	63	168	0	24	1333	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3523	
Flt Permitted	0.76	1.00	1.00	0.75	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1407	1863	1583	1398	1863	1583	1770	3539		1770	3523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	11	46	187	4	5	63	168	0	24	1333	42
RTOR Reduction (vph)	0	0	37	0	0	4	0	0	0	0	2	0
Lane Group Flow (vph)	229	11	9	187	4	1	63	168	0	24	1373	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	20.1	20.1	20.1	20.1	20.1	20.1	6.0	64.9		2.0	61.4	
Effective Green, g (s)	20.1	20.1	20.1	20.1	20.1	20.1	6.0	64.9		2.0	61.4	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.06	0.65		0.02	0.61	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	283	374	318	281	374	318	106	2297		35	2163	
v/s Ratio Prot		0.01			0.00		c0.04	c0.05		0.01	c0.39	
v/s Ratio Perm	c0.16		0.01	0.13		0.00						
v/c Ratio	0.81	0.03	0.03	0.67	0.01	0.00	0.59	0.07		0.69	0.63	
Uniform Delay, d1	38.1	32.1	32.1	36.8	32.0	31.9	45.8	6.5		48.7	12.2	
Progression Factor	0.60	0.57	0.27	1.00	1.00	1.00	1.47	0.23		1.15	0.28	
Incremental Delay, d2	15.5	0.0	0.0	5.8	0.0	0.0	7.2	0.1		39.9	1.3	
Delay (s)	38.3	18.2	8.6	42.7	32.0	31.9	74.4	1.6		96.0	4.7	
Level of Service	D	B	A	D	C	C	E	A		F	A	
Approach Delay (s)		32.8			42.2			21.4			6.3	
Approach LOS		C			D			C			A	

Intersection Summary

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

























2030 No Proj AM Peak
 12/22/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	349	549	788	321	64	402	443	537	366	748	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.93	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	349	549	788	321	64	402	443	537	366	748	63
RTOR Reduction (vph)	0	139	175	0	0	40	0	0	364	0	0	41
Lane Group Flow (vph)	151	479	105	394	715	24	402	443	173	366	748	22
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	19.9	19.9	19.9	23.6	23.6	23.6	12.0	29.0	29.0	9.5	26.5	26.5
Effective Green, g (s)	19.9	19.9	19.9	23.6	23.6	23.6	12.0	29.0	29.0	9.5	26.5	26.5
Actuated g/C Ratio	0.20	0.20	0.20	0.24	0.24	0.24	0.12	0.29	0.29	0.10	0.26	0.26
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	352	631	287	380	779	374	412	1026	459	326	938	419
v/s Ratio Prot	0.09	c0.15		c0.24	0.22		c0.12	0.13		c0.11	c0.21	
v/s Ratio Perm			0.07			0.01			0.11			0.01
v/c Ratio	0.43	0.76	0.37	1.04	0.99dl	0.06	0.98	0.43	0.38	1.12	0.80	0.05
Uniform Delay, d1	35.1	37.8	34.6	38.2	37.3	29.6	43.9	28.8	28.3	45.2	34.2	27.4
Progression Factor	1.00	1.00	1.00	0.21	0.20	0.04	1.00	1.00	1.00	0.85	1.01	1.19
Incremental Delay, d2	0.8	5.2	0.8	33.8	5.1	0.0	37.6	1.3	2.4	84.0	6.1	0.2
Delay (s)	35.9	43.0	35.4	41.7	12.7	1.2	81.5	30.1	30.7	122.3	40.9	32.9
Level of Service	D	D	D	D	B	A	F	C	C	F	D	C
Approach Delay (s)		40.0			21.8			45.3			65.8	
Approach LOS		D			C			D			E	

Intersection Summary		
HCM Average Control Delay	43.4	HCM Level of Service D
HCM Volume to Capacity ratio	0.90	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 18.0
Intersection Capacity Utilization	84.5%	ICU Level of Service E
Analysis Period (min)	15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.		
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 No Proj AM Peak
12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	453	647	66	879	807	0	147	172	405	15	1279	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	453	647	66	879	807	0	147	172	405	15	1279	182
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	257	0	0	70
Lane Group Flow (vph)	453	647	18	879	807	0	147	172	148	15	1279	112
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	18.0	18.0	18.0	19.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Effective Green, g (s)	18.0	18.0	18.0	19.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Actuated g/C Ratio	0.18	0.18	0.18	0.19	0.19		0.07	0.36	0.36	0.02	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	618	637	285	652	672		254	1292	578	35	1101	492
v/s Ratio Prot	0.13	c0.18		c0.26	0.23		c0.04	0.05		0.01	c0.36	
v/s Ratio Perm			0.01						0.09			0.07
v/c Ratio	0.73	1.02	0.06	1.35	1.20		0.58	0.13	0.26	0.43	1.16	0.23
Uniform Delay, d1	38.7	41.0	34.0	40.5	40.5		44.8	21.2	22.2	48.4	34.4	25.5
Progression Factor	0.94	0.94	1.10	1.00	1.00		1.00	1.00	1.00	1.18	0.71	0.41
Incremental Delay, d2	2.5	30.2	0.0	166.7	104.3		3.2	0.2	1.1	6.6	81.2	0.9
Delay (s)	38.7	68.8	37.6	207.2	144.8		48.0	21.4	23.3	63.9	105.8	11.4
Level of Service	D	E	D	F	F		D	C	C	E	F	B
Approach Delay (s)		55.4			177.3			27.9			93.7	
Approach LOS		E			F			C			F	

Intersection Summary

HCM Average Control Delay	103.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Volume (vph)	74	51	0	56	174	59	25	272	35	684	1298	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	1.00		1.00	0.96			0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1792			3470			3421	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1792			3470			3421	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	74	51	0	56	174	59	25	272	35	684	1298	284
RTOR Reduction (vph)	0	0	0	0	8	0	0	6	0	0	7	0
Lane Group Flow (vph)	74	51	0	56	225	0	0	326	0	0	2259	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	5.1	19.0		5.1	19.0			15.9			94.0	
Effective Green, g (s)	5.1	19.0		5.1	19.0			15.9			94.0	
Actuated g/C Ratio	0.03	0.13		0.03	0.13			0.11			0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	60	236		60	227			368			2144	
v/s Ratio Prot	c0.04	0.03		0.03	c0.13			c0.09			c0.66	
v/s Ratio Perm												
v/c Ratio	1.23	0.22		0.93	0.99			0.89			1.05	
Uniform Delay, d1	72.4	58.8		72.3	65.4			66.1			28.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	191.8	0.5		91.8	57.2			21.5			35.4	
Delay (s)	264.3	59.3		164.1	122.6			87.7			63.4	
Level of Service	F	E		F	F			F			E	
Approach Delay (s)		180.6			130.7			87.7			63.4	
Approach LOS		F			F			F			E	

Intersection Summary

HCM Average Control Delay	77.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	38	168	118	587	456	572	94	1656	105	421	1241	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1846	1583	1770	1863	1583	1770	3508		1770	3473	
Flt Permitted		0.43	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		797	1583	1770	1863	1583	1770	3508		1770	3473	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	168	118	587	456	572	94	1656	105	421	1241	178
RTOR Reduction (vph)	0	0	84	0	0	136	0	5	0	0	11	0
Lane Group Flow (vph)	0	206	34	587	456	436	94	1756	0	421	1408	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		21.0	21.0	17.0	42.0	42.0	5.0	33.0		13.0	41.0	
Effective Green, g (s)		21.0	21.0	17.0	42.0	42.0	5.0	33.0		13.0	41.0	
Actuated g/C Ratio		0.21	0.21	0.17	0.42	0.42	0.05	0.33		0.13	0.41	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		167	332	301	782	665	89	1158		230	1424	
v/s Ratio Prot				c0.33	0.24		0.05	c0.50		c0.24	0.41	
v/s Ratio Perm		c0.26	0.02			0.28						
v/c Ratio		1.23	0.10	1.95	0.58	0.66	1.06	1.52		1.83	0.99	
Uniform Delay, d1		39.5	31.9	41.5	22.3	23.2	47.5	33.5		43.5	29.3	
Progression Factor		0.69	0.49	0.68	0.51	0.32	1.02	1.42		1.00	1.00	
Incremental Delay, d2		137.0	0.5	434.8	1.9	3.0	44.7	232.9		390.2	21.3	
Delay (s)		164.5	16.0	463.0	13.3	10.4	93.2	280.5		433.7	50.6	
Level of Service		F	B	F	B	B	F	F		F	D	
Approach Delay (s)		110.4			175.7			271.0			138.2	
Approach LOS		F			F			F			F	

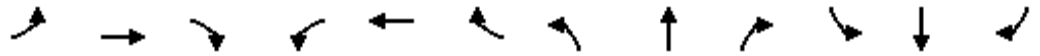
Intersection Summary

HCM Average Control Delay	191.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	129.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 23: G Street & 7th Street

2030 No Proj AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↖	↖	↕	↖	↖	↕			↕	↖
Volume (vph)	91	0	257	394	923	311	14	48	0	0	860	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	0	257	394	923	311	14	48	0	0	860	719
RTOR Reduction (vph)	0	0	129	0	0	204	0	0	0	0	0	129
Lane Group Flow (vph)	91	0	128	394	923	107	14	48	0	0	860	590
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					custom
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0		18.0	25.0	35.0	35.0	5.0	45.5			36.5	45.5
Effective Green, g (s)	8.0		18.0	24.5	35.0	34.5	5.0	45.5			36.0	45.5
Actuated g/C Ratio	0.08		0.18	0.24	0.35	0.34	0.05	0.46			0.36	0.46
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	142		285	434	1239	487	89	848			1274	720
v/s Ratio Prot	0.05			c0.22	c0.26		0.01	0.03			0.24	
v/s Ratio Perm			0.08			0.08						c0.37
v/c Ratio	0.64		0.45	0.91	0.74	0.22	0.16	0.06			0.68	0.82
Uniform Delay, d1	44.6		36.6	36.7	28.6	23.2	45.5	15.2			27.1	23.7
Progression Factor	0.99		0.36	0.98	0.87	1.19	0.80	0.54			1.00	1.00
Incremental Delay, d2	2.0		0.5	18.1	2.6	0.7	1.5	0.1			2.9	10.1
Delay (s)	46.4		13.5	54.1	27.6	28.3	37.7	8.3			29.9	33.8
Level of Service	D		B	D	C	C	D	A			C	C
Approach Delay (s)		22.1			34.1			14.9			31.7	
Approach LOS		C			C			B			C	

Intersection Summary		
HCM Average Control Delay	31.6	HCM Level of Service C
HCM Volume to Capacity ratio	0.84	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	56	67	0	0	0	0	1246	525	617	1351	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98						0.95		1.00	1.00	
Flpb, ped/bikes	0.87	0.90						1.00		1.00	1.00	
Frt	1.00	0.98						0.96		1.00	1.00	
Flt Protected	0.95	0.96						1.00		0.95	1.00	
Satd. Flow (prot)	1406	2840						3207		1770	3539	
Flt Permitted	0.95	0.96						1.00		0.95	1.00	
Satd. Flow (perm)	1406	2840						3207		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	828	56	67	0	0	0	0	1246	525	617	1351	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	46	0	0	0	0
Lane Group Flow (vph)	414	527	0	0	0	0	0	1725	0	617	1351	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)	26.5	26.5						33.5		29.5	66.5	
Effective Green, g (s)	26.5	26.0						33.0		29.0	66.0	
Actuated g/C Ratio	0.26	0.26						0.33		0.29	0.66	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	373	738						1058		513	2336	
v/s Ratio Prot								c0.54		c0.35	0.38	
v/s Ratio Perm	c0.29	0.19										
v/c Ratio	1.11	1.04dl						1.63		1.20	0.58	
Uniform Delay, d1	36.8	33.6						33.5		35.5	9.3	
Progression Factor	0.64	0.62						0.96		1.14	0.11	
Incremental Delay, d2	53.5	0.5						284.0		93.1	0.1	
Delay (s)	77.0	21.5						316.2		133.7	1.1	
Level of Service	E	C						F		F	A	
Approach Delay (s)		45.7			0.0			316.2			42.7	
Approach LOS		D			A			F			D	

Intersection Summary

HCM Average Control Delay	146.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	119	1170	185	0	0	0	0	0	0	512	859	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		3417								1770	3539	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		3417								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	1170	185	0	0	0	0	0	0	512	859	0
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1463	0	0	0	0	0	0	0	512	859	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		47.7								37.3	37.3	
Effective Green, g (s)		47.2								36.8	36.8	
Actuated g/C Ratio		0.47								0.37	0.37	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1613								651	1302	
v/s Ratio Prot		c0.43								c0.29	0.24	
v/s Ratio Perm												
v/c Ratio		0.91								0.79	0.66	
Uniform Delay, d1		24.4								28.1	26.4	
Progression Factor		0.87								0.70	0.67	
Incremental Delay, d2		1.0								6.4	1.8	
Delay (s)		22.2								26.1	19.6	
Level of Service		C								C	B	
Approach Delay (s)		22.2			0.0			0.0			22.0	
Approach LOS		C			A			A			C	

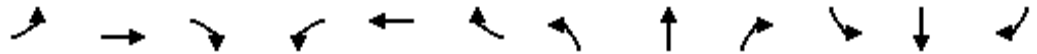
Intersection Summary

HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2030 No Proj AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	120	1143	616	54	1240	0	0	309	1104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.95		1.00	1.00			0.91	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					5984		1610	3390			1617	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					5984		1610	3390			1617	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	120	1143	616	54	1240	0	0	309	1104
RTOR Reduction (vph)	0	0	0	0	176	0	0	0	0	0	98	444
Lane Group Flow (vph)	0	0	0	0	1703	0	49	1245	0	0	631	240
Confl. Peds. (#/hr)						36						
Turn Type				Perm		custom					custom	
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					15.0		18.5	18.5			6.0	6.0
Effective Green, g (s)					14.5		18.0	18.0			5.5	5.5
Actuated g/C Ratio					0.29		0.36	0.36			0.11	0.11
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1735		580	1220			178	165
v/s Ratio Prot							0.03	c0.37			c0.39	0.16
v/s Ratio Perm					0.28							
v/c Ratio					0.98		0.08	1.02			3.55	1.45
Uniform Delay, d1					17.6		10.6	16.0			22.3	22.3
Progression Factor					0.88		0.83	1.20			2.02	5.11
Incremental Delay, d2					15.3		0.1	23.6			1156.9	229.6
Delay (s)					30.8		9.0	42.7			1201.8	343.3
Level of Service					C		A	D			F	F
Approach Delay (s)		0.0			30.8			41.4			786.2	
Approach LOS		A			C			D			F	

Intersection Summary			
HCM Average Control Delay	266.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	143.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	298	1685	0	0	0	0	0	883	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.93
Flpb, ped/bikes				0.94	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1435	4797						5085	1476
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1435	4797						5085	1476
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	298	1685	0	0	0	0	0	883	191
RTOR Reduction (vph)	0	0	0	38	2	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	230	1713	0	0	0	0	0	883	153
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				56.5	56.5						30.5	30.5
Effective Green, g (s)				56.0	56.0						30.0	30.0
Actuated g/C Ratio				0.56	0.56						0.30	0.30
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				804	2686						1526	443
v/s Ratio Prot											c0.17	
v/s Ratio Perm				0.16	0.36							0.10
v/c Ratio				0.29	0.64						0.58	0.34
Uniform Delay, d1				11.5	15.1						29.6	27.3
Progression Factor				1.00	1.00						0.52	0.33
Incremental Delay, d2				0.9	1.2						1.2	1.5
Delay (s)				12.4	16.2						16.6	10.4
Level of Service				B	B						B	B
Approach Delay (s)		0.0			15.7			0.0			15.5	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 6 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	1332	2299	0	0	0	0	0	58	29	199	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.89	0.98						1.00		0.90		
Frt	1.00	1.00						0.96		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1349	4677						1706		1592		
Flt Permitted	0.95	0.99						1.00		0.70		
Satd. Flow (perm)	1349	4677						1706		1170		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1332	2299	0	0	0	0	0	58	29	199	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	879	2752	0	0	0	0	0	76	0	199	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						4 8					
Actuated Green, G (s)	72.5						20.5 20.5					
Effective Green, g (s)	72.0						20.0 20.0					
Actuated g/C Ratio	0.72						0.20 0.20					
Clearance Time (s)	3.5						3.5 3.5					
Lane Grp Cap (vph)	971		3367				341		234			
v/s Ratio Prot							0.04					
v/s Ratio Perm	c0.65		0.59						c0.17			
v/c Ratio	0.91		0.82				0.22		0.85			
Uniform Delay, d1	11.3		9.5				33.5		38.6			
Progression Factor	0.27		0.24				1.00		1.27			
Incremental Delay, d2	1.5		0.2				1.5		3.7			
Delay (s)	4.6		2.5				35.0		52.7			
Level of Service	A		A				C		D			
Approach Delay (s)			3.0		0.0		35.0				52.7	
Approach LOS			A		A		C				D	

Intersection Summary

HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	143.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2338	480	0	0	0	0	0	0	274	759	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.91	1.00								0.91	
Frbp, ped/bikes		1.00	0.84								1.00	
Flpb, ped/bikes		1.00	1.00								0.97	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5085	1325								4850	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5085	1325								4850	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2338	480	0	0	0	0	0	0	274	759	0
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	2338	467	0	0	0	0	0	0	0	1029	0
Confl. Peds. (#/hr)			72							72		
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1							2		
Actuated Green, G (s)		62.5	62.5								30.5	
Effective Green, g (s)		62.0	62.5								30.0	
Actuated g/C Ratio		0.62	0.62								0.30	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		3153	828								1455	
v/s Ratio Prot		0.46										
v/s Ratio Perm			0.35								0.21	
v/c Ratio		0.74	0.56								0.71	
Uniform Delay, d1		13.4	10.9								31.1	
Progression Factor		0.63	0.62								0.65	
Incremental Delay, d2		1.1	1.9								2.5	
Delay (s)		9.5	8.6								22.8	
Level of Service		A	A								C	
Approach Delay (s)		9.3			0.0			0.0			22.8	
Approach LOS		A			A			A			C	

Intersection Summary

HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1155	186	0	2	0	0	276	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.98	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6275			1863			1833	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6275			1863			1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1155	186	0	2	0	0	276	37
RTOR Reduction (vph)	0	0	0	0	44	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	0	0	0	1297	0	0	2	0	0	306	0
Turn Type				Prot				Perm				
Protected Phases				2				4			8	
Permitted Phases					2			4				
Actuated Green, G (s)					28.5			27.5			27.5	
Effective Green, g (s)					28.5			27.5			27.5	
Actuated g/C Ratio					0.44			0.42			0.42	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2751			788			776	
v/s Ratio Prot								0.00			c0.17	
v/s Ratio Perm					c0.21							
v/c Ratio					0.47			0.00			0.39	
Uniform Delay, d1					12.9			10.8			13.0	
Progression Factor					0.63			1.00			0.42	
Incremental Delay, d2					0.4			0.0			1.4	
Delay (s)					8.6			10.8			6.9	
Level of Service					A			B			A	
Approach Delay (s)		0.0			8.6			10.8			6.9	
Approach LOS		A			A			B			A	

Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 31: Richards Blvd & 12th Street

2030 No Proj AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	47	630	89	0	2167	0	0	4372	711
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00		0.91			0.81	1.00
Fr _t				1.00	1.00	0.85		1.00			1.00	0.85
Fl _t Protected				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583		5085			7544	1583
Fl _t Permitted				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583		5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	47	630	89	0	2167	0	0	4372	711
RTOR Reduction (vph)	0	0	0	0	0	47	0	0	0	0	0	83
Lane Group Flow (vph)	0	0	0	47	630	42	0	2167	0	0	4372	628
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				33.0	33.0	33.0		89.0			89.0	89.0
Effective Green, g (s)				33.0	33.0	33.0		89.0			89.0	89.0
Actuated g/C Ratio				0.25	0.25	0.25		0.68			0.68	0.68
Clearance Time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)				449	898	402		3481			5165	1084
v/s Ratio Prot					c0.18			0.43			c0.58	
v/s Ratio Perm				0.03		0.03						0.40
v/c Ratio				0.10	0.70	0.10		0.62			0.85	0.58
Uniform Delay, d ₁				37.2	44.0	37.2		11.3			15.4	10.7
Progression Factor				1.00	1.00	1.00		0.34			1.00	1.00
Incremental Delay, d ₂				0.5	4.6	0.5		0.7			1.9	2.3
Delay (s)				37.6	48.6	37.7		4.5			17.2	13.0
Level of Service				D	D	D		A			B	B
Approach Delay (s)		0.0			46.7			4.5			16.6	
Approach LOS		A			D			A			B	

Intersection Summary

HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Bannon St & 12th Street

2030 No Proj AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔↔	↑	↔					↔↔↔	↔	↔	↑↑↑↑	
Volume (vph)	720	30	549	0	0	0	0	1449	1	32	4388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	720	30	549	0	0	0	0	1449	1	32	4388	0
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	720	30	507	0	0	0	0	1449	0	32	4388	0
Turn Type	custom		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	39.7	39.7	39.7					64.8	64.8	12.5	81.8	
Effective Green, g (s)	39.7	39.7	39.7					64.8	64.8	12.5	81.8	
Actuated g/C Ratio	0.31	0.31	0.31					0.50	0.50	0.10	0.63	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1524	569	483					2535	789	170	4747	
v/s Ratio Prot	0.14	0.02						0.28		0.02	c0.58	
v/s Ratio Perm			c0.32						0.00			
v/c Ratio	0.47	0.05	1.05					0.57	0.00	0.19	0.92	
Uniform Delay, d1	36.6	31.9	45.2					22.9	16.4	54.1	21.4	
Progression Factor	1.00	1.00	1.00					0.35	0.00	0.68	0.30	
Incremental Delay, d2	0.2	0.0	54.8					0.1	0.0	0.3	2.2	
Delay (s)	36.9	31.9	100.0					8.2	0.0	36.9	8.8	
Level of Service	D	C	F					A	A	D	A	
Approach Delay (s)		63.4			0.0			8.2			9.0	
Approach LOS		E			A			A			A	

Intersection Summary

HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 33: Riverside Drive & 5th Street

2030 No Proj AM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverside Dr & 7th Street

2030 No Proj AM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↗
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 35: New St "A" & 7th Street

2030 No Proj AM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	468	5	10	454	5	5
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	468	5	10	454	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	252	237			464	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	252	237			464	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	36	99			100	
cM capacity (veh/h)	733	802			1097	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	473	464	10
Volume Left	468	0	5
Volume Right	5	454	0
cSH	734	1700	1097
Volume to Capacity	0.64	0.27	0.00
Queue Length 95th (ft)	119	0	0
Control Delay (s)	18.4	0.0	4.2
Lane LOS	C		A
Approach Delay (s)	18.4	0.0	4.2
Approach LOS	C		

Intersection Summary			
Average Delay		9.2	
Intersection Capacity Utilization		61.5%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 36: Signature St & 7th Street

2030 No Proj AM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	468	15	454	454	5	468
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	468	15	454	454	5	468
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			428			
pX, platoon unblocked	0.74	0.74			0.74	
vC, conflicting volume	1159	681			908	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1039	392			699	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	97			99	
cM capacity (veh/h)	187	485			663	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	483	908	473
Volume Left	468	0	5
Volume Right	15	454	0
cSH	191	1700	663
Volume to Capacity	2.53	0.53	0.01
Queue Length 95th (ft)	1023	0	1
Control Delay (s)	741.1	0.0	0.2
Lane LOS	F		A
Approach Delay (s)	741.1	0.0	0.2
Approach LOS	F		

Intersection Summary			
Average Delay		192.1	
Intersection Capacity Utilization		85.2%	ICU Level of Service E
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

2030 No Proj PM Peak

1: Richards Blvd & I-5 SB Off

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖↗	↖↗						↖↗	↖↗
Volume (vph)	0	0	0	1140	440	0	0	0	0	0	1534	851
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	1140	440	0	0	0	0	0	1534	851
RTOR Reduction (vph)	0	0	0	34	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	0	0	1106	440	0	0	0	0	0	1534	754
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6						4	
Permitted Phases												4
Actuated Green, G (s)				36.5	36.5						56.0	56.0
Effective Green, g (s)				35.0	36.0						56.0	56.0
Actuated g/C Ratio				0.35	0.36						0.56	0.56
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				1202	1274						1982	786
v/s Ratio Prot				c0.32	0.12						0.43	
v/s Ratio Perm												c0.54
v/c Ratio				0.92	0.35						0.77	0.96
Uniform Delay, d1				31.2	23.4						17.1	20.9
Progression Factor				0.58	0.52						1.00	1.00
Incremental Delay, d2				12.0	0.7						2.3	22.8
Delay (s)				29.9	12.9						19.4	43.7
Level of Service				C	B						B	D
Approach Delay (s)		0.0			25.2			0.0			28.0	
Approach LOS		A			C			A			C	

Intersection Summary

HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: Richards Blvd & I-5 NB Off

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	1481	2881	98	602	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1481	2881	98	602	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	21	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1481	2881	77	602	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					65.9	100.0	26.6	26.6				
Effective Green, g (s)					65.9	100.0	26.1	26.1				
Actuated g/C Ratio					0.66	1.00	0.26	0.26				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3351	2708	462	924				
v/s Ratio Prot					0.29		0.04	0.17				
v/s Ratio Perm						c1.06						
v/c Ratio					0.44	1.06	0.17	0.65				
Uniform Delay, d1					8.2	50.0	28.5	32.9				
Progression Factor					0.59	1.00	0.60	0.70				
Incremental Delay, d2					0.0	29.7	0.3	1.9				
Delay (s)					4.8	79.7	17.5	24.9				
Level of Service					A	E	B	C				
Approach Delay (s)		0.0			54.3			23.8			0.0	
Approach LOS		A			D			C			A	

Intersection Summary

HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Richards Blvd & Bercut Dr

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	13	3321	39	828	221	0	0	215	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	6386		3433	1863			1863	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	6386		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	13	3321	39	828	221	0	0	215	213
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	13	3359	0	828	221	0	0	215	211
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				50.9	50.9		23.0	41.0			14.0	14.0
Effective Green, g (s)				51.5	51.5		22.5	40.5			13.5	13.5
Actuated g/C Ratio				0.52	0.52		0.22	0.40			0.14	0.14
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				790	3289		772	755			252	214
v/s Ratio Prot					c0.53		c0.24	0.12			0.12	
v/s Ratio Perm				0.01								c0.13
v/c Ratio				0.02	1.02		1.07	0.29			0.85	0.99
Uniform Delay, d1				11.9	24.2		38.8	20.1			42.3	43.2
Progression Factor				0.36	0.41		0.44	0.29			1.00	1.00
Incremental Delay, d2				0.0	15.7		49.5	0.1			22.6	57.2
Delay (s)				4.3	25.6		66.7	5.8			64.9	100.4
Level of Service				A	C		E	A			E	F
Approach Delay (s)		0.0			25.5			53.9			82.5	
Approach LOS		A			C			D			F	

Intersection Summary

HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 No Proj PM Peak

4: Richards Blvd & 5th Street

1/9/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑	↘
Volume (vph)	0	0	0	194	2318	31	963	202	0	0	42	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6388		3433	1863			1863	1480
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6388		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	194	2318	31	963	202	0	0	42	209
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	194	2347	0	963	202	0	0	42	206
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				40.3	39.0		30.8	53.2			18.4	18.4
Effective Green, g (s)				39.3	39.3		30.3	52.7			17.9	18.4
Actuated g/C Ratio				0.39	0.39		0.30	0.53			0.18	0.18
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				696	2510		1040	982			333	272
v/s Ratio Prot				0.11	c0.37		c0.28	0.11			0.02	
v/s Ratio Perm												c0.14
v/c Ratio				0.28	0.94		0.93	0.21			0.13	0.76
Uniform Delay, d1				20.7	29.1		33.8	12.5			34.5	38.7
Progression Factor				0.60	0.71		0.74	0.36			1.00	1.00
Incremental Delay, d2				0.1	6.6		7.7	0.0			0.1	10.2
Delay (s)				12.4	27.3		32.7	4.6			34.5	48.8
Level of Service				B	C		C	A			C	D
Approach Delay (s)		0.0			26.2			27.8			46.4	
Approach LOS		A			C			C			D	

Intersection Summary

HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richards Blvd & 7th Street

2030 No Proj PM Peak
12/22/2006



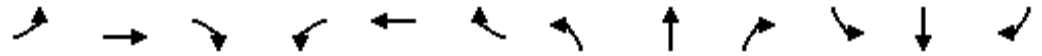
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	299	1611	0	402	474	0	0	520	848
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.91		0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	0.99			1.00	1.00
Satd. Flow (prot)				1770	5085		1610	3357			3539	1583
Flt Permitted				0.95	1.00		0.95	0.99			1.00	1.00
Satd. Flow (perm)				1770	5085		1610	3357			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	299	1611	0	402	474	0	0	520	848
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	299	1611	0	285	591	0	0	520	848
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				50.9	49.9		21.6	21.6			17.5	100.0
Effective Green, g (s)				49.9	49.9		21.1	21.1			17.0	100.0
Actuated g/C Ratio				0.50	0.50		0.21	0.21			0.17	1.00
Clearance Time (s)				3.0	4.0		3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)				883	2537		340	708			602	1583
v/s Ratio Prot				0.17	c0.32		c0.18	0.18			c0.15	
v/s Ratio Perm												0.54
v/c Ratio				0.34	0.64		0.84	0.83			0.86	0.54
Uniform Delay, d1				15.1	18.4		37.8	37.8			40.4	0.0
Progression Factor				0.64	0.58		0.92	0.91			1.00	1.00
Incremental Delay, d2				0.1	1.1		15.1	7.7			11.9	1.3
Delay (s)				9.8	11.8		50.0	42.3			52.3	1.3
Level of Service				A	B		D	D			D	A
Approach Delay (s)		0.0			11.5			44.8			20.7	
Approach LOS		A			B			D			C	

Intersection Summary

HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑↑	↔
Volume (vph)	0	0	0	91	487	28	930	42	0	0	33	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.89
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6356		3433	1863			3539	1411
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6356		3433	1863			3539	1411
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	91	487	28	930	42	0	0	33	169
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	68
Lane Group Flow (vph)	0	0	0	91	508	0	930	42	0	0	33	101
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				43.9	42.9		34.0	49.1			11.1	11.1
Effective Green, g (s)				43.4	43.4		33.5	48.6			10.6	10.6
Actuated g/C Ratio				0.43	0.43		0.34	0.49			0.11	0.11
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				768	2759		1150	905			375	150
v/s Ratio Prot				0.05	c0.08		c0.27	0.02			0.01	
v/s Ratio Perm												c0.07
v/c Ratio				0.12	0.18		0.81	0.05			0.09	0.67
Uniform Delay, d1				16.9	17.4		30.3	13.5			40.3	43.0
Progression Factor				0.74	0.74		1.00	1.00			1.00	1.00
Incremental Delay, d2				0.0	0.1		4.3	0.0			0.0	9.0
Delay (s)				12.5	13.0		34.6	13.5			40.4	52.0
Level of Service				B	B		C	B			D	D
Approach Delay (s)		0.0			12.9			33.7			50.1	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	759	38	109	1317	121	37	167	0	0	103	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			1.00			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3514		1770	3448			1846			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			1.00	
Satd. Flow (perm)	1770	3514		1770	3448			1726			1783	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	759	38	109	1317	121	37	167	0	0	103	48
RTOR Reduction (vph)	0	5	0	0	10	0	0	0	0	0	22	0
Lane Group Flow (vph)	79	792	0	109	1428	0	0	204	0	0	129	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	4.4	27.9		7.3	30.8			21.3			21.3	
Effective Green, g (s)	4.9	28.4		7.8	31.3			20.8			20.8	
Actuated g/C Ratio	0.07	0.41		0.11	0.45			0.30			0.30	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	124	1426		197	1542			513			530	
v/s Ratio Prot	0.04	0.23		c0.06	c0.41						0.07	
v/s Ratio Perm								c0.12				
v/c Ratio	0.64	0.56		0.55	0.93			0.40			0.24	
Uniform Delay, d1	31.7	16.0		29.5	18.3			19.6			18.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	10.3	0.3		3.3	9.7			2.3			1.1	
Delay (s)	41.9	16.2		32.8	28.0			21.9			19.7	
Level of Service	D	B		C	C			C			B	
Approach Delay (s)		18.5			28.3			21.9			19.7	
Approach LOS		B			C			C			B	

Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	1022	1066	0	0	0	0	0	0	1164	1511	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1022	1066	0	0	0	0	0	0	1164	1511	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	33	0	0
Lane Group Flow (vph)	0	1022	1066	0	0	0	0	0	0	1131	1511	0
Turn Type			Free							Split		
Protected Phases		4								2	2	
Permitted Phases			Free									
Actuated Green, G (s)		34.4	100.0							56.6	56.6	
Effective Green, g (s)		34.4	100.0							56.6	56.6	
Actuated g/C Ratio		0.34	1.00							0.57	0.57	
Clearance Time (s)		4.5								4.5	4.5	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		1217	1583							2824	2003	
v/s Ratio Prot		c0.29								0.23	c0.43	
v/s Ratio Perm			0.67									
v/c Ratio		0.84	0.67							0.40	0.75	
Uniform Delay, d1		30.3	0.0							12.2	16.4	
Progression Factor		1.00	1.00							0.85	0.88	
Incremental Delay, d2		5.3	2.3							0.2	1.4	
Delay (s)		35.5	2.3							10.6	15.8	
Level of Service		D	A							B	B	
Approach Delay (s)		18.6			0.0			0.0			13.5	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	129.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: Bannon St & I-5 NB Off

2030 No Proj PM Peak
 12/22/2006

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑↑						↑	↗↗↗			
Volume (vph)	593	1593	0	0	0	0	0	52	1385	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	593	1593	0	0	0	0	0	52	1385	0	0	0
RTOR Reduction (vph)	374	0	0	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	219	1593	0	0	0	0	0	52	1384	0	0	0
Turn Type	Split						Prot					
Protected Phases	2	2						1	4	1	4	
Permitted Phases												
Actuated Green, G (s)	32.2	32.2						59.8	59.8			
Effective Green, g (s)	32.2	32.2						59.8	59.8			
Actuated g/C Ratio	0.32	0.32						0.60	0.60			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	570	2429						1114	2159			
v/s Ratio Prot	0.12	c0.21						0.03	c0.38			
v/s Ratio Perm												
v/c Ratio	0.38	0.66						0.05	0.64			
Uniform Delay, d1	26.2	29.1						8.3	13.1			
Progression Factor	1.70	0.88						1.00	1.00			
Incremental Delay, d2	1.6	1.2						0.0	0.7			
Delay (s)	46.1	26.7						8.3	13.8			
Level of Service	D	C						A	B			
Approach Delay (s)		31.9			0.0			13.6			0.0	
Approach LOS		C			A			B			A	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

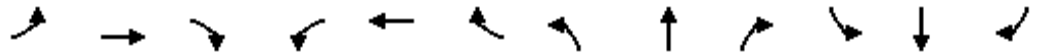
HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2030 No Proj PM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 		 		
Volume (vph)	144	2134	700	0	0	0	0	806	47	126	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00	
Frt	1.00	1.00	0.85					0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	6408	1583					3510		3433	1863	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	6408	1583					3510		3433	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	2134	700	0	0	0	0	806	47	126	22	0
RTOR Reduction (vph)	0	0	321	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	144	2134	379	0	0	0	0	849	0	126	22	0
Turn Type	Split		Perm					Prot				
Protected Phases	6	6						8		7	4	
Permitted Phases			6									
Actuated Green, G (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Effective Green, g (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Actuated g/C Ratio	0.54	0.54	0.54					0.28		0.06	0.38	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	959	3473	858					976		206	704	
v/s Ratio Prot	0.08	c0.33						c0.24		c0.04	0.01	
v/s Ratio Perm			0.24									
v/c Ratio	0.15	0.61	0.44					0.87		0.61	0.03	
Uniform Delay, d1	11.4	15.7	13.8					34.4		45.9	19.6	
Progression Factor	0.74	0.74	0.92					0.74		0.70	1.49	
Incremental Delay, d2	0.3	0.6	1.3					6.9		3.0	0.0	
Delay (s)	8.7	12.2	14.0					32.3		35.2	29.1	
Level of Service	A	B	B					C		D	C	
Approach Delay (s)		12.5			0.0			32.3			34.3	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			17.5					HCM Level of Service		B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			100.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			68.9%					ICU Level of Service		C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	433	1433	634	0	0	0	0	1019	665	160	572	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.95						0.98	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6113						3324	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6113						3324	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	433	1433	634	0	0	0	0	1019	665	160	572	0
RTOR Reduction (vph)	0	80	0	0	0	0	0	11	53	0	0	0
Lane Group Flow (vph)	433	1987	0	0	0	0	0	1161	459	160	572	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	34.5	34.5						38.7	38.7	13.8	56.5	
Effective Green, g (s)	34.5	34.5						38.7	38.7	13.8	56.5	
Actuated g/C Ratio	0.34	0.34						0.39	0.39	0.14	0.56	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	611	2109						1286	558	244	2000	
v/s Ratio Prot		c0.33						c0.35		c0.09	0.16	
v/s Ratio Perm	0.24							0.32				
v/c Ratio	0.71	1.01dr						0.90	0.82	0.66	0.29	
Uniform Delay, d1	28.4	31.8						28.9	27.6	40.8	11.3	
Progression Factor	0.50	0.54						0.55	0.44	1.25	0.84	
Incremental Delay, d2	3.1	8.0						7.7	9.4	6.2	0.1	
Delay (s)	17.5	25.1						23.5	21.6	57.1	9.5	
Level of Service	B	C						C	C	E	A	
Approach Delay (s)		23.8			0.0			22.9			19.9	
Approach LOS		C			A			C			B	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 13: Bannon St & 7th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗					↑↑	↗	↘	↑↑	
Volume (vph)	427	1708	163	0	0	0	0	232	1156	153	286	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	427	1708	163	0	0	0	0	232	1156	153	286	0
RTOR Reduction (vph)	0	0	95	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	427	1708	68	0	0	0	0	232	1156	153	286	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	41.7	41.7	41.7					28.3	100.0	16.5	49.3	
Effective Green, g (s)	41.7	41.7	41.7					28.3	100.0	16.5	49.3	
Actuated g/C Ratio	0.42	0.42	0.42					0.28	1.00	0.16	0.49	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	738	2120	660					1002	1583	292	1745	
v/s Ratio Prot		0.34						0.07		0.09	0.08	
v/s Ratio Perm	0.24		0.04						c0.73			
v/c Ratio	0.58	0.81	0.10					0.23	0.73	0.52	0.16	
Uniform Delay, d1	22.4	25.6	17.8					27.5	0.0	38.2	14.0	
Progression Factor	0.51	0.51	0.09					1.32	1.00	0.80	0.57	
Incremental Delay, d2	0.5	1.1	0.0					0.4	2.3	1.3	0.2	
Delay (s)	11.8	14.0	1.7					36.8	2.3	32.0	8.2	
Level of Service	B	B	A					D	A	C	A	
Approach Delay (s)		12.7			0.0			8.0			16.5	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	144	271	315	132	72	161	1567	167	12	900	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.64	1.00	1.00	0.62	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1191	1863	1583	1156	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	52	144	271	315	132	72	161	1567	167	12	900	180
RTOR Reduction (vph)	0	0	188	0	0	50	0	0	46	0	0	97
Lane Group Flow (vph)	52	144	83	315	132	22	161	1567	121	12	900	83
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	30.5	30.5	30.5	30.5	30.5	30.5	18.0	55.5	55.5	1.0	38.5	38.5
Effective Green, g (s)	30.5	30.5	30.5	30.5	30.5	30.5	18.0	55.5	55.5	1.0	38.5	38.5
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30	0.30	0.18	0.56	0.56	0.01	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	363	568	483	353	568	483	319	1964	879	18	1363	609
v/s Ratio Prot		0.08			0.07		c0.09	c0.44		0.01	0.25	
v/s Ratio Perm	0.04		0.05	c0.27		0.01			0.08			0.05
v/c Ratio	0.14	0.25	0.17	0.89	0.23	0.05	0.50	0.80	0.14	0.67	0.66	0.14
Uniform Delay, d1	25.3	26.2	25.5	33.2	26.0	24.5	37.0	17.8	10.7	49.3	25.4	20.0
Progression Factor	1.00	1.00	1.00	1.19	1.21	2.40	0.72	0.24	0.03	0.93	0.75	0.35
Incremental Delay, d2	0.2	0.2	0.2	23.2	0.2	0.0	0.8	2.3	0.2	54.1	2.0	0.4
Delay (s)	25.4	26.4	25.7	62.8	31.6	58.9	27.5	6.6	0.5	100.2	20.9	7.3
Level of Service	C	C	C	E	C	E	C	A	A	F	C	A
Approach Delay (s)		25.9			54.3			7.8			19.6	
Approach LOS		C			D			A			B	

Intersection Summary

HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	100	39	477	284	14	90	1261	591	58	343	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3476	3476
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3476	3476
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	100	39	477	284	14	90	1261	591	58	343	46
RTOR Reduction (vph)	0	0	33	0	0	10	0	0	167	0	9	0
Lane Group Flow (vph)	30	100	6	477	284	4	90	1261	424	58	380	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.6	14.4	14.4	16.0	26.8	26.8	14.0	47.6	63.6	4.0	37.6	
Effective Green, g (s)	3.6	14.4	14.4	16.0	26.8	26.8	14.0	47.6	63.6	4.0	37.6	
Actuated g/C Ratio	0.04	0.14	0.14	0.16	0.27	0.27	0.14	0.48	0.64	0.04	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	64	510	228	549	948	424	248	1685	1078	71	1307	
v/s Ratio Prot	c0.02	0.03		c0.14	c0.08		0.05	c0.36	0.06	c0.03	0.11	
v/s Ratio Perm			0.00			0.00			0.21			
v/c Ratio	0.47	0.20	0.02	0.87	0.30	0.01	0.36	0.75	0.39	0.82	0.29	
Uniform Delay, d1	47.3	37.7	36.8	41.0	29.1	26.9	39.0	21.3	8.8	47.6	21.9	
Progression Factor	1.12	0.75	0.52	1.00	1.00	1.00	0.89	0.70	0.08	0.69	1.13	
Incremental Delay, d2	5.3	0.2	0.0	13.7	0.2	0.0	0.7	2.6	0.2	49.0	0.6	
Delay (s)	58.4	28.6	19.2	54.7	29.3	26.9	35.2	17.4	0.9	81.8	25.4	
Level of Service	E	C	B	D	C	C	D	B	A	F	C	
Approach Delay (s)		31.7			44.9			13.2			32.7	
Approach LOS		C			D			B			C	

Intersection Summary

HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕						↔↔↔↔	↗
Volume (vph)	1428	515	199	58	182	149	0	0	0	111	3248	1150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3300						7532	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3300						7532	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1428	515	199	58	182	149	0	0	0	111	3248	1150
RTOR Reduction (vph)	0	0	142	0	117	0	0	0	0	0	0	121
Lane Group Flow (vph)	1428	515	57	58	214	0	0	0	0	0	3359	1029
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	22.0	22.0	22.0	20.4	20.4						69.1	91.1
Effective Green, g (s)	22.0	22.0	22.0	20.4	20.4						72.1	91.1
Actuated g/C Ratio	0.17	0.17	0.17	0.16	0.16						0.55	0.70
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	844	599	246	278	518						4177	1231
v/s Ratio Prot	c0.29	0.15		0.03	c0.06							c0.14
v/s Ratio Perm			0.04								0.45	0.51
v/c Ratio	1.69	0.86	0.23	0.21	0.41						0.80	0.84
Uniform Delay, d1	54.0	52.5	46.7	47.8	49.4						23.3	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.75	1.19
Incremental Delay, d2	316.5	12.9	1.0	0.8	1.1						0.6	1.9
Delay (s)	370.5	65.4	47.7	48.5	50.5						41.2	18.7
Level of Service	F	E	D	D	D						D	B
Approach Delay (s)		267.1			50.2			0.0			35.5	
Approach LOS		F			D			A			D	

Intersection Summary

HCM Average Control Delay	106.8	HCM Level of Service	F
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
17: Canal St & 6th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	185	356	37	10	16	194	1643	10	162	1024	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1691		1770	3536		1770	3469	
Flt Permitted	0.74	1.00	1.00	0.44	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1379	1863	1583	827	1691		1770	3536		1770	3469	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	185	356	37	10	16	194	1643	10	162	1024	156
RTOR Reduction (vph)	0	0	297	0	13	0	0	0	0	0	10	0
Lane Group Flow (vph)	119	185	59	37	13	0	194	1653	0	162	1170	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4			8			5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	16.5	16.5	16.5	16.5	16.5		15.6	57.4		12.6	54.4	
Effective Green, g (s)	16.5	16.5	16.5	16.5	16.5		15.6	57.4		12.6	54.4	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.16	0.57		0.13	0.54	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	307	261	136	279		276	2030		223	1887	
v/s Ratio Prot	c0.10			0.01			0.11	c0.47		0.09	c0.34	
v/s Ratio Perm	0.09		0.04	0.04								
v/c Ratio	0.52	0.60	0.23	0.27	0.05		0.70	0.81		0.73	0.62	
Uniform Delay, d1	38.1	38.7	36.2	36.5	35.1		40.0	17.0		42.0	15.7	
Progression Factor	0.85	0.85	1.20	0.72	0.86		1.00	1.00		0.84	0.57	
Incremental Delay, d2	2.1	3.2	0.4	1.0	0.1		7.9	3.7		9.0	1.2	
Delay (s)	34.3	36.0	43.7	27.4	30.3		47.9	20.8		44.2	10.1	
Level of Service	C	D	D	C	C		D	C		D	B	
Approach Delay (s)	39.9			28.6			23.6			14.3		
Approach LOS	D			C			C			B		

Intersection Summary

HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 No Proj PM Peak
12/22/2006



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	277	40	38	89	3	9	74	1381	0	63	918	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3525	
Flt Permitted	0.76	1.00	1.00	0.73	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1408	1863	1583	1362	1863	1583	1770	3539		1770	3525	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	277	40	38	89	3	9	74	1381	0	63	918	26
RTOR Reduction (vph)	0	0	29	0	0	7	0	0	0	0	2	0
Lane Group Flow (vph)	277	40	9	89	3	2	74	1381	0	63	942	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	23.0	23.0	23.0	23.0	23.0	23.0	7.4	59.1		4.9	57.1	
Effective Green, g (s)	23.0	23.0	23.0	23.0	23.0	23.0	7.4	59.1		4.9	57.1	
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.07	0.59		0.05	0.57	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	428	364	313	428	364	131	2092		87	2013	
v/s Ratio Prot		0.02			0.00		0.04	c0.39		0.04	c0.27	
v/s Ratio Perm	c0.20		0.01	0.07		0.00						
v/c Ratio	0.85	0.09	0.02	0.28	0.01	0.01	0.56	0.66		0.72	0.47	
Uniform Delay, d1	36.9	30.3	29.8	31.7	29.7	29.7	44.7	13.7		46.9	12.6	
Progression Factor	0.42	0.22	0.18	1.00	1.00	1.00	1.00	1.00		0.81	0.41	
Incremental Delay, d2	16.0	0.1	0.0	0.5	0.0	0.0	5.5	1.7		22.4	0.7	
Delay (s)	31.4	6.8	5.2	32.2	29.7	29.7	50.2	15.4		60.2	5.8	
Level of Service	C	A	A	C	C	C	D	B		E	A	
Approach Delay (s)		25.8			31.9			17.1			9.2	
Approach LOS		C			C			B			A	

Intersection Summary

HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

































HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2030 No Proj PM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	531	562	403	541	199	598	1509	839	228	1171	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	334	531	562	403	541	199	598	1509	839	228	1171	182
RTOR Reduction (vph)	0	28	236	0	0	95	0	0	177	0	0	50
Lane Group Flow (vph)	334	728	101	306	638	104	598	1509	662	228	1171	132
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	31.5	31.5	31.5	27.1	27.1	27.1	24.6	63.3	63.3	10.1	48.8	48.8
Effective Green, g (s)	31.5	31.5	31.5	27.1	27.1	27.1	24.6	63.3	63.3	10.1	48.8	48.8
Actuated g/C Ratio	0.21	0.21	0.21	0.18	0.18	0.18	0.16	0.42	0.42	0.07	0.33	0.33
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	372	680	303	291	608	286	563	1493	668	231	1151	515
v/s Ratio Prot	0.19	c0.22		c0.19	0.19		0.17	c0.43		0.07	c0.33	
v/s Ratio Perm			0.07			0.07			0.42			0.08
v/c Ratio	0.90	1.07	0.33	1.05	1.05	0.36	1.06	1.01	0.99	0.99	1.02	0.26
Uniform Delay, d1	57.7	59.2	50.3	61.4	61.4	53.9	62.7	43.4	43.0	69.9	50.6	37.2
Progression Factor	1.00	1.00	1.00	0.29	0.29	0.41	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.3	54.8	0.7	31.5	26.9	0.1	55.5	26.0	32.6	55.0	31.0	1.2
Delay (s)	81.0	114.0	51.0	49.2	44.6	22.4	118.2	69.3	75.6	124.9	81.6	38.4
Level of Service	F	F	D	D	D	C	F	E	E	F	F	D
Approach Delay (s)		91.4			42.0			81.0			82.8	
Approach LOS		F			D			F			F	
Intersection Summary												
HCM Average Control Delay			77.2			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			102.9%			ICU Level of Service			G			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 No Proj PM Peak
12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	1232	915	39	615	606	0	472	701	470	49	806	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1232	915	39	615	606	0	472	701	470	49	806	7
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	212	0	0	3
Lane Group Flow (vph)	1232	915	25	615	606	0	472	701	258	49	806	4
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	49.5	43.5	43.5	30.0	24.0		19.0	47.2	47.2	4.8	33.0	33.0
Effective Green, g (s)	49.5	43.5	43.5	30.0	24.0		19.0	47.2	47.2	4.8	33.0	33.0
Actuated g/C Ratio	0.33	0.29	0.29	0.20	0.16		0.13	0.31	0.31	0.03	0.22	0.22
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1133	1026	459	687	566		435	1114	498	57	779	348
v/s Ratio Prot	c0.36	0.26		0.18	c0.17		c0.14	0.20		0.03	c0.23	
v/s Ratio Perm			0.02						0.16			0.00
v/c Ratio	1.09	0.89	0.05	0.90	1.07		1.09	0.63	0.52	0.86	1.03	0.01
Uniform Delay, d1	50.2	51.0	38.4	58.5	63.0		65.5	43.9	42.1	72.3	58.5	45.7
Progression Factor	1.02	1.03	1.09	1.00	1.00		0.79	0.61	0.72	1.00	1.00	1.00
Incremental Delay, d2	49.5	6.8	0.0	14.2	58.2		42.5	0.2	0.3	69.8	41.5	0.1
Delay (s)	100.5	59.2	41.9	72.6	121.2		94.4	26.9	30.6	142.1	100.0	45.8
Level of Service	F	E	D	E	F		F	C	C	F	F	D
Approach Delay (s)		82.2			96.7			47.4			102.0	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	78.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	314	200	173	96	221	418	0	593	118	664	823	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.93		1.00	0.90			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1770	1733		1770	1680			3451			3425	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (perm)	1770	1733		1770	1680			3451			3425	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	314	200	173	96	221	418	0	593	118	664	823	133
RTOR Reduction (vph)	0	21	0	0	46	0	0	11	0	0	4	0
Lane Group Flow (vph)	314	352	0	96	593	0	0	700	0	0	1616	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	17.0	42.4		10.6	36.0			23.0			58.0	
Effective Green, g (s)	17.0	42.4		10.6	36.0			23.0			58.0	
Actuated g/C Ratio	0.11	0.28		0.07	0.24			0.15			0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	201	490		125	403			529			1324	
v/s Ratio Prot	c0.18	0.20		0.05	c0.35			c0.20			c0.47	
v/s Ratio Perm												
v/c Ratio	1.56	0.72		0.77	1.47			1.32			1.22	
Uniform Delay, d1	66.5	48.4		68.5	57.0			63.5			46.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.48	
Incremental Delay, d2	275.8	5.0		24.2	225.7			158.3			102.7	
Delay (s)	342.3	53.4		92.6	282.7			221.8			124.7	
Level of Service	F	D		F	F			F			F	
Approach Delay (s)		185.5			257.9			221.8			124.7	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	180.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	134.5%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	104	196	261	831	534	798	39	1625	37	370	2792	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1831	1583	1770	1863	1583	1770	3527		1770	3519	
Flt Permitted		0.68	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1261	1583	1770	1863	1583	1770	3527		1770	3519	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	196	261	831	534	798	39	1625	37	370	2792	113
RTOR Reduction (vph)	0	0	73	0	0	137	0	2	0	0	3	0
Lane Group Flow (vph)	0	300	188	831	534	661	39	1660	0	370	2902	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		20.0	20.0	18.0	42.0	42.0	5.0	37.0		9.0	41.0	
Effective Green, g (s)		20.0	20.0	18.0	42.0	42.0	5.0	37.0		9.0	41.0	
Actuated g/C Ratio		0.20	0.20	0.18	0.42	0.42	0.05	0.37		0.09	0.41	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		252	317	319	782	665	89	1305		159	1443	
v/s Ratio Prot				c0.47	0.29		0.02	c0.47		0.21	c0.82	
v/s Ratio Perm		c0.24	0.12			0.42						
v/c Ratio		1.19	0.59	2.61	0.68	0.99	0.44	1.27		2.33	2.01	
Uniform Delay, d1		40.0	36.3	41.0	23.6	28.9	46.1	31.5		45.5	29.5	
Progression Factor		0.76	0.62	1.33	0.67	0.51	1.41	0.52		1.00	1.00	
Incremental Delay, d2		116.7	7.5	727.5	2.8	25.1	1.4	123.0		616.4	457.5	
Delay (s)		147.1	29.9	782.0	18.7	39.8	66.6	139.3		661.9	487.0	
Level of Service		F	C	F	B	D	E	F		F	F	
Approach Delay (s)		92.5			319.7			137.6			506.7	
Approach LOS		F			F			F			F	

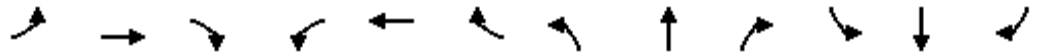
Intersection Summary

HCM Average Control Delay	342.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	160.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 23: G Street & 7th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↖	↖	↕	↖	↖	↕			↕	↖
Volume (vph)	280	0	351	194	1035	441	26	63	0	0	482	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	280	0	351	194	1035	441	26	63	0	0	482	760
RTOR Reduction (vph)	0	0	204	0	0	311	0	0	0	0	0	283
Lane Group Flow (vph)	280	0	147	194	1035	130	26	63	0	0	482	477
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2				6
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		27.0	19.0	30.0	30.0	5.0	42.5			33.5	33.5
Effective Green, g (s)	16.0		27.0	18.5	30.0	29.5	5.0	42.5			33.0	33.5
Actuated g/C Ratio	0.16		0.27	0.18	0.30	0.29	0.05	0.42			0.33	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		427	327	1062	417	89	792			1168	530
v/s Ratio Prot	c0.16			0.11	c0.29		c0.01	0.03			0.14	
v/s Ratio Perm			0.09			0.09						c0.30
v/c Ratio	0.99		0.34	0.59	0.97	0.31	0.29	0.08			0.41	0.90
Uniform Delay, d1	41.9		29.4	37.3	34.6	27.4	45.8	17.1			26.0	31.7
Progression Factor	0.97		1.33	0.89	1.01	1.55	1.40	1.70			1.00	1.00
Incremental Delay, d2	13.8		0.2	6.0	18.9	1.5	3.5	0.1			1.1	21.0
Delay (s)	54.3		39.1	39.2	53.8	44.0	67.8	29.2			27.1	52.6
Level of Service	D		D	D	D	D	E	C			C	D
Approach Delay (s)		45.9			49.5			40.4			42.7	
Approach LOS		D			D			D			D	

Intersection Summary		
HCM Average Control Delay	46.3	HCM Level of Service D
HCM Volume to Capacity ratio	0.91	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 15.5
Intersection Capacity Utilization	89.8%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	242	188	122	0	0	0	0	1571	0	1155	2737	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.95						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.95						1.00		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3051						3539		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3051						3539		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	242	188	122	0	0	0	0	1571	0	1155	2737	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	186	360	0	0	0	0	0	1571	0	1155	2737	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	17.0	17.0						31.0		41.5	76.0	
Effective Green, g (s)	17.0	16.5						30.5		41.0	75.5	
Actuated g/C Ratio	0.17	0.16						0.30		0.41	0.76	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	274	503						1079		726	2672	
v/s Ratio Prot	0.12	c0.12						c0.44		c0.65	0.77	
v/s Ratio Perm												
v/c Ratio	0.68	0.72						1.46		1.59	1.02	
Uniform Delay, d1	38.9	39.5						34.8		29.5	12.2	
Progression Factor	0.44	0.43						0.19		0.59	0.86	
Incremental Delay, d2	1.2	0.8						205.7		266.5	13.1	
Delay (s)	18.2	17.7						212.3		283.8	23.6	
Level of Service	B	B						F		F	C	
Approach Delay (s)		17.9			0.0			212.3			100.8	
Approach LOS		B			A			F			F	

Intersection Summary		
HCM Average Control Delay	122.3	HCM Level of Service F
HCM Volume to Capacity ratio	1.38	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	131.6%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	92	1183	338	0	0	0	0	0	0	399	448	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.98								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.97								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		3349								1770	3539	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		3349								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	92	1183	338	0	0	0	0	0	0	399	448	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1589	0	0	0	0	0	0	0	399	448	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		53.5								31.5	31.5	
Effective Green, g (s)		53.0								31.0	31.0	
Actuated g/C Ratio		0.53								0.31	0.31	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1775								549	1097	
v/s Ratio Prot		c0.47								c0.23	0.13	
v/s Ratio Perm												
v/c Ratio		0.90								0.73	0.41	
Uniform Delay, d1		21.0								30.7	27.3	
Progression Factor		0.57								0.64	0.67	
Incremental Delay, d2		0.8								7.3	1.0	
Delay (s)		12.8								27.1	19.3	
Level of Service		B								C	B	
Approach Delay (s)		12.8			0.0			0.0			22.9	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	368	1983	267	328	1122	0	0	714	2343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.92	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6216		1770	3539			1624	1504
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6216		1770	3539			1624	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	368	1983	267	328	1122	0	0	714	2343
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	44	48
Lane Group Flow (vph)	0	0	0	0	2599	0	328	1122	0	0	1537	1428
Confl. Peds. (#/hr)							36					
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					26.5		23.5	23.5			39.5	39.5
Effective Green, g (s)					26.0		23.0	23.0			39.0	39.0
Actuated g/C Ratio					0.26		0.23	0.23			0.39	0.39
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1616		407	814			633	587
v/s Ratio Prot							0.19	c0.32			0.95	c0.95
v/s Ratio Perm					0.42							
v/c Ratio					1.61		0.81	1.38			2.43	2.43
Uniform Delay, d1					37.0		36.4	38.5			30.5	30.5
Progression Factor					0.69		1.08	1.08			0.86	0.86
Incremental Delay, d2					275.3		7.4	173.7			644.3	646.3
Delay (s)					300.7		46.8	215.4			670.7	672.6
Level of Service					F		D	F			F	F
Approach Delay (s)		0.0			300.7			177.2			671.6	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	434.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	208.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	108	2354	0	0	0	0	0	1232	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.93
Flpb, ped/bikes				0.94	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1435	4803						5085	1476
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1435	4803						5085	1476
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	108	2354	0	0	0	0	0	1232	291
RTOR Reduction (vph)	0	0	0	2	0	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	95	2365	0	0	0	0	0	1232	288
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				59.9	59.9						33.1	33.1
Effective Green, g (s)				59.4	59.4						32.6	32.6
Actuated g/C Ratio				0.59	0.59						0.33	0.33
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				852	2853						1658	481
v/s Ratio Prot											c0.24	
v/s Ratio Perm				0.07	0.49							0.20
v/c Ratio				0.11	0.83						0.74	0.60
Uniform Delay, d1				8.8	16.2						30.0	28.2
Progression Factor				1.00	1.00						0.80	0.79
Incremental Delay, d2				0.3	2.9						3.0	5.2
Delay (s)				9.1	19.2						26.9	27.6
Level of Service				A	B						C	C
Approach Delay (s)		0.0			18.8			0.0			27.1	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM Average Control Delay			21.9		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			69.6%		ICU Level of Service						C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↔↗↗						↗		↘		
Volume (vph)	982	1743	0	0	0	0	0	244	290	689	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.94	0.99						1.00		0.98		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1435	4726						1663		1732		
Flt Permitted	0.95	0.99						1.00		0.30		
Satd. Flow (perm)	1435	4726						1663		547		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	982	1743	0	0	0	0	0	244	290	689	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	658	2067	0	0	0	0	0	533	0	689	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	20.5	20.5						22.5		22.5		
Effective Green, g (s)	20.0	20.0						22.0		22.0		
Actuated g/C Ratio	0.40	0.40						0.44		0.44		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	574	1890						732		241		
v/s Ratio Prot								0.32				
v/s Ratio Perm	c0.46	0.44								c1.26		
v/c Ratio	1.15	1.09						0.73		2.86		
Uniform Delay, d1	15.0	15.0						11.5		14.0		
Progression Factor	1.26	1.26						1.00		0.97		
Incremental Delay, d2	68.0	43.1						6.3		837.5		
Delay (s)	86.9	62.1						17.8		851.2		
Level of Service	F	E						B		F		
Approach Delay (s)		68.1			0.0			17.8			851.2	
Approach LOS		E			A			B			F	

Intersection Summary

HCM Average Control Delay	197.9	HCM Level of Service	F
HCM Volume to Capacity ratio	2.05		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	208.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2166	734	0	0	0	0	0	0	221	990	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.91	1.00								0.91	
Frbp, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5085	1445								4981	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5085	1445								4981	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2166	734	0	0	0	0	0	0	221	990	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2166	725	0	0	0	0	0	0	0	1209	0
Confl. Peds. (#/hr)			72								72	
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		26.0	26.0								17.0	
Effective Green, g (s)		25.5	26.0								16.5	
Actuated g/C Ratio		0.51	0.52								0.33	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		2593	751								1644	
v/s Ratio Prot		0.43										
v/s Ratio Perm			c0.50								0.24	
v/c Ratio		0.84	0.97								0.74	
Uniform Delay, d1		10.5	11.6								14.8	
Progression Factor		0.56	0.59								0.76	
Incremental Delay, d2		0.3	4.7								2.1	
Delay (s)		6.1	11.5								13.4	
Level of Service		A	B								B	
Approach Delay (s)		7.5			0.0			0.0			13.4	
Approach LOS		A			A			A			B	

Intersection Summary

HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↑↑↑			↑			↑	
Volume (vph)	0	0	0	0	784	187	0	12	0	0	248	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.97			1.00			0.99	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6223			1863			1850	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6223			1863			1850	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	784	187	0	12	0	0	248	13
RTOR Reduction (vph)	0	0	0	0	86	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	885	0	0	12	0	0	257	0
Turn Type				Prot			Perm					
Protected Phases				2				4			8	
Permitted Phases					2		4					
Actuated Green, G (s)					20.5			20.5			20.5	
Effective Green, g (s)					20.5			20.5			20.5	
Actuated g/C Ratio					0.41			0.41			0.41	
Clearance Time (s)					4.5			4.5			4.5	
Lane Grp Cap (vph)					2551			764			759	
v/s Ratio Prot								0.01			c0.14	
v/s Ratio Perm					c0.14							
v/c Ratio					0.35			0.02			0.34	
Uniform Delay, d1					10.1			8.8			10.1	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			0.0			1.2	
Delay (s)					10.5			8.8			11.3	
Level of Service					B			A			B	
Approach Delay (s)		0.0			10.5			8.8			11.3	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 31: Richards Blvd & 12th Street

2030 No Proj PM Peak
 12/22/2006

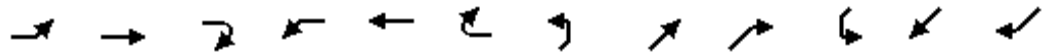


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	148	189	155	4	4154	0	0	3675	777
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00	0.97	0.91			0.81	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583	3433	5085			7544	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583	3433	5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	148	189	155	4	4154	0	0	3675	777
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	194
Lane Group Flow (vph)	0	0	0	148	189	113	4	4154	0	0	3675	584
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				31.8	31.8	31.8	1.2	90.2			85.0	85.0
Effective Green, g (s)				31.8	31.8	31.8	1.2	90.2			85.0	85.0
Actuated g/C Ratio				0.24	0.24	0.24	0.01	0.69			0.65	0.65
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				433	866	387	32	3528			4933	1035
v/s Ratio Prot					0.05		0.00	c0.82			0.49	
v/s Ratio Perm				c0.08		0.07						0.37
v/c Ratio				0.34	0.22	0.29	0.12	1.18			0.74	0.56
Uniform Delay, d1				40.5	39.2	40.0	63.9	19.9			15.2	12.3
Progression Factor				1.00	1.00	1.00	1.06	1.01			1.00	1.00
Incremental Delay, d2				2.1	0.6	1.9	0.6	80.9			1.1	2.2
Delay (s)				42.6	39.8	41.9	68.0	101.1			16.2	14.6
Level of Service				D	D	D	E	F			B	B
Approach Delay (s)		0.0			41.3			101.0			15.9	
Approach LOS		A			D			F			B	

Intersection Summary		
HCM Average Control Delay	56.2	HCM Level of Service E
HCM Volume to Capacity ratio	0.96	
Actuated Cycle Length (s)	130.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	143.0%	ICU Level of Service H
Analysis Period (min)	15	
Description: 8 seconds additional lost time represents LRT.		
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
32: Bannon St & 12th Street

2030 No Proj PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔↔	↑	↗					↖↖↖	↗	↖	↑↑↑↑	
Volume (vph)	2087	92	717	0	0	0	0	2072	21	45	3780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2087	92	717	0	0	0	0	2072	21	45	3780	0
RTOR Reduction (vph)	0	0	43	0	0	0	0	0	5	0	0	0
Lane Group Flow (vph)	2087	92	674	0	0	0	0	2072	16	45	3780	0
Turn Type	Split		Perm				Perm		Prot			
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	51.5	51.5	51.5					61.5	61.5	4.0	70.0	
Effective Green, g (s)	51.5	51.5	51.5					61.5	61.5	4.0	70.0	
Actuated g/C Ratio	0.40	0.40	0.40					0.47	0.47	0.03	0.54	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1977	738	627					2406	749	54	4062	
v/s Ratio Prot	0.42	0.05						0.41		0.03	c0.50	
v/s Ratio Perm			c0.43						0.01			
v/c Ratio	1.06	0.12	1.08					0.86	0.02	0.83	0.93	
Uniform Delay, d1	39.2	24.9	39.2					30.5	18.2	62.7	27.8	
Progression Factor	1.00	1.00	1.00					1.31	0.50	0.76	0.52	
Incremental Delay, d2	36.8	0.1	57.8					0.4	0.0	49.0	3.6	
Delay (s)	76.0	25.0	97.1					40.2	9.0	96.7	18.0	
Level of Service	E	C	F					D	A	F	B	
Approach Delay (s)		79.6			0.0			39.9			18.9	
Approach LOS		E			A			D			B	

Intersection Summary		
HCM Average Control Delay	43.8	HCM Level of Service D
HCM Volume to Capacity ratio	0.99	
Actuated Cycle Length (s)	130.0	Sum of lost time (s) 8.5
Intersection Capacity Utilization	143.0%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		

HCM Unsignalized Intersection Capacity Analysis
 33: Riverside Drive & 5th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	100	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			105		212	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		212	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		773	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	884
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		19.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverside Dr & 7th Street

2030 No Proj PM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Volume (veh/h)	100	5	5	50	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	50	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			105		162	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		162	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		825	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	55	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	906
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.7	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.0
Approach LOS			A

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		16.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 35: New St "A" & 7th Street

2030 No Proj PM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	684	5	10	237	5	5
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	684	5	10	237	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	144	128			247	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144	128			247	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	19	99			100	
cM capacity (veh/h)	846	921			1319	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	689	247	10
Volume Left	684	0	5
Volume Right	5	237	0
cSH	846	1700	1319
Volume to Capacity	0.81	0.15	0.00
Queue Length 95th (ft)	225	0	0
Control Delay (s)	24.9	0.0	3.9
Lane LOS	C		A
Approach Delay (s)	24.9	0.0	3.9
Approach LOS	C		

Intersection Summary			
Average Delay		18.2	
Intersection Capacity Utilization		60.1%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 36: Signature St & 7th Street

2030 No Proj PM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	684	15	237	237	5	468
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	684	15	237	237	5	468
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			428			
pX, platoon unblocked	0.80	0.80			0.80	
vC, conflicting volume	834	356			474	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	666	68			217	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	98			100	
cM capacity (veh/h)	338	795			1082	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	699	474	473
Volume Left	684	0	5
Volume Right	15	237	0
cSH	342	1700	1082
Volume to Capacity	2.04	0.28	0.00
Queue Length 95th (ft)	1247	0	0
Control Delay (s)	505.4	0.0	0.1
Lane LOS	F		A
Approach Delay (s)	505.4	0.0	0.1
Approach LOS	F		

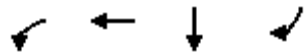
Intersection Summary			
Average Delay		214.6	
Intersection Capacity Utilization		74.1%	ICU Level of Service D
Analysis Period (min)		15	

Queues

2030 No Proj AM Peak

1/9/2007

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	448	303	2343	795
v/c Ratio	0.74	0.48	0.89	0.74
Control Delay	36.0	30.3	16.0	11.5
Queue Delay	0.0	0.0	0.5	0.0
Total Delay	36.0	30.3	16.6	11.5
Queue Length 50th (ft)	143	102	508	206
Queue Length 95th (ft)	163	114	659	363
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	607	637	2619	1070
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	66	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.48	0.92	0.74

Intersection Summary

Queues

2: Richards Blvd & I-5 NB Off



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	676	1218	74	240
v/c Ratio	0.17	0.45	0.22	0.44
Control Delay	4.9	1.1	7.2	35.4
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	5.1	1.1	7.2	35.4
Queue Length 50th (ft)	35	11	5	72
Queue Length 95th (ft)	74	7	21	103
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)		150	300	
Base Capacity (vph)	3892	2708	718	1345
Starvation Cap Reductn	2358	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.45	0.10	0.18

Intersection Summary

Queues

3: Richards Blvd & Bercut Dr



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	23	1401	466	249	90	91
v/c Ratio	0.02	0.36	0.73	0.44	0.66	0.54
Control Delay	5.0	4.6	28.0	17.3	67.4	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	4.6	28.0	17.3	67.4	31.2
Queue Length 50th (ft)	3	60	70	65	57	20
Queue Length 95th (ft)	m8	81	132	m88	105	68
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	947	3904	978	913	298	302
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.36	0.48	0.27	0.30	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 No Proj AM Peak

4: Richards Blvd & 5th Street

1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	151	854	433	156	48	302
v/c Ratio	0.18	0.28	0.73	0.19	0.12	0.83
Control Delay	13.8	14.1	40.1	11.8	28.9	49.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	14.1	40.1	11.8	28.9	49.1
Queue Length 50th (ft)	62	105	131	31	25	159
Queue Length 95th (ft)	m124	156	180	32	48	230
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	858	3086	739	1099	615	526
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.28	0.59	0.14	0.08	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	304	836	177	226	755	634	302
v/c Ratio	0.42	0.40	0.24	0.54	0.86	0.85	0.19
Control Delay	12.2	10.3	1.7	35.2	44.8	49.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	10.3	1.7	35.2	44.8	49.7	0.3
Queue Length 50th (ft)	63	61	6	116	198	204	0
Queue Length 95th (ft)	143	106	m1	172	278	262	0
Internal Link Dist (ft)		1155			540	231	
Turn Bay Length (ft)	200			200			200
Base Capacity (vph)	728	2091	728	467	981	849	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.40	0.24	0.48	0.77	0.75	0.19

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richards Blvd & 10th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	211	410	1092	34	24	36
v/c Ratio	0.27	0.15	0.80	0.04	0.13	0.35
Control Delay	21.5	15.6	31.0	11.0	46.2	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	15.6	31.0	11.0	46.2	24.1
Queue Length 50th (ft)	85	37	308	11	7	0
Queue Length 95th (ft)	164	63	341	21	21	31
Internal Link Dist (ft)		1064		248	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	782	2778	1665	1155	319	157
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.15	0.66	0.03	0.08	0.23

Intersection Summary

Queues

2030 No Proj AM Peak

1/9/2007

7: Richard Blvd & Dos Rios St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	538	237	1307	249	163
v/c Ratio	0.28	0.72	0.57	0.91	0.41	0.26
Control Delay	33.0	28.7	27.2	28.2	9.0	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	28.7	27.2	28.2	9.0	13.7
Queue Length 50th (ft)	16	97	77	229	57	34
Queue Length 95th (ft)	44	140	142	#360	105	79
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	152	983	474	1515	608	623
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.55	0.50	0.86	0.41	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
9: Bannon St & I-5 SB Off

2030 No Proj AM Peak
1/9/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	628	164	2029	762
v/c Ratio	0.74	0.34	0.59	0.32
Control Delay	40.2	10.0	5.9	5.3
Queue Delay	0.4	0.0	1.2	0.6
Total Delay	40.6	10.0	7.1	5.9
Queue Length 50th (ft)	195	17	132	62
Queue Length 95th (ft)	235	63	225	m104
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1115	588	3411	2369
Starvation Cap Reductn	0	0	1054	1131
Spillback Cap Reductn	145	0	809	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.28	0.86	0.62

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
10: Bannon St & I-5 NB Off

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	240	2417	52	1730
v/c Ratio	0.32	0.89	0.05	0.86
Control Delay	6.1	29.4	10.2	24.3
Queue Delay	1.0	57.3	0.0	63.8
Total Delay	7.1	86.7	10.2	88.0
Queue Length 50th (ft)	15	356	14	384
Queue Length 95th (ft)	53	366	31	478
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	741	2730	1043	2022
Starvation Cap Reductn	289	583	0	0
Spillback Cap Reductn	0	175	0	503
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	1.13	0.05	1.14

Intersection Summary

Queues

2030 No Proj AM Peak

1/9/2007

11: Bannon St & Bercut Dr



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	217	3052	878	446	146	6
v/c Ratio	0.19	0.72	0.65	0.79	0.74	0.01
Control Delay	4.9	8.8	1.6	51.1	52.2	11.8
Queue Delay	4.2	33.9	1.5	0.0	0.0	0.0
Total Delay	9.0	42.7	3.1	51.1	52.2	11.8
Queue Length 50th (ft)	32	215	3	142	51	2
Queue Length 95th (ft)	m40	336	m10	198	#108	m5
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	1171	4241	1344	596	197	484
Starvation Cap Reductn	867	1389	276	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	1.07	0.82	0.75	0.74	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	524	2722	480	112	69	317
v/c Ratio	0.55	1.07dr	0.63	0.27	0.30	0.24
Control Delay	8.9	8.6	25.8	5.5	36.7	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	8.6	25.8	5.5	36.7	18.9
Queue Length 50th (ft)	78	103	170	2	41	78
Queue Length 95th (ft)	97	79	146	13	62	66
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	945	3330	798	425	267	1433
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.82	0.60	0.26	0.26	0.22

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	539	1311	28	234	341	125	750
v/c Ratio	0.75	0.64	0.04	0.20	0.22	0.57	0.42
Control Delay	13.4	9.3	0.6	24.8	0.4	58.9	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	9.3	0.6	24.8	0.4	58.9	5.7
Queue Length 50th (ft)	53	47	0	64	0	52	17
Queue Length 95th (ft)	m126	73	m1	105	1	m97	71
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	805	2314	736	1197	1583	255	1792
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.57	0.04	0.20	0.22	0.49	0.42

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

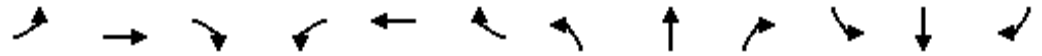
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 No Proj AM Peak

1/9/2007

14: N B Street & 6th Street



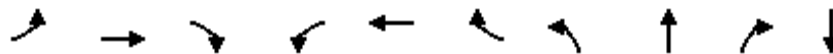
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	46	72	142	195	17	73	487	79	89	872	143
v/c Ratio	0.54	0.11	0.18	0.49	0.49	0.05	0.43	0.28	0.10	0.28	0.42	0.15
Control Delay	44.8	30.1	8.4	40.8	39.3	17.2	45.8	11.5	1.2	38.3	8.7	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	30.1	8.4	40.8	39.3	17.2	45.8	11.5	1.2	38.3	8.7	2.4
Queue Length 50th (ft)	57	23	0	84	116	0	49	56	0	58	116	6
Queue Length 95th (ft)	110	51	34	144	183	m16	92	72	2	m78	272	m25
Internal Link Dist (ft)		435			1023			498			815	
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	255	540	510	393	540	471	239	1840	861	344	2055	978
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.09	0.14	0.36	0.36	0.04	0.31	0.26	0.09	0.26	0.42	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	39	88	57	89	130	308	80	378	381	1110
v/c Ratio	0.36	0.16	0.19	0.32	0.19	0.55	0.45	0.16	0.29	0.60
Control Delay	43.2	23.7	10.6	46.3	33.2	8.0	43.2	6.6	0.7	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	23.7	10.6	46.3	33.2	8.0	43.2	6.6	0.7	11.5
Queue Length 50th (ft)	22	24	1	28	37	0	44	52	1	124
Queue Length 95th (ft)	63	47	24	52	61	69	m75	57	0	134
Internal Link Dist (ft)		1023			1129			471		779
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	108	637	332	326	833	608	182	2300	1298	1850
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.14	0.17	0.27	0.16	0.51	0.44	0.16	0.29	0.60

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1381	107	32	298	4555	383
v/c Ratio	1.71	0.19	0.12	0.55	1.07	0.30
Control Delay	355.5	39.4	46.8	53.2	52.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	355.5	39.4	46.8	53.2	52.4	5.2
Queue Length 50th (ft)	~612	35	23	116	-678	92
Queue Length 95th (ft)	#711	m61	53	164	m#699	m101
Internal Link Dist (ft)		767		1056	531	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	806	572	313	623	4245	1274
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.71	0.19	0.10	0.48	1.07	0.30

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

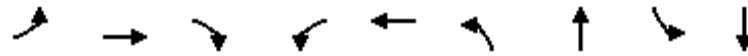
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 No Proj AM Peak
1/9/2007



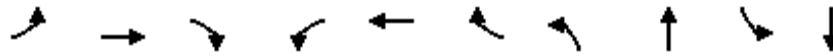
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	65	204	76	27	211	504	83	1044
v/c Ratio	0.25	0.22	0.49	0.37	0.10	0.70	0.23	0.48	0.56
Control Delay	38.5	37.2	9.5	29.9	9.1	47.2	7.5	59.0	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	37.2	9.5	29.9	9.1	47.2	7.5	59.0	8.7
Queue Length 50th (ft)	30	36	0	49	1	83	54	50	73
Queue Length 95th (ft)	66	74	61	m85	m5	200	161	98	87
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	269	363	473	260	339	400	2236	209	1880
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.18	0.43	0.29	0.08	0.53	0.23	0.40	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	229	11	46	187	4	5	63	168	24	1375
v/c Ratio	0.81	0.03	0.13	0.67	0.01	0.02	0.50	0.07	0.27	0.63
Control Delay	44.9	17.1	3.2	48.4	29.8	18.2	77.3	1.7	59.9	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	44.9	17.1	3.2	48.4	29.8	18.2	77.3	1.7	59.9	5.3
Queue Length 50th (ft)	99	4	0	109	2	0	44	4	15	75
Queue Length 95th (ft)	#237	m14	16	179	11	9	m67	m4	m32	86
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	330	438	407	328	438	376	133	2382	89	2197
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	98
Spillback Cap Reductn	0	0	4	0	0	0	0	0	0	336
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.03	0.11	0.57	0.01	0.01	0.47	0.07	0.27	0.74

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	151	618	280	394	715	64	402	443	537	366	748	63
v/c Ratio	0.43	0.80	0.61	1.04	0.99dl	0.15	0.97	0.43	0.65	1.12	0.80	0.14
Control Delay	38.8	35.9	15.3	49.6	17.0	0.7	84.2	30.4	7.6	121.4	41.0	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	35.9	15.3	49.6	17.0	0.7	84.2	30.4	7.6	121.4	41.0	11.4
Queue Length 50th (ft)	84	148	36	~281	78	1	~152	120	11	~142	265	17
Queue Length 95th (ft)	144	217	127	m#101	m75	m0	#247	166	104	#236	300	m36
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	372	802	475	379	778	414	413	1026	823	326	991	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.77	0.59	1.04	0.92	0.15	0.97	0.43	0.65	1.12	0.75	0.13

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
20: Big Four Blvd & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	453	647	66	879	807	147	172	405	15	1279	182
v/c Ratio	0.73	1.02	0.20	1.35	1.20	0.85	0.12	0.47	0.17	1.08	0.30
Control Delay	40.8	69.7	13.4	200.5	140.9	87.2	21.1	4.5	57.7	72.9	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	69.7	13.4	200.5	140.9	87.2	21.1	4.5	57.7	72.9	5.7
Queue Length 50th (ft)	143	~234	5	~380	~330	48	34	0	8	~493	8
Queue Length 95th (ft)	m169	m#299	m12	#501	#450	#106	64	64	m14	#605	29
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	618	637	333	652	672	172	1377	864	89	1186	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.02	0.20	1.35	1.20	0.85	0.12	0.47	0.17	1.08	0.30

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	74	51	56	233	332	2266
v/c Ratio	1.23	0.22	0.93	0.99	0.89	1.05
Control Delay	245.7	61.5	166.9	118.2	89.8	63.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	245.7	61.5	166.9	118.2	89.8	63.3
Queue Length 50th (ft)	~90	46	56	223	167	~1269
Queue Length 95th (ft)	#202	90	#151	#405	#256	#1398
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	60	236	60	235	376	2150
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.23	0.22	0.93	0.99	0.88	1.05

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	118	587	456	572	94	1761	421	1419
v/c Ratio	1.23	0.28	1.95	0.58	0.71	1.06	1.52	1.83	0.99
Control Delay	166.0	5.4	457.2	13.5	7.7	93.3	266.4	418.1	51.0
Queue Delay	0.0	0.3	243.8	1.0	0.7	0.0	101.7	0.0	3.6
Total Delay	166.0	5.7	701.0	14.5	8.4	93.3	368.2	418.1	54.6
Queue Length 50th (ft)	~163	6	~587	126	68	~65	~816	~408	458
Queue Length 95th (ft)	m#277	m14	m#756	m172	m102	m47	m#538	#596	#626
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	167	416	301	782	801	89	1162	230	1435
Starvation Cap Reductn	0	0	0	134	54	0	151	0	0
Spillback Cap Reductn	0	68	129	24	0	0	0	0	23
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.23	0.34	3.41	0.70	0.77	1.06	1.74	1.83	1.00

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	257	394	923	311	14	48	860	719
v/c Ratio	0.64	0.62	0.91	0.74	0.45	0.16	0.06	0.68	0.85
Control Delay	47.6	6.2	55.5	27.9	4.9	38.1	8.4	30.3	27.0
Queue Delay	0.0	0.1	7.2	3.7	0.3	0.0	0.0	1.0	9.0
Total Delay	47.6	6.3	62.7	31.6	5.2	38.1	8.4	31.3	36.0
Queue Length 50th (ft)	63	97	255	236	21	7	17	241	280
Queue Length 95th (ft)	m39	m29	m#388	294	m38	m8	m17	310	#527
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			60			150
Base Capacity (vph)	142	414	434	1239	691	89	848	1274	849
Starvation Cap Reductn	0	0	25	228	86	0	0	194	108
Spillback Cap Reductn	0	5	0	0	0	0	0	122	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.63	0.96	0.91	0.51	0.16	0.06	0.80	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	414	537	1771	617	1351
v/c Ratio	1.11	1.04dl	1.60	1.20	0.58
Control Delay	79.8	21.3	297.4	129.7	1.1
Queue Delay	613.7	157.4	44.3	71.5	0.8
Total Delay	693.6	178.7	341.7	201.2	1.9
Queue Length 50th (ft)	~328	137	~873	~478	23
Queue Length 95th (ft)	m208	m105	m#862	m#377	m21
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	373	749	1105	513	2336
Starvation Cap Reductn	0	0	0	46	606
Spillback Cap Reductn	350	349	64	61	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	18.00	1.34	1.70	1.37	0.78

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
25: H Street & 7th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1474	512	859
v/c Ratio	0.91	0.79	0.66
Control Delay	22.7	27.0	19.8
Queue Delay	42.6	2.5	0.7
Total Delay	65.2	29.6	20.5
Queue Length 50th (ft)	294	267	171
Queue Length 95th (ft)	m235	m381	m216
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1623	651	1302
Starvation Cap Reductn	273	61	178
Spillback Cap Reductn	22	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.09	0.87	0.76

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

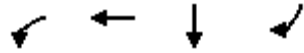
2030 No Proj AM Peak
1/9/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1879	49	1245	729	684
v/c Ratio	0.98	0.08	1.02	2.64	1.12
Control Delay	29.8	9.1	44.8	765.0	92.4
Queue Delay	24.5	0.1	22.2	0.0	219.1
Total Delay	54.3	9.2	67.0	765.0	311.6
Queue Length 50th (ft)	156	14	~305	~835	~256
Queue Length 95th (ft)	#222	m16	m#365	#1096	#646
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1912	580	1220	276	610
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	143	165	68	112	187
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.06	0.12	1.08	4.45	1.62

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	268	1715	883	191
v/c Ratio	0.32	0.64	0.58	0.40
Control Delay	8.9	16.4	16.7	8.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.9	16.4	16.7	8.2
Queue Length 50th (ft)	63	272	201	45
Queue Length 95th (ft)	120	324	m197	m80
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	841	2688	1526	481
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	10	11	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.64	0.58	0.40

Intersection Summary

Description: 6 seconds lost time added to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
28: J St & 6th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	879	2752	87	199
v/c Ratio	0.91	0.82	0.25	0.85
Control Delay	6.4	2.6	30.3	53.7
Queue Delay	2.9	1.4	0.0	0.0
Total Delay	9.3	4.0	30.3	53.7
Queue Length 50th (ft)	103	103	39	134
Queue Length 95th (ft)	m95	m95	83	m73
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	971	3368	352	234
Starvation Cap Reductn	41	390	0	0
Spillback Cap Reductn	0	56	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	0.92	0.25	0.85

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2338	480	1033
v/c Ratio	0.74	0.57	0.71
Control Delay	9.6	8.4	22.8
Queue Delay	1.2	0.9	1.2
Total Delay	10.9	9.3	24.1
Queue Length 50th (ft)	235	81	232
Queue Length 95th (ft)	256	m126	272
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	3153	842	1459
Starvation Cap Reductn	541	153	221
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.90	0.70	0.83

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
30: Richards Blvd & Dos Rios St

2030 No Proj AM Peak
1/9/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1341	2	313
v/c Ratio	0.48	0.00	0.40
Control Delay	8.1	11.0	6.8
Queue Delay	0.0	0.0	0.0
Total Delay	8.1	11.0	6.8
Queue Length 50th (ft)	82	1	25
Queue Length 95th (ft)	86	4	52
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2795	788	783
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.00	0.40

Intersection Summary

Queues
31: Richards Blvd & 12th Street

2030 No Proj AM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	47	630	89	2167	4372	711
v/c Ratio	0.10	0.70	0.20	0.62	0.85	0.61
Control Delay	38.1	49.0	15.3	4.6	17.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	38.1	49.0	15.3	4.6	18.3	8.9
Queue Length 50th (ft)	31	255	17	206	624	178
Queue Length 95th (ft)	64	323	61	222	652	283
Internal Link Dist (ft)		258		468	518	
Turn Bay Length (ft)	150					300
Base Capacity (vph)	449	898	449	3481	5165	1167
Starvation Cap Reductn	0	0	0	119	0	0
Spillback Cap Reductn	0	0	0	0	437	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.70	0.20	0.64	0.92	0.61

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

Queues
32: Bannon St & 12th Street

2030 No Proj AM Peak
1/9/2007



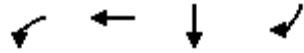
Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	720	30	549	1449	1	32	4388
v/c Ratio	0.47	0.05	1.05	0.56	0.00	0.16	0.92
Control Delay	37.9	32.4	90.9	8.5	0.0	34.1	9.0
Queue Delay	0.0	0.0	0.7	0.2	0.0	0.0	0.6
Total Delay	37.9	32.4	91.6	8.6	0.0	34.1	9.7
Queue Length 50th (ft)	174	18	~465	189	0	23	765
Queue Length 95th (ft)	214	42	#692	m9	m0	m28	290
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	1524	569	525	2752	857	206	4747
Starvation Cap Reductn	0	0	0	422	0	0	15
Spillback Cap Reductn	0	0	1	0	0	0	120
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.05	1.05	0.62	0.00	0.16	0.95

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1140	440	1534	851
v/c Ratio	0.92	0.35	0.77	0.96
Control Delay	30.3	13.0	20.5	39.8
Queue Delay	6.8	0.0	9.9	0.0
Total Delay	37.2	13.0	30.5	39.8
Queue Length 50th (ft)	190	79	376	399
Queue Length 95th (ft)	#108	98	470	#714
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	1235	1274	1982	883
Starvation Cap Reductn	19	0	0	0
Spillback Cap Reductn	78	0	436	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.35	0.99	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2: Richards Blvd & I-5 NB Off



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1481	2881	98	602
v/c Ratio	0.44	1.06	0.20	0.65
Control Delay	5.3	45.5	12.3	25.6
Queue Delay	0.9	0.0	0.0	0.0
Total Delay	6.2	45.5	12.3	25.6
Queue Length 50th (ft)	74	-655	20	131
Queue Length 95th (ft)	m78	m#590	m35	143
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)		150	300	
Base Capacity (vph)	3350	2708	673	1309
Starvation Cap Reductn	1476	0	0	0
Spillback Cap Reductn	87	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	1.06	0.15	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

3: Richards Blvd & Bercut Dr

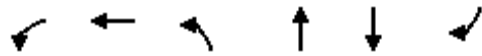


Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	3360	828	221	215	213
v/c Ratio	0.02	1.02	1.07	0.29	0.85	0.99
Control Delay	4.3	27.7	70.0	6.6	72.6	103.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	27.7	70.0	6.6	72.6	103.7
Queue Length 50th (ft)	2	~243	~291	26	136	136
Queue Length 95th (ft)	m2	#716	m#395	m34	#265	#286
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	790	3289	772	755	252	215
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.02	1.07	0.29	0.85	0.99

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

4: Richards Blvd & 5th Street



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	194	2349	963	202	42	209
v/c Ratio	0.28	0.94	0.92	0.21	0.13	0.76
Control Delay	13.6	28.2	36.0	4.8	33.3	55.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	28.2	36.0	4.8	33.3	55.1
Queue Length 50th (ft)	54	403	~340	30	22	119
Queue Length 95th (ft)	m82	#505	m#426	m45	50	199
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	695	2512	1042	997	401	329
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.94	0.92	0.20	0.10	0.64

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	299	1611	285	591	520	848
v/c Ratio	0.34	0.63	0.84	0.83	0.87	0.54
Control Delay	11.5	12.3	55.6	45.0	56.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	12.3	55.6	45.0	56.2	1.3
Queue Length 50th (ft)	51	159	192	197	169	0
Queue Length 95th (ft)	138	227	#323	276	#247	0
Internal Link Dist (ft)		1155		540	218	
Turn Bay Length (ft)	200		200			200
Base Capacity (vph)	883	2538	386	805	637	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.63	0.74	0.73	0.82	0.54

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
6: Richards Blvd & 10th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	515	930	42	33	169
v/c Ratio	0.12	0.19	0.81	0.05	0.09	0.75
Control Delay	15.6	14.1	36.2	10.7	37.9	43.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	14.1	36.2	10.7	37.9	43.5
Queue Length 50th (ft)	34	55	275	14	10	58
Queue Length 95th (ft)	61	69	318	22	23	120
Internal Link Dist (ft)		1064		356	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	769	2768	1357	1174	672	343
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.19	0.69	0.04	0.05	0.49

Intersection Summary

Queues

2030 No Proj PM Peak

1/9/2007

7: Richard Blvd & Dos Rios St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	797	109	1438	204	151
v/c Ratio	0.52	0.56	0.48	0.93	0.38	0.26
Control Delay	44.0	17.5	35.4	29.6	23.5	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	17.5	35.4	29.6	23.5	17.6
Queue Length 50th (ft)	33	131	44	277	74	41
Queue Length 95th (ft)	#83	182	89	#425	132	86
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	152	1451	253	1625	535	574
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.55	0.43	0.88	0.38	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Bannon St & I-5 SB Off

2030 No Proj PM Peak
1/9/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	1022	1066	1164	1511
v/c Ratio	0.84	0.67	0.41	0.75
Control Delay	37.1	2.3	10.3	16.7
Queue Delay	0.0	0.0	0.5	16.4
Total Delay	37.1	2.3	10.8	33.1
Queue Length 50th (ft)	305	0	125	362
Queue Length 95th (ft)	376	0	m143	m434
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1327	1583	2857	2003
Starvation Cap Reductn	0	0	1128	517
Spillback Cap Reductn	0	0	560	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.67	0.67	1.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
10: Bannon St & I-5 NB Off

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	593	1593	52	1385
v/c Ratio	0.63	0.66	0.05	0.64
Control Delay	8.8	27.0	8.1	14.6
Queue Delay	1.0	1.9	0.0	2.4
Total Delay	9.8	28.9	8.1	17.1
Queue Length 50th (ft)	79	236	12	225
Queue Length 95th (ft)	116	277	27	281
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	944	2432	1136	2203
Starvation Cap Reductn	149	643	0	0
Spillback Cap Reductn	0	175	0	657
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.75	0.89	0.05	0.90

Intersection Summary

Queues
11: Bannon St & Bercut Dr

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	144	2134	700	853	126	22
v/c Ratio	0.15	0.61	0.59	0.87	0.61	0.03
Control Delay	9.1	12.5	2.7	34.4	40.1	28.4
Queue Delay	2.0	1.6	0.5	0.0	0.0	0.0
Total Delay	11.1	14.1	3.2	34.4	40.1	28.4
Queue Length 50th (ft)	28	127	21	188	44	15
Queue Length 95th (ft)	m49	237	39	#238	m53	m18
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	960	3476	1179	1022	206	727
Starvation Cap Reductn	684	1095	166	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.90	0.69	0.83	0.61	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	433	2067	1172	512	160	572
v/c Ratio	0.71	1.01dr	0.90	0.84	0.65	0.29
Control Delay	20.4	25.6	24.9	21.6	63.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	25.6	24.9	21.6	63.7	9.9
Queue Length 50th (ft)	81	200	313	157	101	73
Queue Length 95th (ft)	m136	#261	#240	#479	170	96
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	611	2189	1296	610	267	2000
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.94	0.90	0.84	0.60	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	427	1708	163	232	1156	153	286
v/c Ratio	0.58	0.81	0.22	0.23	0.73	0.52	0.16
Control Delay	13.0	14.6	0.6	37.5	17.3	36.3	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	14.6	0.6	37.5	17.3	36.3	8.3
Queue Length 50th (ft)	111	165	0	54	435	106	31
Queue Length 95th (ft)	m125	m182	m0	m84	450	m146	m36
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	752	2161	767	1001	1583	292	1744
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.79	0.21	0.23	0.73	0.52	0.16

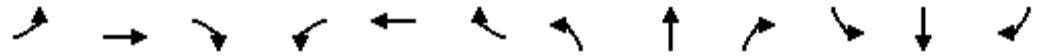
Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: N B Street & 6th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	52	144	271	315	132	72	161	1567	167	12	900	180
v/c Ratio	0.14	0.25	0.40	0.89	0.23	0.14	0.63	0.75	0.17	0.13	0.60	0.24
Control Delay	25.5	26.9	5.2	66.8	31.9	15.5	36.6	6.0	0.4	45.1	19.2	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	25.5	26.9	5.2	66.8	31.9	15.5	36.6	6.3	0.4	45.1	19.2	2.2
Queue Length 50th (ft)	22	64	0	171	66	2	100	53	0	8	189	3
Queue Length 95th (ft)	54	118	56	#338	117	44	m136	195	m1	m17	m246	m11
Internal Link Dist (ft)		435			1023			498				815
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	382	598	692	372	598	557	294	2092	978	92	1513	767
Starvation Cap Reductn	0	0	0	0	0	0	0	95	0	0	0	0
Spillback Cap Reductn	0	0	1	0	0	0	0	0	0	0	16	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.39	0.85	0.22	0.13	0.55	0.78	0.17	0.13	0.60	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	100	39	477	284	14	90	1261	591	58	389
v/c Ratio	0.29	0.18	0.14	0.92	0.30	0.03	0.33	0.71	0.47	0.63	0.28
Control Delay	57.9	27.3	7.0	66.9	30.0	13.4	35.3	17.2	1.2	63.6	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0
Total Delay	57.9	27.3	7.0	66.9	30.0	13.4	35.3	17.4	1.4	63.6	26.3
Queue Length 50th (ft)	13	21	1	157	76	0	56	376	2	33	84
Queue Length 95th (ft)	0	38	16	#257	112	15	m84	376	4	#97	124
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	106	637	317	519	1012	463	289	1780	1254	92	1409
Starvation Cap Reductn	0	0	0	0	0	0	0	82	138	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.16	0.12	0.92	0.28	0.03	0.31	0.74	0.53	0.63	0.28

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1428	515	199	58	331	3359	1150
v/c Ratio	1.69	0.86	0.51	0.21	0.52	0.81	0.87
Control Delay	349.9	67.6	15.4	48.1	31.1	22.2	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.2
Total Delay	349.9	67.6	15.4	48.1	31.1	22.2	14.4
Queue Length 50th (ft)	~624	224	20	42	75	543	216
Queue Length 95th (ft)	#718	#313	95	84	124	m563	m180
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	844	599	388	313	698	4144	1316
Starvation Cap Reductn	0	0	0	0	0	0	77
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.69	0.86	0.51	0.19	0.47	0.81	0.93

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

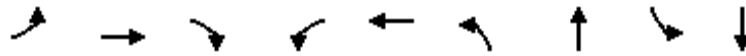
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	185	356	37	26	194	1653	162	1180
v/c Ratio	0.52	0.60	0.64	0.27	0.09	0.70	0.81	0.73	0.62
Control Delay	39.9	40.6	10.3	30.5	18.0	53.6	22.2	51.3	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.4
Total Delay	39.9	40.6	10.3	30.5	18.0	53.6	25.5	51.3	11.2
Queue Length 50th (ft)	58	90	24	24	12	118	444	110	128
Queue Length 95th (ft)	m88	m128	m39	m52	m21	186	561	m#169	265
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	255	345	583	153	326	343	2032	242	1897
Starvation Cap Reductn	0	0	0	0	0	0	283	0	288
Spillback Cap Reductn	0	0	0	0	0	0	44	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.54	0.61	0.24	0.08	0.57	0.95	0.67	0.73

Intersection Summary

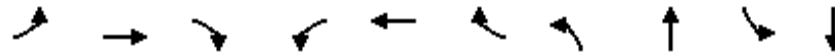
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	277	40	38	89	3	9	74	1381	63	944
v/c Ratio	0.85	0.09	0.10	0.28	0.01	0.02	0.49	0.65	0.60	0.46
Control Delay	36.8	6.8	2.1	33.3	28.0	15.3	54.2	16.2	58.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Total Delay	36.8	6.8	2.1	33.3	28.0	15.3	54.2	17.1	58.2	6.2
Queue Length 50th (ft)	15	2	0	45	1	0	45	318	39	32
Queue Length 95th (ft)	m#291	m10	m7	89	9	13	91	399	m68	m234
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	359	475	432	347	475	410	173	2123	106	2045
Starvation Cap Reductn	0	0	0	0	0	0	0	432	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	62	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.08	0.09	0.26	0.01	0.02	0.43	0.82	0.59	0.46

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	756	337	306	638	199	598	1509	839	228	1171	182
v/c Ratio	0.90	1.07	0.63	1.05	1.05	0.52	1.06	1.01	0.99	0.99	1.02	0.32
Control Delay	84.5	105.8	13.9	53.3	47.6	10.1	113.8	68.6	56.5	124.4	80.4	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.1	2.2	0.0	62.9	0.0
Total Delay	84.5	105.8	13.9	53.3	47.6	10.1	113.8	97.8	58.7	124.4	143.3	23.8
Queue Length 50th (ft)	322	-432	32	-339	-353	93	-330	-790	607	117	-635	77
Queue Length 95th (ft)	#501	#572	150	m#232	m232	m88	#454	#953	#918	#208	#775	145
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	372	708	539	291	608	381	563	1493	845	231	1151	565
Starvation Cap Reductn	0	0	0	0	0	0	0	108	8	0	154	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	1.07	0.63	1.05	1.05	0.52	1.06	1.09	1.00	0.99	1.17	0.32

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1232	915	39	615	606	472	701	470	49	806	7
v/c Ratio	1.09	0.89	0.08	0.90	1.07	1.09	0.62	0.66	0.69	1.03	0.02
Control Delay	96.9	60.3	23.9	75.1	116.2	91.0	27.0	11.1	113.6	97.5	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.9	60.3	23.9	75.1	116.2	91.0	27.0	11.1	113.6	97.5	33.9
Queue Length 50th (ft)	~695	444	11	310	-344	~259	298	189	48	-444	2
Queue Length 95th (ft)	m#719	m456	m21	#444	#470	m178	m234	m108	#121	#579	16
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	1133	1097	505	686	566	435	1132	717	71	779	351
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.83	0.08	0.90	1.07	1.09	0.62	0.66	0.69	1.03	0.02

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	314	373	96	639	711	1620
v/c Ratio	1.56	0.73	0.77	1.42	1.32	1.22
Control Delay	316.9	54.4	103.6	240.0	201.9	125.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	316.9	54.4	103.6	240.0	201.9	125.6
Queue Length 50th (ft)	~434	309	94	~799	~467	~994
Queue Length 95th (ft)	#630	435	#189	#1045	#598	m#1034
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	201	511	130	449	540	1329
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.56	0.73	0.74	1.42	1.32	1.22

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	300	261	831	534	798	39	1662	370	2905
v/c Ratio	1.19	0.67	2.61	0.68	1.00	0.44	1.27	2.33	2.01
Control Delay	147.4	23.4	749.7	19.2	36.2	67.5	142.5	639.5	479.4
Queue Delay	0.0	0.4	0.0	2.5	0.0	14.7	16.1	0.0	219.6
Total Delay	147.4	23.8	749.7	21.7	36.2	82.3	158.5	639.5	699.0
Queue Length 50th (ft)	~237	86	~894	158	144	25	~668	~387	~1552
Queue Length 95th (ft)	m#400	m164	m#976	m180	m#492	m20	m123	#566	#1686
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	252	389	319	782	802	89	1308	159	1445
Starvation Cap Reductn	0	0	0	129	0	0	36	0	0
Spillback Cap Reductn	0	13	99	140	0	33	0	0	447
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.69	3.78	0.83	1.00	0.70	1.31	2.33	2.91

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	280	351	194	1035	441	26	63	482	760
v/c Ratio	0.99	0.56	0.59	0.97	0.61	0.29	0.08	0.41	0.93
Control Delay	56.2	10.2	39.8	54.7	7.5	68.6	29.6	27.3	34.4
Queue Delay	0.0	1.0	0.0	49.3	0.4	0.0	0.0	0.0	1.6
Total Delay	56.2	11.2	39.8	104.0	7.9	68.6	29.6	27.3	36.0
Queue Length 50th (ft)	127	127	104	328	12	18	42	124	237
Queue Length 95th (ft)	m77	m72	m173	#480	111	m20	m47	170	#504
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	283	632	327	1062	727	89	792	1168	813
Starvation Cap Reductn	0	109	0	139	58	0	0	0	13
Spillback Cap Reductn	0	1	0	4	0	0	0	12	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.67	0.59	1.12	0.66	0.29	0.08	0.42	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	186	366	1571	1155	2737
v/c Ratio	0.68	0.72	1.46	1.59	1.02
Control Delay	19.3	17.7	221.7	287.4	25.4
Queue Delay	8.1	98.6	14.9	279.7	208.5
Total Delay	27.4	116.3	236.5	567.0	233.8
Queue Length 50th (ft)	84	81	~680	~1062	~456
Queue Length 95th (ft)	m86	m77	m#416	m334	m32
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	274	509	1079	726	2672
Starvation Cap Reductn	0	0	0	204	845
Spillback Cap Reductn	56	205	24	0	359
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.85	1.20	1.49	2.21	1.50

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1613	399	448
v/c Ratio	0.90	0.73	0.41
Control Delay	13.2	27.6	19.4
Queue Delay	44.8	18.1	0.0
Total Delay	58.0	45.8	19.4
Queue Length 50th (ft)	171	147	86
Queue Length 95th (ft)	m126	213	117
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1799	549	1097
Starvation Cap Reductn	328	34	0
Spillback Cap Reductn	151	143	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.10	0.98	0.41

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.



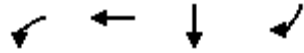
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2618	328	1122	1581	1476
v/c Ratio	1.60	0.81	1.38	2.34	2.32
Control Delay	295.6	47.8	207.6	621.4	616.6
Queue Delay	61.1	0.0	0.0	72.7	77.5
Total Delay	356.7	47.8	207.6	694.2	694.1
Queue Length 50th (ft)	~678	214	~516	~1727	~1606
Queue Length 95th (ft)	#767	m224	m#494	m#1709	m#1590
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1636	407	814	677	635
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	128	0	0	209	195
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.74	0.81	1.38	3.38	3.35

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	97	2365	1232	291
v/c Ratio	0.11	0.83	0.74	0.60
Control Delay	8.7	19.5	27.1	27.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.7	19.5	27.1	27.9
Queue Length 50th (ft)	26	434	242	149
Queue Length 95th (ft)	53	511	m287	m214
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	855	2855	1658	484
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.11	0.83	0.74	0.60

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	658	2067	534	689
v/c Ratio	1.15	1.09	0.73	2.86
Control Delay	90.0	64.1	19.3	852.9
Queue Delay	88.4	38.8	34.8	0.0
Total Delay	178.4	103.0	54.0	852.9
Queue Length 50th (ft)	~355	~337	120	~672
Queue Length 95th (ft)	m#312	m#288	#259	m#306
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	574	1890	733	241
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	86	142	225	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.35	1.18	1.05	2.86

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2166	734	1211
v/c Ratio	0.84	0.97	0.74
Control Delay	6.2	14.5	13.4
Queue Delay	0.0	0.0	0.0
Total Delay	6.2	14.5	13.4
Queue Length 50th (ft)	102	92	94
Queue Length 95th (ft)	m78	m75	143
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	2593	760	1646
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	0.97	0.74

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
30: Richards Blvd & Dos Rios St

2030 No Proj PM Peak
1/9/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	971	12	261
v/c Ratio	0.37	0.02	0.34
Control Delay	9.1	8.9	11.5
Queue Delay	0.0	0.0	0.0
Total Delay	9.1	8.9	11.5
Queue Length 50th (ft)	45	2	48
Queue Length 95th (ft)	64	9	92
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2637	764	762
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.37	0.02	0.34

Intersection Summary

Queues
31: Richards Blvd & 12th Street

2030 No Proj PM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	148	189	155	4	4154	3675	777
v/c Ratio	0.31	0.20	0.33	0.03	1.22	0.75	0.63
Control Delay	40.1	37.4	26.5	62.8	123.7	16.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	4.2	0.6	0.0
Total Delay	40.1	37.4	26.5	62.8	127.9	17.5	6.0
Queue Length 50th (ft)	100	64	66	1	~1571	455	65
Queue Length 95th (ft)	162	97	130	m1	m#1533	612	223
Internal Link Dist (ft)		258			468	518	
Turn Bay Length (ft)	150			200			300
Base Capacity (vph)	477	953	466	150	3403	4932	1228
Starvation Cap Reductn	0	0	0	0	26	0	0
Spillback Cap Reductn	0	0	0	0	0	739	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.20	0.33	0.03	1.23	0.88	0.63

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	2087	92	717	2072	21	45	3780
v/c Ratio	1.06	0.12	1.07	0.85	0.03	0.66	0.93
Control Delay	75.0	25.6	89.5	40.1	6.6	77.5	18.3
Queue Delay	205.2	0.0	0.0	0.4	0.0	0.0	0.1
Total Delay	280.2	25.6	89.5	40.6	6.6	77.5	18.4
Queue Length 50th (ft)	~681	49	~631	416	0	38	712
Queue Length 95th (ft)	#773	87	#875	m231	m1	m53	149
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	1977	738	670	2440	765	68	4062
Starvation Cap Reductn	0	0	0	0	0	0	19
Spillback Cap Reductn	603	0	0	86	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.52	0.12	1.07	0.88	0.03	0.66	0.93

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Year 2030 Long Term + Project

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Res) AM Peak

1: Richards Blvd & I-5 SB Off

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↕↕						↕↕	↔↔
Volume (vph)	0	0	0	448	303	0	0	0	0	0	2444	795
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	448	303	0	0	0	0	0	2444	795
RTOR Reduction (vph)	0	0	0	20	0	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	0	0	428	303	0	0	0	0	0	2444	769
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6							4
Permitted Phases												4
Actuated Green, G (s)				17.5	17.5						75.0	75.0
Effective Green, g (s)				16.0	17.0						75.0	75.0
Actuated g/C Ratio				0.16	0.17						0.75	0.75
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				549	602						2654	1053
v/s Ratio Prot				c0.12	0.09						c0.69	
v/s Ratio Perm												0.55
v/c Ratio				0.78	0.50						0.92	0.73
Uniform Delay, d1				40.3	37.7						10.1	6.9
Progression Factor				0.73	0.72						1.00	1.00
Incremental Delay, d2				10.4	3.0						6.2	3.2
Delay (s)				39.9	30.2						16.3	10.1
Level of Service				D	C						B	B
Approach Delay (s)		0.0			36.0			0.0			14.8	
Approach LOS		A			D			A			B	

Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richards Blvd & I-5 NB Off

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	676	1448	74	240	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	676	1448	74	240	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	63	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	676	1448	11	240	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					76.5	100.0	16.0	16.0				
Effective Green, g (s)					76.5	100.0	15.5	15.5				
Actuated g/C Ratio					0.76	1.00	0.16	0.16				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3890	2708	274	549				
v/s Ratio Prot					0.13		0.01	0.07				
v/s Ratio Perm						c0.53						
v/c Ratio					0.17	0.53	0.04	0.44				
Uniform Delay, d1					3.2	0.0	35.9	38.3				
Progression Factor					1.26	1.00	0.68	0.89				
Incremental Delay, d2					0.1	0.7	0.1	1.1				
Delay (s)					4.1	0.7	24.7	35.2				
Level of Service					A	A	C	D				
Approach Delay (s)		0.0			1.8			32.8			0.0	
Approach LOS		A			A			C			A	

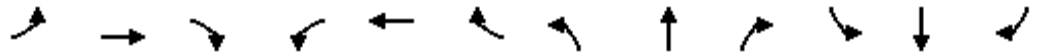
Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Richards Blvd & Bercut Dr

2030 +Proj (Res) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘↘	↑			↑	↗
Volume (vph)	0	0	0	23	1566	65	466	249	0	0	90	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	6331		3433	1863			1863	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	6331		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	23	1566	65	466	249	0	0	90	91
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	42
Lane Group Flow (vph)	0	0	0	23	1627	0	466	249	0	0	90	49
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				61.1	61.1		19.0	30.8			7.8	7.8
Effective Green, g (s)				61.7	61.7		18.5	30.3			7.3	7.3
Actuated g/C Ratio				0.62	0.62		0.18	0.30			0.07	0.07
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				946	3906		635	564			136	116
v/s Ratio Prot					c0.26		c0.14	0.13			c0.05	
v/s Ratio Perm				0.01								0.03
v/c Ratio				0.02	0.42		0.73	0.44			0.66	0.42
Uniform Delay, d1				7.4	9.9		38.4	28.0			45.1	44.3
Progression Factor				0.47	0.43		0.61	0.54			1.00	1.00
Incremental Delay, d2				0.0	0.3		3.9	0.2			9.0	0.9
Delay (s)				3.5	4.5		27.4	15.4			54.1	45.3
Level of Service				A	A		C	B			D	D
Approach Delay (s)		0.0			4.5			23.2			49.7	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richards Blvd & 5th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑	↘
Volume (vph)	0	0	0	224	972	37	433	329	0	0	232	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6352		3433	1863			1863	1480
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6352		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	224	972	37	433	329	0	0	232	388
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	20
Lane Group Flow (vph)	0	0	0	224	1005	0	433	329	0	0	232	368
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				43.0	41.7		17.3	50.5			29.2	29.2
Effective Green, g (s)				42.0	42.0		16.8	50.0			28.7	29.2
Actuated g/C Ratio				0.42	0.42		0.17	0.50			0.29	0.29
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				743	2668		577	932			535	432
v/s Ratio Prot				0.13	c0.16		c0.13	0.18			0.12	
v/s Ratio Perm												c0.25
v/c Ratio				0.30	0.38		0.75	0.35			0.43	0.85
Uniform Delay, d1				19.3	20.0		39.6	15.2			29.0	33.4
Progression Factor				0.70	0.71		0.89	0.71			1.00	1.00
Incremental Delay, d2				0.1	0.4		4.0	0.1			0.2	14.4
Delay (s)				13.6	14.5		39.5	10.8			29.2	47.8
Level of Service				B	B		D	B			C	D
Approach Delay (s)		0.0			14.3			27.1			40.8	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richards Blvd & 7th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙	↑↑			↑↑	↗
Volume (vph)	0	0	0	304	880	219	254	838	0	0	1044	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.91	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frft				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	5085	1518	1610	3385			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	5085	1518	1610	3385			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	304	880	219	254	838	0	0	1044	360
RTOR Reduction (vph)	0	0	0	0	0	149	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	304	880	70	229	863	0	0	1044	360
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				33.0	32.0	32.0	26.7	26.7			30.3	100.0
Effective Green, g (s)				32.0	32.0	32.0	26.2	26.2			29.8	100.0
Actuated g/C Ratio				0.32	0.32	0.32	0.26	0.26			0.30	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				566	1627	486	422	887			1055	1583
v/s Ratio Prot				0.17	c0.17		0.14	c0.25			c0.29	
v/s Ratio Perm						0.05						0.23
v/c Ratio				0.54	0.54	0.14	0.54	0.97			0.99	0.23
Uniform Delay, d1				27.9	28.0	24.2	31.7	36.5			34.9	0.0
Progression Factor				0.60	0.60	0.68	0.97	0.96			1.00	1.00
Incremental Delay, d2				0.4	1.1	0.5	0.7	21.9			24.8	0.3
Delay (s)				17.3	18.0	17.1	31.4	57.1			59.8	0.3
Level of Service				B	B	B	C	E			E	A
Approach Delay (s)		0.0			17.7			51.7			44.5	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑↑	↗
Volume (vph)	0	0	0	211	409	87	1092	34	0	0	24	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.74
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Fr _t				1.00	0.97		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6239		3433	1863			3539	1176
Fl _t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6239		3433	1863			3539	1176
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	211	409	87	1092	34	0	0	24	36
RTOR Reduction (vph)	0	0	0	0	31	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	0	0	211	465	0	1092	34	0	0	24	2
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				43.9	42.9		40.4	49.1			4.7	4.7
Effective Green, g (s)				43.4	43.4		39.9	48.6			4.2	4.2
Actuated g/C Ratio				0.43	0.43		0.40	0.49			0.04	0.04
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				768	2708		1370	905			149	49
v/s Ratio Prot				c0.12	0.07		c0.32	0.02			c0.01	
v/s Ratio Perm												0.00
v/c Ratio				0.27	0.17		0.80	0.04			0.16	0.03
Uniform Delay, d ₁				18.2	17.3		26.5	13.5			46.2	45.9
Progression Factor				1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d ₂				0.1	0.1		3.3	0.0			0.2	0.1
Delay (s)				18.3	17.4		29.8	13.5			46.4	46.0
Level of Service				B	B		C	B			D	D
Approach Delay (s)		0.0			17.7			29.3			46.2	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	488	50	237	1151	199	35	150	64	21	75	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.97			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3490		1770	3386			1751			1739	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.95	
Satd. Flow (perm)	1770	3490		1770	3386			1662			1655	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	488	50	237	1151	199	35	150	64	21	75	67
RTOR Reduction (vph)	0	13	0	0	22	0	0	18	0	0	36	0
Lane Group Flow (vph)	43	525	0	237	1328	0	0	231	0	0	127	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	3.1	13.1		16.6	26.6			21.8			21.8	
Effective Green, g (s)	3.6	13.6		17.1	27.1			21.3			21.3	
Actuated g/C Ratio	0.06	0.21		0.26	0.42			0.33			0.33	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	98	730		466	1412			545			542	
v/s Ratio Prot	0.02	c0.15		0.13	c0.39							
v/s Ratio Perm								c0.14			0.08	
v/c Ratio	0.44	0.72		0.51	0.94			0.42			0.23	
Uniform Delay, d1	29.7	23.9		20.4	18.2			17.1			15.9	
Progression Factor	1.00	1.00		1.00	1.00			0.41			1.00	
Incremental Delay, d2	3.1	2.8		0.9	12.3			2.3			1.0	
Delay (s)	32.8	26.8		21.3	30.5			9.3			16.9	
Level of Service	C	C		C	C			A			B	
Approach Delay (s)		27.2			29.1			9.3			16.9	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 +Proj (Res) AM Peak
 12/22/2006

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	628	164	0	0	0	0	0	0	2130	762	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	628	164	0	0	0	0	0	0	2130	762	0
RTOR Reduction (vph)	0	0	97	0	0	0	0	0	0	65	0	0
Lane Group Flow (vph)	0	628	67	0	0	0	0	0	0	2065	762	0
Turn Type			Perm								Split	
Protected Phases		4								2	2	
Permitted Phases			4									
Actuated Green, G (s)		24.0	24.0							67.0	67.0	
Effective Green, g (s)		24.0	24.0							67.0	67.0	
Actuated g/C Ratio		0.24	0.24							0.67	0.67	
Clearance Time (s)		4.5	4.5							4.5	4.5	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		849	380							3343	2371	
v/s Ratio Prot		c0.18								c0.41	0.22	
v/s Ratio Perm			0.04									
v/c Ratio		0.74	0.18							0.62	0.32	
Uniform Delay, d1		35.1	30.2							9.3	6.9	
Progression Factor		1.00	1.00							0.67	0.72	
Incremental Delay, d2		3.4	0.2							0.4	0.1	
Delay (s)		38.5	30.4							6.6	5.1	
Level of Service		D	C							A	A	
Approach Delay (s)		36.8			0.0			0.0			6.2	
Approach LOS		D			A			A			A	

Intersection Summary		
HCM Average Control Delay	12.8	HCM Level of Service
HCM Volume to Capacity ratio	0.65	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	87.8%	9.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		E























HCM Signalized Intersection Capacity Analysis
 10: Bannon St & I-5 NB Off

2030 +Proj (Res) AM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   							   			
Volume (vph)	240	2518	0	0	0	0	0	52	1730	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	2518	0	0	0	0	0	52	1730	0	0	0
RTOR Reduction (vph)	97	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	143	2518	0	0	0	0	0	52	1730	0	0	0
Turn Type	Split						Prot					
Protected Phases	2	2						1	4	1	4	
Permitted Phases												
Actuated Green, G (s)	36.2	36.2						55.8	55.8			
Effective Green, g (s)	36.2	36.2						55.8	55.8			
Actuated g/C Ratio	0.36	0.36						0.56	0.56			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	641	2731						1040	2014			
v/s Ratio Prot	0.08	c0.33						0.03	c0.48			
v/s Ratio Perm												
v/c Ratio	0.22	0.92						0.05	0.86			
Uniform Delay, d1	22.1	30.5						10.0	18.8			
Progression Factor	0.65	0.85						1.00	1.00			
Incremental Delay, d2	0.6	5.3						0.0	3.9			
Delay (s)	15.1	31.2						10.1	22.7			
Level of Service	B	C						B	C			
Approach Delay (s)		29.8			0.0			22.3			0.0	
Approach LOS		C			A			C			A	
Intersection Summary												
HCM Average Control Delay			26.9		HCM Level of Service				C			
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			76.2%		ICU Level of Service				D			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2030 +Proj (Res) AM Peak
 12/22/2006

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						 		 			
Volume (vph)	217	3153	878	0	0	0	0	404	42	146	6	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0		
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00		
Frt	1.00	1.00	0.85					0.99		1.00	1.00		
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1770	6408	1583					3489		3433	1863		
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00		
Satd. Flow (perm)	1770	6408	1583					3489		3433	1863		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	217	3153	878	0	0	0	0	404	42	146	6	0	
RTOR Reduction (vph)	0	0	297	0	0	0	0	3	0	0	0	0	
Lane Group Flow (vph)	217	3153	581	0	0	0	0	443	0	146	6	0	
Turn Type	Split		Perm					Prot					
Protected Phases	6	6						8		7	4		
Permitted Phases			6										
Actuated Green, G (s)	66.2	66.2	66.2					16.1		5.7	25.8		
Effective Green, g (s)	66.2	66.2	66.2					16.1		5.7	25.8		
Actuated g/C Ratio	0.66	0.66	0.66					0.16		0.06	0.26		
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	1172	4242	1048					562		196	481		
v/s Ratio Prot	0.12	c0.49						c0.13		c0.04	0.00		
v/s Ratio Perm			0.37										
v/c Ratio	0.19	0.74	0.55					0.79		0.74	0.01		
Uniform Delay, d1	6.5	11.2	9.0					40.3		46.4	27.6		
Progression Factor	0.68	0.74	0.80					1.00		0.50	0.42		
Incremental Delay, d2	0.1	0.5	0.9					7.3		14.1	0.0		
Delay (s)	4.6	8.8	8.1					47.6		37.4	11.7		
Level of Service	A	A	A					D		D	B		
Approach Delay (s)		8.4			0.0			47.6			36.4		
Approach LOS		A			A			D			D		
Intersection Summary													
HCM Average Control Delay			12.9									HCM Level of Service	B
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			72.4%									ICU Level of Service	C
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 12: Bannon St & 6th Street

2030 +Proj (Res) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	601	1737	1009	0	0	0	0	564	124	69	574	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6055						3380	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6055						3380	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	601	1737	1009	0	0	0	0	564	124	69	574	0
RTOR Reduction (vph)	0	86	0	0	0	0	0	2	86	0	0	0
Lane Group Flow (vph)	601	2660	0	0	0	0	0	574	26	69	574	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	51.7	51.7						23.3	23.3	12.0	39.3	
Effective Green, g (s)	51.7	51.7						23.3	23.3	12.0	39.3	
Actuated g/C Ratio	0.52	0.52						0.23	0.23	0.12	0.39	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	915	3130						788	336	212	1391	
v/s Ratio Prot	c0.44						c0.17			0.04 c0.16		
v/s Ratio Perm	0.34						0.02					
v/c Ratio	0.66	1.11dr						0.73	0.08	0.33	0.41	
Uniform Delay, d1	17.7	20.8						35.4	30.0	40.3	22.0	
Progression Factor	0.50	0.44						0.45	0.30	1.12	1.19	
Incremental Delay, d2	1.1	1.5						5.7	0.4	0.9	0.2	
Delay (s)	9.9	10.7						21.5	9.4	45.8	26.3	
Level of Service	A	B						C	A	D	C	
Approach Delay (s)	10.6			0.0				19.5		28.4		
Approach LOS	B			A				B		C		

Intersection Summary

HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 13: Bannon St & 7th Street

2030 +Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	563	1311	28	0	0	0	0	321	341	216	1069	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Flt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	563	1311	28	0	0	0	0	321	341	216	1069	0
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	563	1311	11	0	0	0	0	321	341	216	1069	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	38.9	38.9	38.9					30.3	100.0	17.3	52.1	
Effective Green, g (s)	38.9	38.9	38.9					30.3	100.0	17.3	52.1	
Actuated g/C Ratio	0.39	0.39	0.39					0.30	1.00	0.17	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	689	1978	616					1072	1583	306	1844	
v/s Ratio Prot		0.26						0.09		c0.12	c0.30	
v/s Ratio Perm	c0.32		0.01						0.22			
v/c Ratio	0.82	0.66	0.02					0.30	0.22	0.71	0.58	
Uniform Delay, d1	27.4	25.2	18.8					26.7	0.0	39.0	16.4	
Progression Factor	0.40	0.38	0.08					0.66	1.00	1.06	0.17	
Incremental Delay, d2	4.5	0.5	0.0					0.7	0.3	3.2	0.6	
Delay (s)	15.5	10.2	1.5					18.2	0.3	44.6	3.4	
Level of Service	B	B	A					B	A	D	A	
Approach Delay (s)		11.6			0.0			9.0			10.3	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

























Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 +Proj (Res) AM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	46	72	142	195	17	73	583	79	89	1129	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.47	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	878	1863	1583	1354	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	103	46	72	142	195	17	73	583	79	89	1129	143
RTOR Reduction (vph)	0	0	57	0	0	13	0	0	44	0	0	51
Lane Group Flow (vph)	103	46	15	142	195	4	73	583	35	89	1129	92
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.0	44.4	44.4	21.1	57.5	57.5
Effective Green, g (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.0	44.4	44.4	21.1	57.5	57.5
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.08	0.44	0.44	0.21	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	189	401	340	291	401	340	142	1571	703	373	2035	910
v/s Ratio Prot		0.02			0.10		c0.04	0.16		0.05	c0.32	
v/s Ratio Perm	c0.12		0.01	0.10		0.00			0.02			0.06
v/c Ratio	0.54	0.11	0.05	0.49	0.49	0.01	0.51	0.37	0.05	0.24	0.55	0.10
Uniform Delay, d1	34.9	31.6	31.1	34.4	34.4	30.9	44.1	18.5	15.8	32.8	13.3	9.6
Progression Factor	1.00	1.00	1.00	1.10	1.09	1.45	0.97	0.46	0.08	1.07	0.63	0.71
Incremental Delay, d2	3.2	0.1	0.1	1.2	0.9	0.0	3.1	0.7	0.1	0.2	0.8	0.2
Delay (s)	38.1	31.7	31.2	39.2	38.6	44.8	45.9	9.1	1.4	35.2	9.2	7.0
Level of Service	D	C	C	D	D	D	D	A	A	D	A	A
Approach Delay (s)		34.5			39.1			11.9			10.6	
Approach LOS		C			D			B			B	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 +Proj (Res) AM Peak

12/22/2006



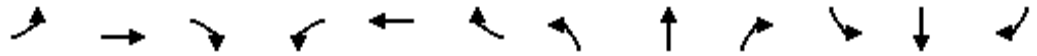
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	88	57	89	130	308	80	465	381	126	1233	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	88	57	89	130	308	80	465	381	126	1233	70
RTOR Reduction (vph)	0	0	49	0	0	248	0	0	205	0	3	0
Lane Group Flow (vph)	39	88	8	89	130	60	80	465	176	126	1300	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov		Prot	
Protected Phases	7	4		3	8		5	2	3		1	6
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.1	14.4	14.4	8.2	19.5	19.5	5.9	37.9	46.1	21.5	53.5	53.5
Effective Green, g (s)	3.1	14.4	14.4	8.2	19.5	19.5	5.9	37.9	46.1	21.5	53.5	53.5
Actuated g/C Ratio	0.03	0.14	0.14	0.08	0.20	0.20	0.06	0.38	0.46	0.22	0.54	0.54
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	55	510	228	282	690	309	104	1341	801	381	1878	1878
v/s Ratio Prot	c0.02	0.02		c0.03	0.04		c0.05	0.13	0.02	0.07	c0.37	c0.37
v/s Ratio Perm			0.01			c0.04			0.09			
v/c Ratio	0.71	0.17	0.04	0.32	0.19	0.19	0.77	0.35	0.22	0.33	0.69	0.69
Uniform Delay, d1	48.0	37.6	36.8	43.3	33.6	33.7	46.4	22.2	16.2	33.2	17.2	17.2
Progression Factor	0.85	1.05	1.66	1.00	1.00	1.00	0.99	0.68	0.17	0.58	0.38	0.38
Incremental Delay, d2	34.0	0.2	0.1	0.6	0.1	0.3	28.0	0.7	0.1	0.5	1.9	1.9
Delay (s)	74.7	39.5	61.2	43.9	33.8	34.0	74.1	15.8	2.9	19.6	8.5	8.5
Level of Service	E	D	E	D	C	C	E	B	A	B	A	A
Approach Delay (s)		53.7			35.6			15.5			9.5	9.5
Approach LOS		D			D			B			A	A

Intersection Summary

HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 +Proj (Res) AM Peak
 12/22/2006



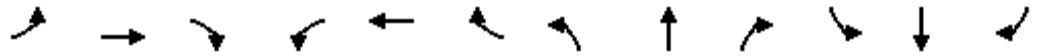
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕↕						←←←←	↗
Volume (vph)	1381	107	126	32	269	29	0	0	0	81	4474	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3488						7537	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3488						7537	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1381	107	126	32	269	29	0	0	0	81	4474	383
RTOR Reduction (vph)	0	0	106	0	7	0	0	0	0	0	0	55
Lane Group Flow (vph)	1381	107	20	32	291	0	0	0	0	0	4555	328
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split							Perm	pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3								2 10	2 10
Actuated Green, G (s)	21.0	21.0	21.0	19.8	19.8						70.7	91.7
Effective Green, g (s)	21.0	21.0	21.0	19.8	19.8						73.7	91.7
Actuated g/C Ratio	0.16	0.16	0.16	0.15	0.15						0.57	0.71
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	806	572	235	270	531						4273	1238
v/s Ratio Prot	c0.28	0.03		0.02	c0.08							0.04
v/s Ratio Perm			0.01								0.60	0.16
v/c Ratio	1.71	0.19	0.09	0.12	0.55						1.07	0.26
Uniform Delay, d1	54.5	47.1	46.3	47.6	51.0						28.1	6.9
Progression Factor	0.88	0.85	1.25	1.00	1.00						0.96	2.24
Incremental Delay, d2	325.4	0.3	0.3	0.4	2.0						31.9	0.1
Delay (s)	373.3	40.5	58.3	48.0	53.0						59.0	15.6
Level of Service	F	D	E	D	D						E	B
Approach Delay (s)		326.6			52.5			0.0			55.7	
Approach LOS		F			D			A			E	

Intersection Summary

HCM Average Control Delay	119.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th Street

2030 +Proj (Res) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	65	204	76	7	20	211	600	0	83	1174	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1656		1770	3539		1770	3487	
Flt Permitted	0.74	1.00	1.00	0.71	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1378	1863	1583	1331	1656		1770	3539		1770	3487	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	65	204	76	7	20	211	600	0	83	1174	127
RTOR Reduction (vph)	0	0	172	0	17	0	0	0	0	0	7	0
Lane Group Flow (vph)	54	65	32	76	10	0	211	600	0	83	1294	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases			4		8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	15.6	15.6	15.6	15.6	15.6		16.7	62.9		8.0	54.2	
Effective Green, g (s)	15.6	15.6	15.6	15.6	15.6		16.7	62.9		8.0	54.2	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.17	0.63		0.08	0.54	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	215	291	247	208	258		296	2226		142	1890	
v/s Ratio Prot		0.03			0.01		c0.12	0.17		0.05	c0.37	
v/s Ratio Perm	0.04		0.02	c0.06								
v/c Ratio	0.25	0.22	0.13	0.37	0.04		0.71	0.27		0.58	0.68	
Uniform Delay, d1	37.1	36.9	36.3	37.8	35.8		39.4	8.3		44.4	16.7	
Progression Factor	1.00	1.00	1.00	1.06	1.15		0.74	0.99		1.15	0.39	
Incremental Delay, d2	0.6	0.4	0.2	0.9	0.1		7.2	0.3		5.3	1.8	
Delay (s)	37.7	37.3	36.6	40.8	41.2		36.3	8.5		56.2	8.3	
Level of Service	D	D	D	D	D		D	A		E	A	
Approach Delay (s)		36.9			40.9			15.7			11.2	
Approach LOS		D			D			B			B	

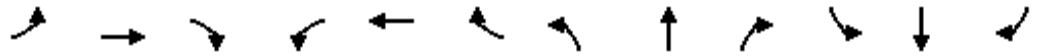
Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 +Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	11	46	187	4	5	63	255	0	24	1526	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3525	
Flt Permitted	0.76	1.00	1.00	0.75	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1407	1863	1583	1398	1863	1583	1770	3539		1770	3525	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	11	46	187	4	5	63	255	0	24	1526	42
RTOR Reduction (vph)	0	0	37	0	0	4	0	0	0	0	2	0
Lane Group Flow (vph)	229	11	9	187	4	1	63	255	0	24	1566	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	19.5	19.5	19.5	19.5	19.5	19.5	7.6	59.0		8.5	60.4	
Effective Green, g (s)	19.5	19.5	19.5	19.5	19.5	19.5	7.6	59.0		8.5	60.4	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.08	0.59		0.08	0.60	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	274	363	309	273	363	309	135	2088		150	2129	
v/s Ratio Prot		0.01			0.00		c0.04	0.07		0.01	c0.44	
v/s Ratio Perm	c0.16		0.01	0.13		0.00						
v/c Ratio	0.84	0.03	0.03	0.68	0.01	0.00	0.47	0.12		0.16	0.74	
Uniform Delay, d1	38.7	32.6	32.6	37.4	32.5	32.4	44.3	9.1		42.4	14.1	
Progression Factor	0.77	0.71	0.64	1.00	1.00	1.00	0.98	0.53		0.88	0.22	
Incremental Delay, d2	19.2	0.0	0.0	6.9	0.0	0.0	2.2	0.1		0.4	2.0	
Delay (s)	48.9	23.1	20.8	44.3	32.5	32.4	45.4	4.9		37.7	5.1	
Level of Service	D	C	C	D	C	C	D	A		D	A	
Approach Delay (s)		43.4			43.8			12.9			5.6	
Approach LOS		D			D			B			A	

























Intersection Summary

HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2030 +Proj (Res) AM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	349	549	788	321	64	402	539	537	366	1005	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.93	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	349	549	788	321	64	402	539	537	366	1005	63
RTOR Reduction (vph)	0	139	167	0	0	40	0	0	364	0	0	30
Lane Group Flow (vph)	151	479	113	394	715	24	402	539	173	366	1005	33
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Effective Green, g (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Actuated g/C Ratio	0.20	0.20	0.20	0.24	0.24	0.24	0.10	0.29	0.29	0.10	0.28	0.28
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	352	631	287	380	779	374	360	1026	459	326	991	443
v/s Ratio Prot	0.09	c0.15		c0.24	0.22		c0.12	0.15		0.11	c0.28	
v/s Ratio Perm			0.08			0.01			0.11			0.02
v/c Ratio	0.43	0.76	0.39	1.04	0.99dl	0.06	1.12	0.53	0.38	1.12	1.01	0.07
Uniform Delay, d1	35.1	37.8	34.8	38.2	37.3	29.6	44.8	29.7	28.3	45.2	36.0	26.5
Progression Factor	1.00	1.00	1.00	0.20	0.20	0.04	1.00	1.00	1.00	0.81	0.87	0.72
Incremental Delay, d2	0.8	5.2	0.9	33.7	5.1	0.0	82.8	1.9	2.4	81.6	28.7	0.3
Delay (s)	35.9	43.0	35.7	41.6	12.7	1.3	127.6	31.7	30.7	118.0	60.1	19.3
Level of Service	D	D	D	D	B	A	F	C	C	F	E	B
Approach Delay (s)		40.1			21.7			57.4			73.1	
Approach LOS		D			C			E			E	

Intersection Summary

HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 +Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↖	↖↗	↕	↖	↖↗	↕	↖	↖	↕	↖
Volume (vph)	453	647	66	879	807	0	147	259	405	15	1472	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	453	647	66	879	807	0	147	259	405	15	1472	182
RTOR Reduction (vph)	0	0	49	0	0	0	0	0	257	0	0	61
Lane Group Flow (vph)	453	647	17	879	807	0	147	259	148	15	1472	121
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.5	20.5	20.5	16.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Effective Green, g (s)	17.5	20.5	20.5	16.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Actuated g/C Ratio	0.18	0.20	0.20	0.16	0.19		0.07	0.36	0.36	0.02	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	601	725	325	549	672		254	1292	578	35	1101	492
v/s Ratio Prot	0.13	c0.18		c0.26	0.23		c0.04	0.07		0.01	c0.42	
v/s Ratio Perm			0.01						0.09			0.08
v/c Ratio	0.75	0.89	0.05	1.60	1.20		0.58	0.20	0.26	0.43	1.34	0.25
Uniform Delay, d1	39.2	38.7	31.9	42.0	40.5		44.8	21.8	22.2	48.4	34.4	25.7
Progression Factor	0.93	0.93	1.17	1.00	1.00		1.00	1.00	1.00	1.23	0.75	0.62
Incremental Delay, d2	2.9	7.9	0.0	279.0	104.3		3.2	0.3	1.1	6.0	156.2	0.9
Delay (s)	39.5	44.0	37.4	321.0	144.8		48.0	22.1	23.3	65.4	181.9	16.7
Level of Service	D	D	D	F	F		D	C	C	E	F	B
Approach Delay (s)		41.9			236.6			27.4			162.9	
Approach LOS		D			F			C			F	

Intersection Summary

HCM Average Control Delay	139.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

21: F Street & 7th Street

2030 +Proj (Res) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Volume (vph)	74	51	0	56	174	59	25	359	35	684	1491	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	1.00		1.00	0.96			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1792			3484			3430	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1792			3484			3430	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	74	51	0	56	174	59	25	359	35	684	1491	284
RTOR Reduction (vph)	0	0	0	0	8	0	0	4	0	0	6	0
Lane Group Flow (vph)	74	51	0	56	225	0	0	415	0	0	2453	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	5.0	19.0		5.0	19.0			16.0			94.0	
Effective Green, g (s)	5.0	19.0		5.0	19.0			16.0			94.0	
Actuated g/C Ratio	0.03	0.13		0.03	0.13			0.11			0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	59	236		59	227			372			2149	
v/s Ratio Prot	c0.04	0.03		0.03	c0.13			c0.12			c0.72	
v/s Ratio Perm												
v/c Ratio	1.25	0.22		0.95	0.99			1.11			1.14	
Uniform Delay, d1	72.5	58.8		72.4	65.4			67.0			28.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	200.4	0.5		97.7	57.2			81.3			69.8	
Delay (s)	272.9	59.3		170.1	122.6			148.3			97.8	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		185.7			131.8			148.3			97.8	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	110.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	38	168	118	587	456	572	94	1752	105	421	1498	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1846	1583	1770	1863	1583	1770	3509		1770	3483	
Flt Permitted		0.37	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		696	1583	1770	1863	1583	1770	3509		1770	3483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	168	118	587	456	572	94	1752	105	421	1498	178
RTOR Reduction (vph)	0	0	79	0	0	135	0	5	0	0	9	0
Lane Group Flow (vph)	0	206	39	587	456	437	94	1852	0	421	1667	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		20.0	20.0	17.0	41.0	41.0	5.0	34.0		13.0	42.0	
Effective Green, g (s)		20.0	20.0	17.0	41.0	41.0	5.0	34.0		13.0	42.0	
Actuated g/C Ratio		0.20	0.20	0.17	0.41	0.41	0.05	0.34		0.13	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		139	317	301	764	649	89	1193		230	1463	
v/s Ratio Prot				c0.33	0.24		0.05	c0.53		c0.24	0.48	
v/s Ratio Perm		c0.30	0.02			0.28						
v/c Ratio		1.48	0.12	1.95	0.60	0.67	1.06	1.55		1.83	1.14	
Uniform Delay, d1		40.0	32.8	41.5	23.0	24.0	47.5	33.0		43.5	29.0	
Progression Factor		0.71	0.37	0.74	0.63	0.43	0.99	1.38		1.00	1.00	
Incremental Delay, d2		242.9	0.6	434.8	2.1	3.3	44.7	249.1		390.2	71.5	
Delay (s)		271.1	12.6	465.3	16.5	13.6	91.7	294.5		433.7	100.5	
Level of Service		F	B	F	B	B	F	F		F	F	
Approach Delay (s)		177.0			178.6			284.7			167.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	209.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	91	0	257	394	923	336	14	111	0	0	1053	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	0	257	394	923	336	14	111	0	0	1053	719
RTOR Reduction (vph)	0	0	117	0	0	220	0	0	0	0	0	129
Lane Group Flow (vph)	91	0	140	394	923	116	14	111	0	0	1053	590
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					custom
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0		18.0	25.0	35.0	35.0	5.0	45.5			36.5	45.5
Effective Green, g (s)	8.0		18.0	24.5	35.0	34.5	5.0	45.5			36.0	45.5
Actuated g/C Ratio	0.08		0.18	0.24	0.35	0.34	0.05	0.46			0.36	0.46
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	142		285	434	1239	487	89	848			1274	720
v/s Ratio Prot	0.05			c0.22	c0.26		0.01	0.06			0.30	
v/s Ratio Perm			0.09			0.08						c0.37
v/c Ratio	0.64		0.49	0.91	0.74	0.24	0.16	0.13			0.83	0.82
Uniform Delay, d1	44.6		36.9	36.7	28.6	23.4	45.5	15.8			29.2	23.7
Progression Factor	1.06		0.41	0.98	0.84	1.18	0.73	0.77			1.00	1.00
Incremental Delay, d2	2.0		0.5	18.1	2.6	0.7	1.3	0.1			6.2	10.1
Delay (s)	49.5		15.7	54.0	26.8	28.3	34.4	12.2			35.4	33.8
Level of Service	D		B	D	C	C	C	B			D	C
Approach Delay (s)		24.6			33.6			14.7			34.7	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	907	105	67	0	0	0	0	1263	539	648	1577	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99						0.95		1.00	1.00	
Flpb, ped/bikes	0.87	0.91						1.00		1.00	1.00	
Frt	1.00	0.98						0.96		1.00	1.00	
Flt Protected	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (prot)	1406	2880						3204		1770	3539	
Flt Permitted	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (perm)	1406	2880						3204		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	907	105	67	0	0	0	0	1263	539	648	1577	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	453	617	0	0	0	0	0	1754	0	648	1577	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)	27.5	27.5						32.5		29.5	65.5	
Effective Green, g (s)	27.5	27.0						32.0		29.0	65.0	
Actuated g/C Ratio	0.28	0.27						0.32		0.29	0.65	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	387	778						1025		513	2300	
v/s Ratio Prot								c0.55		c0.37	0.45	
v/s Ratio Perm	c0.32	0.21										
v/c Ratio	1.17	1.09dl						1.71		1.26	0.69	
Uniform Delay, d1	36.2	33.9						34.0		35.5	11.0	
Progression Factor	0.77	0.77						0.79		1.22	0.22	
Incremental Delay, d2	79.5	0.8						320.6		119.9	0.2	
Delay (s)	107.4	26.9						347.4		163.4	2.6	
Level of Service	F	C						F		F	A	
Approach Delay (s)		60.7			0.0			347.4			49.4	
Approach LOS		E			A			F			D	

Intersection Summary

HCM Average Control Delay	157.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	124.7%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	182	1201	185	0	0	0	0	0	0	512	1052	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3417								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3417								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	1201	185	0	0	0	0	0	0	512	1052	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1558	0	0	0	0	0	0	0	512	1052	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		49.5								35.5	35.5	
Effective Green, g (s)		49.0								35.0	35.0	
Actuated g/C Ratio		0.49								0.35	0.35	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1674								620	1239	
v/s Ratio Prot		c0.46								0.29	c0.30	
v/s Ratio Perm												
v/c Ratio		0.93								0.83	0.85	
Uniform Delay, d1		23.9								29.7	30.1	
Progression Factor		0.82								0.63	0.63	
Incremental Delay, d2		1.2								6.9	4.2	
Delay (s)		20.8								25.6	23.0	
Level of Service		C								C	C	
Approach Delay (s)		20.8			0.0			0.0			23.9	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2030 +Proj (Res) AM Peak
 12/22/2006



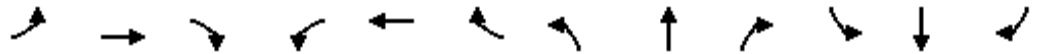
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	120	1242	628	54	1259	0	0	404	1235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.95		1.00	1.00			0.92	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6000		1610	3390			1630	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6000		1610	3390			1630	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	120	1242	628	54	1259	0	0	404	1235
RTOR Reduction (vph)	0	0	0	0	167	0	0	0	0	0	79	461
Lane Group Flow (vph)	0	0	0	0	1824	0	49	1264	0	0	770	329
Confl. Peds. (#/hr)						36						
Turn Type				Perm		custom					custom	
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					13.5		19.0	19.0			7.0	7.0
Effective Green, g (s)					13.0		18.5	18.5			6.5	6.5
Actuated g/C Ratio					0.26		0.37	0.37			0.13	0.13
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1560		596	1254			212	196
v/s Ratio Prot							0.03	c0.37			c0.47	0.22
v/s Ratio Perm					0.30							
v/c Ratio					1.17		0.08	1.01			3.63	1.68
Uniform Delay, d1					18.5		10.2	15.7			21.8	21.8
Progression Factor					0.74		0.82	1.22			1.77	4.02
Incremental Delay, d2					78.6		0.1	17.6			1192.4	320.5
Delay (s)					92.3		8.5	36.9			1230.9	407.9
Level of Service					F		A	D			F	F
Approach Delay (s)		0.0			92.3			35.9			834.2	
Approach LOS		A			F			D			F	

Intersection Summary			
HCM Average Control Delay	323.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	150.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 27: I Street & 7th Street

2030 +Proj (Res) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	298	1697	0	0	0	0	0	977	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.96
Flpb, ped/bikes				0.97	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1479	4799						5085	1519
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1479	4799						5085	1519
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	298	1697	0	0	0	0	0	977	290
RTOR Reduction (vph)	0	0	0	86	3	0	0	0	0	0	0	69
Lane Group Flow (vph)	0	0	0	182	1724	0	0	0	0	0	977	221
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				18.0	18.0						19.0	19.0
Effective Green, g (s)				17.5	17.5						18.5	18.5
Actuated g/C Ratio				0.35	0.35						0.37	0.37
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				518	1680						1881	562
v/s Ratio Prot											c0.19	
v/s Ratio Perm				0.12	0.36							0.15
v/c Ratio				0.35	1.03						0.52	0.39
Uniform Delay, d1				12.0	16.2						12.3	11.6
Progression Factor				1.00	1.00						0.79	0.86
Incremental Delay, d2				1.9	28.9						0.5	1.1
Delay (s)				13.9	45.1						10.3	11.0
Level of Service				B	D						B	B
Approach Delay (s)		0.0			40.9			0.0			10.5	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM Average Control Delay	29.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 6 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 +Proj (Res) AM Peak
12/22/2006



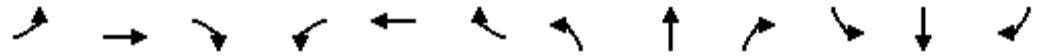
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↘	↕↕↕						↕		↘			
Volume (vph)	1351	2299	0	0	0	0	0	58	29	294	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0						4.0		4.0			
Lane Util. Factor	0.86	0.86						1.00		1.00			
Frbp, ped/bikes	1.00	1.00						0.96		1.00			
Flpb, ped/bikes	0.89	0.98						1.00		0.90			
Frt	1.00	1.00						0.96		1.00			
Flt Protected	0.95	0.99						1.00		0.95			
Satd. Flow (prot)	1349	4676						1706		1591			
Flt Permitted	0.95	0.99						1.00		0.70			
Satd. Flow (perm)	1349	4676						1706		1173			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	1351	2299	0	0	0	0	0	58	29	294	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0	
Lane Group Flow (vph)	892	2758	0	0	0	0	0	80	0	294	0	0	
Confl. Peds. (#/hr)	72								72	72			
Turn Type	Perm						custom						
Protected Phases	2						4						
Permitted Phases	2						4 8						
Actuated Green, G (s)	67.5						25.5						
Effective Green, g (s)	67.0						25.0						
Actuated g/C Ratio	0.67						0.25						
Clearance Time (s)	3.5						3.5						
Lane Grp Cap (vph)	904	3133						427					
v/s Ratio Prot							0.05						
v/s Ratio Perm	c0.66		0.59										
v/c Ratio	0.99		0.88				0.19						
Uniform Delay, d1	16.1		13.3				29.5						
Progression Factor	0.32		0.32				1.00						
Incremental Delay, d2	6.4		0.4				1.0						
Delay (s)	11.6		4.6				30.5						
Level of Service	B		A				C						
Approach Delay (s)			6.3				0.0						
Approach LOS			A				A						
							30.5						
							58.7						
							C						
							E						

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	150.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 29: J St & 7th Street

2030 +Proj (Res) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↑								↑↑↑		
Volume (vph)	0	2373	540	0	0	0	0	0	0	323	804	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	3.5								4.0		
Lane Util. Factor		0.91	1.00								0.91		
Frbp, ped/bikes		1.00	0.84								1.00		
Flpb, ped/bikes		1.00	1.00								0.96		
Frt		1.00	0.85								1.00		
Flt Protected		1.00	1.00								0.99		
Satd. Flow (prot)		5085	1325								4831		
Flt Permitted		1.00	1.00								0.99		
Satd. Flow (perm)		5085	1325								4831		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	2373	540	0	0	0	0	0	0	323	804	0	
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	3	0	
Lane Group Flow (vph)	0	2373	527	0	0	0	0	0	0	0	1124	0	
Confl. Peds. (#/hr)			72							72			
Turn Type			Perm								Perm		
Protected Phases		1										2	
Permitted Phases			1							2			
Actuated Green, G (s)		61.5	61.5								31.5		
Effective Green, g (s)		61.0	61.5								31.0		
Actuated g/C Ratio		0.61	0.62								0.31		
Clearance Time (s)		3.5	3.5								3.5		
Lane Grp Cap (vph)		3102	815								1498		
v/s Ratio Prot		c0.47											
v/s Ratio Perm			0.40								0.23		
v/c Ratio		0.76	0.65								0.75		
Uniform Delay, d1		14.3	12.3								31.0		
Progression Factor		0.48	0.42								0.88		
Incremental Delay, d2		1.1	2.3								3.0		
Delay (s)		7.9	7.5								30.3		
Level of Service		A	A								C		
Approach Delay (s)		7.8			0.0			0.0			30.3		
Approach LOS		A			A			A			C		
Intersection Summary													
HCM Average Control Delay			14.1									HCM Level of Service	B
HCM Volume to Capacity ratio			0.76										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			74.6%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1241	186	0	2	0	0	276	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.98	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6283			1863			1833	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6283			1863			1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1241	186	0	2	0	0	276	37
RTOR Reduction (vph)	0	0	0	0	42	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	0	0	0	1385	0	0	2	0	0	306	0
Turn Type				Prot			Perm					
Protected Phases				2				4				8
Permitted Phases					2		4					
Actuated Green, G (s)					28.5			27.5				27.5
Effective Green, g (s)					28.5			27.5				27.5
Actuated g/C Ratio					0.44			0.42				0.42
Clearance Time (s)					4.5			4.5				4.5
Vehicle Extension (s)					3.0			3.0				3.0
Lane Grp Cap (vph)					2755			788				776
v/s Ratio Prot								0.00				c0.17
v/s Ratio Perm					c0.22							
v/c Ratio					0.50			0.00				0.39
Uniform Delay, d1					13.1			10.8				13.0
Progression Factor					0.66			1.00				0.39
Incremental Delay, d2					0.5			0.0				1.3
Delay (s)					9.2			10.8				6.4
Level of Service					A			B				A
Approach Delay (s)		0.0			9.2			10.8				6.4
Approach LOS		A			A			B				A

Intersection Summary

HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Richards Blvd & 12th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	47	699	89	0	2258	0	0	4372	728
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00		0.91			0.81	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583		5085			7544	1583
Flt Permitted				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583		5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	47	699	89	0	2258	0	0	4372	728
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	0	0	0	80
Lane Group Flow (vph)	0	0	0	47	699	43	0	2258	0	0	4372	648
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				33.0	33.0	33.0		89.0			89.0	89.0
Effective Green, g (s)				33.0	33.0	33.0		89.0			89.0	89.0
Actuated g/C Ratio				0.25	0.25	0.25		0.68			0.68	0.68
Clearance Time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)				449	898	402		3481			5165	1084
v/s Ratio Prot					c0.20			0.44			c0.58	
v/s Ratio Perm				0.03		0.03						0.41
v/c Ratio				0.10	0.78	0.11		0.65			0.85	0.60
Uniform Delay, d1				37.2	45.1	37.2		11.6			15.4	10.9
Progression Factor				1.00	1.00	1.00		0.36			1.00	1.00
Incremental Delay, d2				0.5	6.6	0.5		0.8			1.9	2.4
Delay (s)				37.6	51.7	37.8		5.0			17.2	13.4
Level of Service				D	D	D		A			B	B
Approach Delay (s)		0.0			49.4			5.0			16.7	
Approach LOS		A			D			A			B	

Intersection Summary

HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Bannon St & 12th Street

2030 +Proj (Res) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔↔	↑	↔					↔↔↔	↔	↔	↑↑↑↑	
Volume (vph)	811	30	549	0	0	0	0	1449	1	32	4388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	811	30	549	0	0	0	0	1449	1	32	4388	0
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	811	30	507	0	0	0	0	1449	0	32	4388	0
Turn Type	custom		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	39.7	39.7	39.7					64.8	64.8	12.5	81.8	
Effective Green, g (s)	39.7	39.7	39.7					64.8	64.8	12.5	81.8	
Actuated g/C Ratio	0.31	0.31	0.31					0.50	0.50	0.10	0.63	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1524	569	483					2535	789	170	4747	
v/s Ratio Prot	0.16	0.02						0.28		0.02	c0.58	
v/s Ratio Perm			c0.32						0.00			
v/c Ratio	0.53	0.05	1.05					0.57	0.00	0.19	0.92	
Uniform Delay, d1	37.4	31.9	45.2					22.9	16.4	54.1	21.4	
Progression Factor	1.00	1.00	1.00					0.35	0.00	0.68	0.30	
Incremental Delay, d2	0.4	0.0	54.8					0.1	0.0	0.3	2.2	
Delay (s)	37.8	31.9	100.0					8.2	0.0	36.9	8.8	
Level of Service	D	C	F					A	A	D	A	
Approach Delay (s)		62.2			0.0			8.2			9.0	
Approach LOS		E			A			A			A	

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2030 +Proj (Res) AM Peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2030 +Proj (Res) AM Peak
 12/27/2006



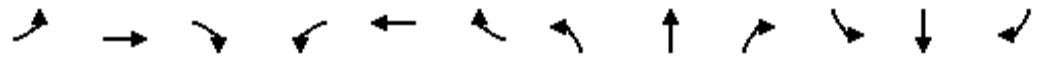
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 1: Richards Blvd & I-5 SB Off

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↕↕						↕↕	↗
Volume (vph)	0	0	0	1140	440	0	0	0	0	0	1796	851
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	1140	440	0	0	0	0	0	1796	851
RTOR Reduction (vph)	0	0	0	17	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	0	0	1123	440	0	0	0	0	0	1796	754
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6						4	
Permitted Phases												4
Actuated Green, G (s)				36.5	36.5						56.0	56.0
Effective Green, g (s)				35.0	36.0						56.0	56.0
Actuated g/C Ratio				0.35	0.36						0.56	0.56
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				1202	1274						1982	786
v/s Ratio Prot				c0.33	0.12						0.51	
v/s Ratio Perm												c0.54
v/c Ratio				0.93	0.35						0.91	0.96
Uniform Delay, d1				31.4	23.4						19.7	20.9
Progression Factor				0.59	0.52						1.00	1.00
Incremental Delay, d2				13.5	0.7						6.8	22.8
Delay (s)				32.1	12.8						26.5	43.7
Level of Service				C	B						C	D
Approach Delay (s)		0.0			26.7			0.0			32.0	
Approach LOS		A			C			A			C	
Intersection Summary												
HCM Average Control Delay			30.0		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)			9.0				
Intersection Capacity Utilization			89.7%		ICU Level of Service			E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
2: Richards Blvd & I-5 NB Off

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	1481	3061	98	602	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1481	3061	98	602	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	21	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1481	3061	77	602	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					65.9	100.0	26.6	26.6				
Effective Green, g (s)					65.9	100.0	26.1	26.1				
Actuated g/C Ratio					0.66	1.00	0.26	0.26				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3351	2708	462	924				
v/s Ratio Prot					0.29		0.04	0.17				
v/s Ratio Perm						c1.13						
v/c Ratio					0.44	1.13	0.17	0.65				
Uniform Delay, d1					8.2	50.0	28.5	32.9				
Progression Factor					0.56	1.00	0.63	0.73				
Incremental Delay, d2					0.0	59.2	0.3	1.9				
Delay (s)					4.6	109.2	18.3	25.7				
Level of Service					A	F	B	C				
Approach Delay (s)		0.0			75.1			24.7			0.0	
Approach LOS		A			E			C			A	

Intersection Summary

HCM Average Control Delay	68.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Richards Blvd & Bercut Dr

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑	↘
Volume (vph)	0	0	0	13	3501	39	828	221	0	0	215	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	6387		3433	1863			1863	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	6387		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	13	3501	39	828	221	0	0	215	213
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	13	3539	0	828	221	0	0	215	211
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				51.0	51.0		23.0	40.9			13.9	13.9
Effective Green, g (s)				51.6	51.6		22.5	40.4			13.4	13.4
Actuated g/C Ratio				0.52	0.52		0.22	0.40			0.13	0.13
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				792	3296		772	753			250	212
v/s Ratio Prot					c0.55		c0.24	0.12			0.12	
v/s Ratio Perm				0.01								c0.13
v/c Ratio				0.02	1.07		1.07	0.29			0.86	1.00
Uniform Delay, d1				11.8	24.2		38.8	20.2			42.4	43.3
Progression Factor				0.36	0.39		0.47	0.34			1.00	1.00
Incremental Delay, d2				0.0	35.0		49.5	0.1			23.5	60.4
Delay (s)				4.3	44.3		67.9	7.0			65.9	103.7
Level of Service				A	D		E	A			E	F
Approach Delay (s)		0.0			44.2			55.1			84.7	
Approach LOS		A			D			E			F	

Intersection Summary

HCM Average Control Delay	49.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richards Blvd & 5th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	252	2434	59	963	645	0	0	178	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Fr _t				1.00	1.00		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6371		3433	1863			1863	1480
Fl _t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6371		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	252	2434	59	963	645	0	0	178	273
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	252	2490	0	963	645	0	0	178	270
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				39.5	38.2		29.6	54.0			20.4	20.4
Effective Green, g (s)				38.5	38.5		29.1	53.5			19.9	20.4
Actuated g/C Ratio				0.38	0.38		0.29	0.54			0.20	0.20
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				681	2453		999	997			371	302
v/s Ratio Prot				0.14	c0.39		c0.28	0.35			0.10	
v/s Ratio Perm												c0.18
v/c Ratio				0.37	1.02		0.96	0.65			0.48	0.89
Uniform Delay, d ₁				22.1	30.8		34.9	16.5			35.5	38.7
Progression Factor				0.43	0.54		0.80	0.60			1.00	1.00
Incremental Delay, d ₂				0.1	18.3		3.4	0.1			0.4	26.0
Delay (s)				9.7	34.8		31.3	10.1			35.8	64.7
Level of Service				A	C		C	B			D	E
Approach Delay (s)		0.0			32.5			22.8			53.3	
Approach LOS		A			C			C			D	

Intersection Summary		
HCM Average Control Delay	31.2	HCM Level of Service C
HCM Volume to Capacity ratio	0.97	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	125.3%	ICU Level of Service H
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richards Blvd & 7th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙	↑↑			↑↑	↗
Volume (vph)	0	0	0	299	1718	110	408	763	0	0	852	891
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.91	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	5085	1518	1610	3382			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	5085	1518	1610	3382			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	299	1718	110	408	763	0	0	852	891
RTOR Reduction (vph)	0	0	0	0	0	61	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	299	1718	49	367	804	0	0	852	891
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				42.4	41.4	41.4	24.1	24.1			23.5	100.0
Effective Green, g (s)				41.4	41.4	41.4	23.6	23.6			23.0	100.0
Actuated g/C Ratio				0.41	0.41	0.41	0.24	0.24			0.23	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				733	2105	628	380	798			814	1583
v/s Ratio Prot				0.17	c0.34		0.23	c0.24			c0.24	
v/s Ratio Perm						0.03						0.56
v/c Ratio				0.41	0.82	0.08	0.97	1.01			1.05	0.56
Uniform Delay, d1				20.7	25.9	17.7	37.8	38.2			38.5	0.0
Progression Factor				0.72	0.71	1.08	0.79	0.79			1.00	1.00
Incremental Delay, d2				0.1	3.3	0.2	34.3	32.0			44.4	1.5
Delay (s)				15.1	21.7	19.4	64.1	62.2			82.9	1.5
Level of Service				B	C	B	E	E			F	A
Approach Delay (s)		0.0			20.7			62.8			41.3	
Approach LOS		A			C			E			D	

Intersection Summary

HCM Average Control Delay	37.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑↑	↔
Volume (vph)	0	0	0	91	703	28	930	42	0	0	33	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.91
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Fr _t				1.00	0.99		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6371		3433	1863			3539	1434
Fl _t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6371		3433	1863			3539	1434
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	91	703	28	930	42	0	0	33	169
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	91	726	0	930	42	0	0	33	131
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				42.2	41.2		33.8	50.8			13.0	13.0
Effective Green, g (s)				41.7	41.7		33.3	50.3			12.5	12.5
Actuated g/C Ratio				0.42	0.42		0.33	0.50			0.12	0.12
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				738	2657		1143	937			442	179
v/s Ratio Prot				0.05	c0.11		c0.27	0.02			0.01	
v/s Ratio Perm												c0.09
v/c Ratio				0.12	0.27		0.81	0.04			0.07	0.73
Uniform Delay, d ₁				17.9	19.2		30.5	12.6			38.6	42.1
Progression Factor				0.78	0.84		1.00	1.00			1.00	1.00
Incremental Delay, d ₂				0.0	0.2		4.5	0.0			0.0	11.8
Delay (s)				14.1	16.3		35.1	12.6			38.7	54.0
Level of Service				B	B		D	B			D	D
Approach Delay (s)		0.0			16.1			34.1			51.5	
Approach LOS		A			B			C			D	

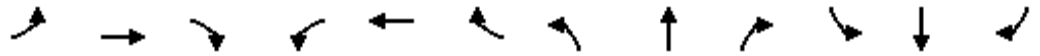
Intersection Summary

HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 7: Richard Blvd & Dos Rios St

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			1.00			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3514		1770	3455			1846			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			1.00	
Satd. Flow (perm)	1770	3514		1770	3455			1725			1783	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
RTOR Reduction (vph)	0	5	0	0	9	0	0	0	0	0	23	0
Lane Group Flow (vph)	79	792	0	109	1541	0	0	204	0	0	128	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	4.2	28.4		7.3	31.5			20.8			20.8	
Effective Green, g (s)	4.7	28.9		7.8	32.0			20.3			20.3	
Actuated g/C Ratio	0.07	0.41		0.11	0.46			0.29			0.29	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	119	1451		197	1579			500			517	
v/s Ratio Prot	0.04	0.23		c0.06	c0.45						0.07	
v/s Ratio Perm								c0.12				
v/c Ratio	0.66	0.55		0.55	0.98			0.41			0.25	
Uniform Delay, d1	31.9	15.6		29.5	18.6			20.0			19.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	13.1	0.2		3.3	17.0			2.5			1.1	
Delay (s)	45.0	15.8		32.8	35.6			22.5			20.1	
Level of Service	D	B		C	D			C			C	
Approach Delay (s)		18.4			35.4			22.5			20.1	
Approach LOS		B			D			C			C	

Intersection Summary

HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	1022	1066	0	0	0	0	0	0	1426	1511	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1022	1066	0	0	0	0	0	0	1426	1511	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	33	0	0
Lane Group Flow (vph)	0	1022	1066	0	0	0	0	0	0	1393	1511	0
Turn Type			Free							Split		
Protected Phases		4								2	2	
Permitted Phases			Free									
Actuated Green, G (s)		34.4	100.0							56.6	56.6	
Effective Green, g (s)		34.4	100.0							56.6	56.6	
Actuated g/C Ratio		0.34	1.00							0.57	0.57	
Clearance Time (s)		4.5								4.5	4.5	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		1217	1583							2824	2003	
v/s Ratio Prot		c0.29								0.28	c0.43	
v/s Ratio Perm			0.67									
v/c Ratio		0.84	0.67							0.49	0.75	
Uniform Delay, d1		30.3	0.0							13.1	16.4	
Progression Factor		1.00	1.00							0.86	0.85	
Incremental Delay, d2		5.3	2.3							0.2	1.0	
Delay (s)		35.5	2.3							11.5	15.1	
Level of Service		D	A							B	B	
Approach Delay (s)		18.6			0.0			0.0			13.3	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	129.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			























HCM Signalized Intersection Capacity Analysis
 10: Bannon St & I-5 NB Off

2030 +Proj (Res) PM Peak
 12/22/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	593	1855	0	0	0	0	0	52	1385	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0						4.0	4.0				
Lane Util. Factor	1.00	0.81						1.00	0.76				
Frt	1.00	1.00						1.00	0.85				
Flt Protected	0.95	1.00						1.00	1.00				
Satd. Flow (prot)	1770	7544						1863	3610				
Flt Permitted	0.95	1.00						1.00	1.00				
Satd. Flow (perm)	1770	7544						1863	3610				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	593	1855	0	0	0	0	0	52	1385	0	0	0	
RTOR Reduction (vph)	321	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	272	1855	0	0	0	0	0	52	1385	0	0	0	
Turn Type	Split						Prot						
Protected Phases	2	2						1	4				
Permitted Phases													
Actuated Green, G (s)	33.2	33.2						58.8	58.8				
Effective Green, g (s)	33.2	33.2						58.8	58.8				
Actuated g/C Ratio	0.33	0.33						0.59	0.59				
Clearance Time (s)	4.0	4.0											
Vehicle Extension (s)	3.0	3.0											
Lane Grp Cap (vph)	588	2505						1095	2123				
v/s Ratio Prot	0.15	c0.25						0.03	c0.38				
v/s Ratio Perm													
v/c Ratio	0.46	0.74						0.05	0.65				
Uniform Delay, d1	26.4	29.6						8.7	13.8				
Progression Factor	0.85	0.88						1.00	1.00				
Incremental Delay, d2	2.1	1.6						0.0	0.7				
Delay (s)	24.4	27.6						8.7	14.5				
Level of Service	C	C						A	B				
Approach Delay (s)		26.9			0.0			14.3			0.0		
Approach LOS		C			A			B			A		
Intersection Summary													
HCM Average Control Delay			22.2									HCM Level of Service	C
HCM Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			60.5%									ICU Level of Service	B
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2030 +Proj (Res) PM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 		 		
Volume (vph)	144	2396	700	0	0	0	0	806	47	126	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00	
Frt	1.00	1.00	0.85					0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	6408	1583					3510		3433	1863	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	6408	1583					3510		3433	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	2396	700	0	0	0	0	806	47	126	22	0
RTOR Reduction (vph)	0	0	321	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	144	2396	379	0	0	0	0	849	0	126	22	0
Turn Type	Split		Perm					Prot				
Protected Phases	6	6						8		7	4	
Permitted Phases			6									
Actuated Green, G (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Effective Green, g (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Actuated g/C Ratio	0.54	0.54	0.54					0.28		0.06	0.38	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	959	3473	858					976		206	704	
v/s Ratio Prot	0.08	c0.37						c0.24		c0.04	0.01	
v/s Ratio Perm			0.24									
v/c Ratio	0.15	0.69	0.44					0.87		0.61	0.03	
Uniform Delay, d1	11.4	16.8	13.8					34.4		45.9	19.6	
Progression Factor	0.71	0.71	0.55					0.74		0.64	1.34	
Incremental Delay, d2	0.2	0.8	1.2					6.9		3.0	0.0	
Delay (s)	8.3	12.8	8.8					32.2		32.2	26.3	
Level of Service	A	B	A					C		C	C	
Approach Delay (s)		11.7			0.0			32.2			31.4	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			16.5					HCM Level of Service		B		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			100.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			72.7%					ICU Level of Service		C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 +Proj (Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	629	1498	634	0	0	0	0	1265	665	160	767	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.96						0.99	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6122						3358	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6122						3358	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	629	1498	634	0	0	0	0	1265	665	160	767	0
RTOR Reduction (vph)	0	76	0	0	0	0	0	5	52	0	0	0
Lane Group Flow (vph)	629	2056	0	0	0	0	0	1346	527	160	767	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Effective Green, g (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Actuated g/C Ratio	0.34	0.34						0.40	0.40	0.14	0.57	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	596	2063						1326	569	244	2028	
v/s Ratio Prot		0.34						c0.40		c0.09	0.22	
v/s Ratio Perm	c0.36								0.37			
v/c Ratio	1.06	1.04dr						1.02	0.93	0.66	0.38	
Uniform Delay, d1	33.1	33.1						30.2	28.9	40.8	11.6	
Progression Factor	0.55	0.53						0.47	0.40	1.24	1.19	
Incremental Delay, d2	47.8	16.4						22.1	14.9	6.2	0.1	
Delay (s)	66.0	33.9						36.4	26.4	56.8	14.0	
Level of Service	E	C						D	C	E	B	
Approach Delay (s)		41.2			0.0			33.4			21.4	
Approach LOS		D			A			C			C	

Intersection Summary
























HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	125.3%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 13: Bannon St & 7th Street

2030 +Proj (Res) PM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	492	1708	163	0	0	0	0	462	1156	230	541	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	1708	163	0	0	0	0	462	1156	230	541	0
RTOR Reduction (vph)	0	0	99	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	492	1708	64	0	0	0	0	462	1156	230	541	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	39.3	39.3	39.3					28.7	100.0	18.5	51.7	
Effective Green, g (s)	39.3	39.3	39.3					28.7	100.0	18.5	51.7	
Actuated g/C Ratio	0.39	0.39	0.39					0.29	1.00	0.18	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	696	1998	622					1016	1583	327	1830	
v/s Ratio Prot		c0.34						0.13		0.13	0.15	
v/s Ratio Perm	0.28		0.04						c0.73			
v/c Ratio	0.71	0.85	0.10					0.45	0.73	0.70	0.30	
Uniform Delay, d1	25.5	27.7	19.2					29.2	0.0	38.2	13.8	
Progression Factor	0.49	0.50	0.07					1.38	1.00	0.81	0.47	
Incremental Delay, d2	1.2	1.4	0.0					0.7	1.5	3.1	0.2	
Delay (s)	13.6	15.1	1.3					41.0	1.5	34.0	6.6	
Level of Service	B	B	A					D	A	C	A	
Approach Delay (s)		13.9			0.0			12.8			14.8	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.5
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 +Proj (Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	144	271	315	132	72	161	1813	167	12	1095	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.64	1.00	1.00	0.62	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1191	1863	1583	1156	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	52	144	271	315	132	72	161	1813	167	12	1095	180
RTOR Reduction (vph)	0	0	188	0	0	50	0	0	43	0	0	82
Lane Group Flow (vph)	52	144	83	315	132	22	161	1813	124	12	1095	98
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	30.5	30.5	30.5	30.5	30.5	30.5	12.0	55.5	55.5	1.0	44.5	44.5
Effective Green, g (s)	30.5	30.5	30.5	30.5	30.5	30.5	12.0	55.5	55.5	1.0	44.5	44.5
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30	0.30	0.12	0.56	0.56	0.01	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	363	568	483	353	568	483	212	1964	879	18	1575	704
v/s Ratio Prot		0.08			0.07		0.09	c0.51		0.01	c0.31	
v/s Ratio Perm	0.04		0.05	c0.27		0.01			0.08			0.06
v/c Ratio	0.14	0.25	0.17	0.89	0.23	0.05	0.76	0.92	0.14	0.67	0.70	0.14
Uniform Delay, d1	25.3	26.2	25.5	33.2	26.0	24.5	42.6	20.3	10.7	49.3	22.3	16.4
Progression Factor	1.00	1.00	1.00	1.00	0.94	1.71	1.27	0.24	0.12	0.82	0.66	0.27
Incremental Delay, d2	0.2	0.2	0.2	23.1	0.2	0.0	8.0	5.1	0.2	52.6	1.9	0.3
Delay (s)	25.4	26.4	25.7	56.3	24.6	41.9	62.3	10.0	1.4	93.1	16.6	4.8
Level of Service	C	C	C	E	C	D	E	A	A	F	B	A
Approach Delay (s)		25.9			46.2			13.2			15.7	
Approach LOS		C			D			B			B	

Intersection Summary

HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	100	39	477	284	14	90	1491	591	158	499	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3494	3494
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3494	3494
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	100	39	477	284	14	90	1491	591	158	499	46
RTOR Reduction (vph)	0	0	33	0	0	10	0	0	150	0	6	0
Lane Group Flow (vph)	30	100	6	477	284	4	90	1491	441	158	539	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov		Prot	
Protected Phases	7	4		3	8		5	2	3		1	6
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.6	14.4	14.4	16.0	26.8	26.8	9.1	43.2	59.2	8.4	42.5	42.5
Effective Green, g (s)	3.6	14.4	14.4	16.0	26.8	26.8	9.1	43.2	59.2	8.4	42.5	42.5
Actuated g/C Ratio	0.04	0.14	0.14	0.16	0.27	0.27	0.09	0.43	0.59	0.08	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	64	510	228	549	948	424	161	1529	1008	149	1485	1485
v/s Ratio Prot	c0.02	0.03		c0.14	c0.08		0.05	c0.42	0.07	c0.09	0.15	0.15
v/s Ratio Perm			0.00			0.00			0.21			
v/c Ratio	0.47	0.20	0.02	0.87	0.30	0.01	0.56	0.98	0.44	1.06	0.36	0.36
Uniform Delay, d1	47.3	37.7	36.8	41.0	29.1	26.9	43.5	27.9	11.2	45.8	19.5	19.5
Progression Factor	0.72	0.77	0.58	1.00	1.00	1.00	1.09	0.69	0.13	0.50	0.19	0.19
Incremental Delay, d2	5.3	0.2	0.0	13.7	0.2	0.0	3.1	14.9	0.2	89.8	0.7	0.7
Delay (s)	39.3	29.0	21.3	54.7	29.3	26.9	50.6	34.2	1.7	112.6	4.4	4.4
Level of Service	D	C	C	D	C	C	D	C	A	F	A	A
Approach Delay (s)		29.1			44.9			26.1			28.7	28.7
Approach LOS		C			D			C			C	C

Intersection Summary

HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 +Proj (Res) PM Peak
 12/22/2006

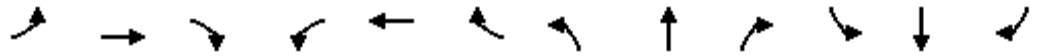


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕						↔↔↔↔	↗
Volume (vph)	1428	515	299	58	182	149	0	0	0	111	3248	1150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3300						7532	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3300						7532	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1428	515	299	58	182	149	0	0	0	111	3248	1150
RTOR Reduction (vph)	0	0	203	0	117	0	0	0	0	0	0	121
Lane Group Flow (vph)	1428	515	96	58	214	0	0	0	0	0	3359	1029
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	22.0	22.0	22.0	20.4	20.4						69.1	91.1
Effective Green, g (s)	22.0	22.0	22.0	20.4	20.4						72.1	91.1
Actuated g/C Ratio	0.17	0.17	0.17	0.16	0.16						0.55	0.70
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	844	599	246	278	518						4177	1231
v/s Ratio Prot	c0.29	0.15		0.03	c0.06							c0.14
v/s Ratio Perm			0.07								0.45	0.51
v/c Ratio	1.69	0.86	0.39	0.21	0.41						0.80	0.84
Uniform Delay, d1	54.0	52.5	48.0	47.8	49.4						23.3	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.76	1.22
Incremental Delay, d2	316.5	12.9	2.1	0.8	1.1						0.5	1.8
Delay (s)	370.5	65.4	50.2	48.5	50.5						41.5	18.9
Level of Service	F	E	D	D	D						D	B
Approach Delay (s)		257.7			50.2			0.0			35.8	
Approach LOS		F			D			A			D	

Intersection Summary		
HCM Average Control Delay	106.2	HCM Level of Service F
HCM Volume to Capacity ratio	0.93	
Actuated Cycle Length (s)	130.0	Sum of lost time (s) 14.0
Intersection Capacity Utilization	88.5%	ICU Level of Service E
Analysis Period (min)	15	
Description: 8 seconds additional lost time represents LRT.		
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th Street

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	185	356	37	10	16	194	1889	10	162	1219	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1691		1770	3536		1770	3479	
Flt Permitted	0.74	1.00	1.00	0.44	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1379	1863	1583	824	1691		1770	3536		1770	3479	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	185	356	37	10	16	194	1889	10	162	1219	156
RTOR Reduction (vph)	0	0	249	0	13	0	0	0	0	0	9	0
Lane Group Flow (vph)	119	185	107	37	13	0	194	1899	0	162	1366	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	16.4	16.4	16.4	16.4	16.4		14.1	58.9		11.2	56.0	
Effective Green, g (s)	16.4	16.4	16.4	16.4	16.4		14.1	58.9		11.2	56.0	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.14	0.59		0.11	0.56	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	306	260	135	277		250	2083		198	1948	
v/s Ratio Prot		c0.10			0.01		0.11	c0.54		0.09	c0.39	
v/s Ratio Perm	0.09		0.07	0.04								
v/c Ratio	0.53	0.60	0.41	0.27	0.05		0.78	0.91		0.82	0.70	
Uniform Delay, d1	38.2	38.8	37.5	36.6	35.2		41.4	18.2		43.4	15.9	
Progression Factor	0.83	0.84	0.79	0.61	0.58		1.00	1.00		0.76	0.58	
Incremental Delay, d2	2.1	3.2	1.0	1.0	0.1		14.0	7.5		17.4	1.6	
Delay (s)	33.9	35.7	30.6	23.2	20.6		55.4	25.7		50.2	10.9	
Level of Service	C	D	C	C	C		E	C		D	B	
Approach Delay (s)		32.6			22.1			28.5			15.0	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 +Proj (Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	277	40	38	89	3	9	74	1611	0	63	1074	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3527	
Flt Permitted	0.76	1.00	1.00	0.73	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1408	1863	1583	1362	1863	1583	1770	3539		1770	3527	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	277	40	38	89	3	9	74	1611	0	63	1074	26
RTOR Reduction (vph)	0	0	30	0	0	7	0	0	0	0	1	0
Lane Group Flow (vph)	277	40	8	89	3	2	74	1611	0	63	1099	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.4	61.3		4.1	58.5	
Effective Green, g (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.4	61.3		4.1	58.5	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.07	0.61		0.04	0.58	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	304	402	342	294	402	342	131	2169		73	2063	
v/s Ratio Prot		0.02			0.00		0.04	c0.46		0.04	c0.31	
v/s Ratio Perm	c0.20		0.01	0.07		0.00						
v/c Ratio	0.91	0.10	0.02	0.30	0.01	0.01	0.56	0.74		0.86	0.53	
Uniform Delay, d1	38.3	31.4	30.9	32.9	30.8	30.8	44.7	13.7		47.7	12.5	
Progression Factor	0.48	0.25	0.49	1.00	1.00	1.00	1.00	1.00		0.95	0.87	
Incremental Delay, d2	24.0	0.1	0.0	0.6	0.0	0.0	5.5	2.3		54.8	0.9	
Delay (s)	42.5	7.9	15.2	33.5	30.8	30.8	50.2	16.1		100.2	11.7	
Level of Service	D	A	B	C	C	C	D	B		F	B	
Approach Delay (s)		35.7			33.1			17.6			16.5	
Approach LOS		D			C			B			B	

























Intersection Summary

HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

































2030 +Proj (Res) PM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	531	562	403	541	199	598	1755	839	228	1366	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	334	531	562	403	541	199	598	1755	839	228	1366	182
RTOR Reduction (vph)	0	28	213	0	0	95	0	0	152	0	0	43
Lane Group Flow (vph)	334	728	124	306	638	104	598	1755	687	228	1366	139
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	29.5	29.5	29.5	25.5	25.5	25.5	22.5	67.5	67.5	9.5	54.5	54.5
Effective Green, g (s)	29.5	29.5	29.5	25.5	25.5	25.5	22.5	67.5	67.5	9.5	54.5	54.5
Actuated g/C Ratio	0.20	0.20	0.20	0.17	0.17	0.17	0.15	0.45	0.45	0.06	0.36	0.36
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	348	637	283	274	572	269	515	1593	712	217	1286	575
v/s Ratio Prot	0.19	c0.22		c0.19	0.19		0.17	c0.50		0.07	c0.39	
v/s Ratio Perm			0.09			0.07			0.43			0.09
v/c Ratio	0.96	1.14	0.44	1.12	1.12	0.38	1.16	1.10	0.96	1.05	1.06	0.24
Uniform Delay, d1	59.7	60.2	53.0	62.2	62.2	55.3	63.8	41.2	40.1	70.2	47.8	33.3
Progression Factor	1.00	1.00	1.00	0.24	0.24	0.31	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	37.2	81.9	1.1	57.7	54.5	0.1	92.3	55.8	26.1	75.1	43.4	1.0
Delay (s)	96.8	142.2	54.1	72.4	69.5	17.1	156.1	97.1	66.1	145.3	91.2	34.3
Level of Service	F	F	D	E	E	B	F	F	E	F	F	C
Approach Delay (s)		110.8			61.1			100.0			92.3	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM Average Control Delay			94.3				HCM Level of Service		F			
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		13.5			
Intersection Capacity Utilization			108.5%				ICU Level of Service		G			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 +Proj (Res) PM Peak
12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	1232	915	39	615	606	0	472	931	470	49	962	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1232	915	39	615	606	0	472	931	470	49	962	7
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	160	0	0	2
Lane Group Flow (vph)	1232	915	25	615	606	0	472	931	310	49	962	5
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	47.5	41.7	41.7	27.8	22.0		17.8	50.7	50.7	5.3	38.2	38.2
Effective Green, g (s)	47.5	41.7	41.7	27.8	22.0		17.8	50.7	50.7	5.3	38.2	38.2
Actuated g/C Ratio	0.32	0.28	0.28	0.19	0.15		0.12	0.34	0.34	0.04	0.25	0.25
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1087	984	440	636	519		407	1196	535	63	901	403
v/s Ratio Prot	c0.36	0.26		0.18	c0.17		c0.14	0.26		0.03	c0.27	
v/s Ratio Perm			0.02						0.20			0.00
v/c Ratio	1.13	0.93	0.06	0.97	1.17		1.16	0.78	0.58	0.78	1.07	0.01
Uniform Delay, d1	51.2	52.7	39.7	60.6	64.0		66.1	44.6	40.9	71.8	55.9	41.8
Progression Factor	1.06	0.71	0.53	1.00	1.00		0.81	0.59	0.66	1.00	1.00	1.00
Incremental Delay, d2	67.9	10.1	0.0	27.3	94.7		74.6	0.5	0.4	44.2	49.8	0.1
Delay (s)	122.2	47.5	21.1	88.0	158.7		128.5	26.7	27.3	116.0	105.7	41.8
Level of Service	F	D	C	F	F		F	C	C	F	F	D
Approach Delay (s)		89.1			123.1			52.5			105.7	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	87.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	314	200	173	96	221	418	0	823	118	664	979	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.93		1.00	0.90			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1770	1733		1770	1680			3473			3435	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (perm)	1770	1733		1770	1680			3473			3435	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	314	200	173	96	221	418	0	823	118	664	979	133
RTOR Reduction (vph)	0	21	0	0	45	0	0	7	0	0	4	0
Lane Group Flow (vph)	314	352	0	96	594	0	0	934	0	0	1772	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	16.0	38.4		10.6	33.0			27.0			58.0	
Effective Green, g (s)	16.0	38.4		10.6	33.0			27.0			58.0	
Actuated g/C Ratio	0.11	0.26		0.07	0.22			0.18			0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	189	444		125	370			625			1328	
v/s Ratio Prot	c0.18	0.20		0.05	c0.35			c0.27			c0.52	
v/s Ratio Perm												
v/c Ratio	1.66	0.79		0.77	1.60			1.49			1.33	
Uniform Delay, d1	67.0	52.1		68.5	58.5			61.5			46.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.40	
Incremental Delay, d2	319.9	9.4		24.2	284.5			230.6			152.7	
Delay (s)	386.9	61.5		92.6	343.0			292.1			171.1	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		210.2			310.3			292.1			171.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	229.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	145.1%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↖	↗	↖	↖↗		↖	↖↗	
Volume (vph)	104	196	261	831	534	798	39	1871	37	370	2987	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1831	1583	1770	1863	1583	1770	3529		1770	3520	
Flt Permitted		0.69	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1287	1583	1770	1863	1583	1770	3529		1770	3520	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	196	261	831	534	798	39	1871	37	370	2987	113
RTOR Reduction (vph)	0	0	76	0	0	124	0	1	0	0	3	0
Lane Group Flow (vph)	0	300	185	831	534	674	39	1907	0	370	3097	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		28.0	28.0	14.0	46.0	46.0	5.0	34.0		8.0	37.0	
Effective Green, g (s)		28.0	28.0	14.0	46.0	46.0	5.0	34.0		8.0	37.0	
Actuated g/C Ratio		0.28	0.28	0.14	0.46	0.46	0.05	0.34		0.08	0.37	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		360	443	248	857	728	89	1200		142	1302	
v/s Ratio Prot				c0.47	0.29		0.02	c0.54		0.21	c0.88	
v/s Ratio Perm		0.23	0.12			c0.43						
v/c Ratio		0.83	0.42	3.35	0.62	0.93	0.44	1.59		2.61	2.38	
Uniform Delay, d1		33.8	29.4	43.0	20.4	25.4	46.1	33.0		46.0	31.5	
Progression Factor		0.70	0.50	1.33	0.69	0.57	1.30	0.16		1.00	1.00	
Incremental Delay, d2		18.8	2.7	1063.8	2.0	12.8	1.4	265.4		742.6	622.9	
Delay (s)		42.5	17.4	1121.1	16.1	27.3	61.6	270.7		788.6	654.4	
Level of Service		D	B	F	B	C	E	F		F	F	
Approach Delay (s)		30.8			444.8			266.5			668.7	
Approach LOS		C			F			F			F	

Intersection Summary

HCM Average Control Delay	469.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	165.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↖	↖	↕	↖	↖	↕			↕	↖
Volume (vph)	280	0	351	194	1035	503	26	230	0	0	638	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	280	0	351	194	1035	503	26	230	0	0	638	760
RTOR Reduction (vph)	0	0	170	0	0	294	0	0	0	0	0	283
Lane Group Flow (vph)	280	0	181	194	1035	209	26	230	0	0	638	477
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2				6
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		27.0	19.0	30.0	30.0	5.0	42.5			33.5	33.5
Effective Green, g (s)	16.0		27.0	18.5	30.0	29.5	5.0	42.5			33.0	33.5
Actuated g/C Ratio	0.16		0.27	0.18	0.30	0.29	0.05	0.42			0.33	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		427	327	1062	417	89	792			1168	530
v/s Ratio Prot	c0.16			0.11	c0.29		0.01	c0.12			0.18	
v/s Ratio Perm			0.11			0.15						c0.30
v/c Ratio	0.99		0.42	0.59	0.97	0.50	0.29	0.29			0.55	0.90
Uniform Delay, d1	41.9		30.1	37.3	34.6	29.2	45.8	18.9			27.4	31.7
Progression Factor	0.57		0.94	0.97	0.99	1.18	1.37	1.76			1.00	1.00
Incremental Delay, d2	13.8		0.3	6.0	18.9	3.3	2.7	0.3			1.8	21.0
Delay (s)	37.8		28.6	42.1	53.1	37.8	65.5	33.5			29.2	52.6
Level of Service	D		C	D	D	D	E	C			C	D
Approach Delay (s)		32.7			47.4			36.8			41.9	
Approach LOS		C			D			D			D	

Intersection Summary

HCM Average Control Delay	42.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 +Proj (Res) PM Peak
12/22/2006



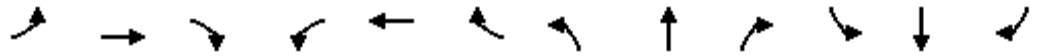
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	442	315	122	0	0	0	0	1617	40	1178	2909	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.97						1.00		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3151						3512		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3151						3512		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	442	315	122	0	0	0	0	1617	40	1178	2909	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	292	583	0	0	0	0	0	1655	0	1178	2909	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	17.0	17.0						32.0		40.5	76.0	
Effective Green, g (s)	17.0	16.5						31.5		40.0	75.5	
Actuated g/C Ratio	0.17	0.16						0.32		0.40	0.76	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	274	520						1106		708	2672	
v/s Ratio Prot	0.18	c0.18						c0.47		c0.67	0.82	
v/s Ratio Perm												
v/c Ratio	1.07	1.12						1.50		1.66	1.09	
Uniform Delay, d1	41.5	41.8						34.2		30.0	12.2	
Progression Factor	1.03	1.03						0.62		0.50	1.51	
Incremental Delay, d2	63.7	71.3						223.8		299.3	40.6	
Delay (s)	106.4	114.4						244.9		314.2	59.1	
Level of Service	F	F						F		F	E	
Approach Delay (s)		111.7			0.0			244.9			132.6	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	157.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	139.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 25: H Street & 7th Street

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	259	1206	338	0	0	0	0	0	0	399	604	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.98								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.97								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3353								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3353								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	259	1206	338	0	0	0	0	0	0	399	604	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1783	0	0	0	0	0	0	0	399	604	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		56.5								28.5	28.5	
Effective Green, g (s)		56.0								28.0	28.0	
Actuated g/C Ratio		0.56								0.28	0.28	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1878								496	991	
v/s Ratio Prot		c0.53								c0.23	0.17	
v/s Ratio Perm												
v/c Ratio		0.95								0.80	0.61	
Uniform Delay, d1		20.7								33.5	31.3	
Progression Factor		0.47								0.67	0.68	
Incremental Delay, d2		1.5								11.0	2.3	
Delay (s)		11.3								33.4	23.6	
Level of Service		B								C	C	
Approach Delay (s)		11.3			0.0			0.0			27.5	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	368	2062	300	328	1175	0	0	785	2444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.92	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6206		1610	3386			1629	1504
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6206		1610	3386			1629	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	368	2062	300	328	1175	0	0	785	2444
RTOR Reduction (vph)	0	0	0	0	22	0	0	0	0	0	40	54
Lane Group Flow (vph)	0	0	0	0	2708	0	295	1208	0	0	1625	1510
Confl. Peds. (#/hr)						36						
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					26.5		24.5	24.5			38.5	38.5
Effective Green, g (s)					26.0		24.0	24.0			38.0	38.0
Actuated g/C Ratio					0.26		0.24	0.24			0.38	0.38
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1614		386	813			619	572
v/s Ratio Prot							0.18	c0.36			1.00	c1.00
v/s Ratio Perm					0.44							
v/c Ratio					1.68		0.76	1.49			2.62	2.64
Uniform Delay, d1					37.0		35.4	38.0			31.0	31.0
Progression Factor					0.69		1.05	1.06			0.80	0.79
Incremental Delay, d2					306.4		5.6	221.3			731.5	738.4
Delay (s)					332.0		42.9	261.4			756.3	763.0
Level of Service					F		D	F			F	F
Approach Delay (s)		0.0			332.0			218.5			759.5	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	494.1	HCM Level of Service	F
HCM Volume to Capacity ratio	2.04		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	214.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2030 +Proj (Res) PM Peak
12/22/2006

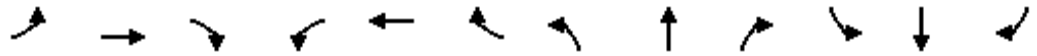


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	108	2387	0	0	0	0	0	1308	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.93
Flpb, ped/bikes				0.94	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1435	4804						5085	1476
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1435	4804						5085	1476
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	108	2387	0	0	0	0	0	1308	370
RTOR Reduction (vph)	0	0	0	2	0	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	95	2398	0	0	0	0	0	1308	367
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				58.5	58.5						34.5	34.5
Effective Green, g (s)				58.0	58.0						34.0	34.0
Actuated g/C Ratio				0.58	0.58						0.34	0.34
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				832	2786						1729	502
v/s Ratio Prot											c0.26	
v/s Ratio Perm				0.07	0.50							0.25
v/c Ratio				0.11	0.86						0.76	0.73
Uniform Delay, d1				9.4	17.6						29.3	29.0
Progression Factor				1.00	1.00						0.76	0.76
Incremental Delay, d2				0.3	3.8						2.9	8.5
Delay (s)				9.7	21.4						25.2	30.5
Level of Service				A	C						C	C
Approach Delay (s)		0.0			20.9			0.0			26.3	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 28: J St & 6th Street

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↔↗						↕		↘		
Volume (vph)	1035	1743	0	0	0	0	0	244	290	760	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.94	0.99						1.00		0.98		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1435	4718						1663		1732		
Flt Permitted	0.95	0.99						1.00		0.30		
Satd. Flow (perm)	1435	4718						1663		547		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1035	1743	0	0	0	0	0	244	290	760	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	673	2105	0	0	0	0	0	533	0	760	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	20.5	20.5						22.5		22.5		
Effective Green, g (s)	20.0	20.0						22.0		22.0		
Actuated g/C Ratio	0.40	0.40						0.44		0.44		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	574	1887						732		241		
v/s Ratio Prot								0.32				
v/s Ratio Perm	c0.47	0.45								c1.39		
v/c Ratio	1.17	1.12						0.73		3.15		
Uniform Delay, d1	15.0	15.0						11.5		14.0		
Progression Factor	0.74	0.73						1.00		1.21		
Incremental Delay, d2	79.5	52.8						6.3		970.1		
Delay (s)	90.5	63.8						17.8		987.0		
Level of Service	F	E						B		F		
Approach Delay (s)		70.3			0.0			17.8			987.0	
Approach LOS		E			A			B			F	

Intersection Summary			
HCM Average Control Delay	234.5	HCM Level of Service	F
HCM Volume to Capacity ratio	2.21		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	214.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

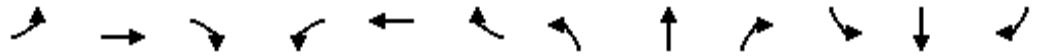
2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↑								↑↑↑			
Volume (vph)	0	2191	780	0	0	0	0	0	0	261	1026	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		4.0	3.5								4.0			
Lane Util. Factor		0.91	1.00								0.91			
Frbp, ped/bikes		1.00	0.91								1.00			
Flpb, ped/bikes		1.00	1.00								0.99			
Frt		1.00	0.85								1.00			
Flt Protected		1.00	1.00								0.99			
Satd. Flow (prot)		5085	1445								4969			
Flt Permitted		1.00	1.00								0.99			
Satd. Flow (perm)		5085	1445								4969			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	0	2191	780	0	0	0	0	0	0	261	1026	0		
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	2	0		
Lane Group Flow (vph)	0	2191	772	0	0	0	0	0	0	0	1285	0		
Confl. Peds. (#/hr)			72							72				
Turn Type			Perm								Perm			
Protected Phases		1										2		
Permitted Phases			1							2				
Actuated Green, G (s)		26.0	26.0								17.0			
Effective Green, g (s)		25.5	26.0								16.5			
Actuated g/C Ratio		0.51	0.52								0.33			
Clearance Time (s)		3.5	3.5								3.5			
Lane Grp Cap (vph)		2593	751								1640			
v/s Ratio Prot		0.43												
v/s Ratio Perm			c0.53								0.26			
v/c Ratio		0.84	1.03								0.78			
Uniform Delay, d1		10.5	12.0								15.1			
Progression Factor		0.60	0.57								0.78			
Incremental Delay, d2		0.3	18.2								2.7			
Delay (s)		6.7	25.1								14.4			
Level of Service		A	C								B			
Approach Delay (s)		11.5			0.0			0.0			14.4			
Approach LOS		B			A			A			B			
Intersection Summary														
HCM Average Control Delay			12.4									HCM Level of Service	B	
HCM Volume to Capacity ratio			0.93											
Actuated Cycle Length (s)			50.0								7.5		Sum of lost time (s)	
Intersection Capacity Utilization			85.1%										ICU Level of Service	E
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis
 30: Richards Blvd & Dos Rios St

2030 +Proj (Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↑↑↑			↗			↘	↙
Volume (vph)	0	0	0	0	1000	187	0	12	0	0	248	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.99	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6256			1863			1850	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6256			1863			1850	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1000	187	0	12	0	0	248	13
RTOR Reduction (vph)	0	0	0	0	67	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	1120	0	0	12	0	0	257	0
Turn Type				Prot				Perm				
Protected Phases				2				4			8	
Permitted Phases					2			4				
Actuated Green, G (s)					20.5			20.5			20.5	
Effective Green, g (s)					20.5			20.5			20.5	
Actuated g/C Ratio					0.41			0.41			0.41	
Clearance Time (s)					4.5			4.5			4.5	
Lane Grp Cap (vph)					2565			764			759	
v/s Ratio Prot								0.01			c0.14	
v/s Ratio Perm					c0.18							
v/c Ratio					0.44			0.02			0.34	
Uniform Delay, d1					10.6			8.8			10.1	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.5			0.0			1.2	
Delay (s)					11.1			8.8			11.3	
Level of Service					B			A			B	
Approach Delay (s)		0.0			11.1			8.8			11.3	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
31: Richards Blvd & 12th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	148	367	155	4	4231	0	0	3675	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00	0.97	0.91			0.81	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583	3433	5085			7544	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583	3433	5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	148	367	155	4	4231	0	0	3675	815
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	126
Lane Group Flow (vph)	0	0	0	148	367	113	4	4231	0	0	3675	689
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Effective Green, g (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Actuated g/C Ratio				0.25	0.25	0.25	0.01	0.69			0.65	0.65
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				447	893	399	32	3489			4875	1023
v/s Ratio Prot					c0.10		0.00	c0.83			0.49	
v/s Ratio Perm				0.08		0.07						0.43
v/c Ratio				0.33	0.41	0.28	0.12	1.21			0.75	0.67
Uniform Delay, d1				39.7	40.5	39.1	63.9	20.4			15.9	14.4
Progression Factor				1.00	1.00	1.00	1.04	1.01			1.00	1.00
Incremental Delay, d2				2.0	1.4	1.8	0.5	96.5			1.1	3.5
Delay (s)				41.6	41.9	40.9	67.0	117.0			17.0	17.9
Level of Service				D	D	D	E	F			B	B
Approach Delay (s)		0.0			41.6			117.0			17.2	
Approach LOS		A			D			F			B	

Intersection Summary

HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	145.3%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Bannon St & 12th Street

2030 +Proj (Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↑↑↑	↑	↗					↑↑↑	↗	↘	↑↑↑↑	
Volume (vph)	2164	92	717	0	0	0	0	2072	21	45	3780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2164	92	717	0	0	0	0	2072	21	45	3780	0
RTOR Reduction (vph)	0	0	43	0	0	0	0	0	5	0	0	0
Lane Group Flow (vph)	2164	92	674	0	0	0	0	2072	16	45	3780	0
Turn Type	Split		Perm					Perm		Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	52.5	52.5	52.5					60.5	60.5	4.0	69.0	
Effective Green, g (s)	52.5	52.5	52.5					60.5	60.5	4.0	69.0	
Actuated g/C Ratio	0.40	0.40	0.40					0.47	0.47	0.03	0.53	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2015	752	639					2366	737	54	4004	
v/s Ratio Prot	c0.43	0.05						0.41		0.03	c0.50	
v/s Ratio Perm			0.43						0.01			
v/c Ratio	1.07	0.12	1.05					0.88	0.02	0.83	0.94	
Uniform Delay, d1	38.8	24.3	38.8					31.4	18.8	62.7	28.7	
Progression Factor	1.00	1.00	1.00					1.33	0.64	0.75	0.51	
Incremental Delay, d2	43.3	0.1	50.9					0.5	0.0	48.5	4.3	
Delay (s)	82.0	24.4	89.7					42.1	12.0	95.5	18.9	
Level of Service	F	C	F					D	B	F	B	
Approach Delay (s)		82.1			0.0			41.8			19.8	
Approach LOS		F			A			D			B	

Intersection Summary

HCM Average Control Delay	45.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	145.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2030 +Proj (Res) PM Peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	100	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			105		212	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		212	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		773	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	884
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		19.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2030 +Proj (Res) PM Peak
 12/27/2006



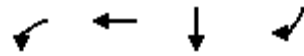
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	100	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			105		212	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		212	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		773	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	884
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization	19.3%		ICU Level of Service A
Analysis Period (min)		15	

Queues

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	448	303	2444	795
v/c Ratio	0.79	0.50	0.92	0.74
Control Delay	39.1	30.4	17.6	11.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.1	30.4	17.6	11.0
Queue Length 50th (ft)	142	101	548	201
Queue Length 95th (ft)	#184	115	723	352
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	569	602	2654	1079
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.50	0.92	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues

2: Richards Blvd & I-5 NB Off



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	676	1448	74	240
v/c Ratio	0.17	0.53	0.22	0.44
Control Delay	4.3	2.1	7.6	36.3
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	4.6	2.1	7.6	36.3
Queue Length 50th (ft)	31	2	7	76
Queue Length 95th (ft)	73	45	32	104
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)		150	300	
Base Capacity (vph)	3892	2708	718	1345
Starvation Cap Reductn	2373	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.53	0.10	0.18

Intersection Summary

Queues

3: Richards Blvd & Bercut Dr



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	23	1631	466	249	90	91
v/c Ratio	0.02	0.42	0.74	0.44	0.66	0.58
Control Delay	4.6	4.9	29.8	16.9	67.4	39.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	4.9	29.8	16.9	67.4	39.3
Queue Length 50th (ft)	3	72	81	66	57	29
Queue Length 95th (ft)	m7	80	200	m75	105	77
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	947	3914	910	857	279	276
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.42	0.51	0.29	0.32	0.33

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Richards Blvd & 5th Street



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	224	1009	433	329	232	388
v/c Ratio	0.30	0.38	0.75	0.35	0.43	0.86
Control Delay	16.7	15.7	41.8	10.7	30.2	48.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	16.7	15.7	41.8	10.7	30.2	48.9
Queue Length 50th (ft)	101	132	136	54	119	216
Queue Length 95th (ft)	m183	m188	183	38	165	297
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	743	2669	669	1148	700	581
Starvation Cap Reductn	0	0	0	0	0	20
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.65	0.29	0.33	0.69

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	304	880	219	229	863	1044	360
v/c Ratio	0.54	0.54	0.34	0.54	0.97	0.99	0.23
Control Delay	20.4	18.1	3.8	35.8	58.9	61.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	18.1	3.8	35.8	58.9	61.2	0.3
Queue Length 50th (ft)	129	138	27	126	254	347	0
Queue Length 95th (ft)	169	137	10	m183	#431	#491	0
Internal Link Dist (ft)		1155			540	199	
Turn Bay Length (ft)	200			200			200
Base Capacity (vph)	566	1627	635	422	887	1055	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.54	0.34	0.54	0.97	0.99	0.23

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

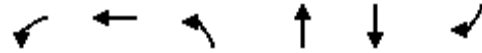
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richards Blvd & 10th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	211	496	1092	34	24	36
v/c Ratio	0.27	0.18	0.80	0.04	0.13	0.35
Control Delay	21.5	16.8	31.0	11.0	46.2	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	16.8	31.0	11.0	46.2	24.1
Queue Length 50th (ft)	85	49	308	11	7	0
Queue Length 95th (ft)	164	79	341	21	21	31
Internal Link Dist (ft)		1064		248	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	782	2787	1665	1155	319	157
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.18	0.66	0.03	0.08	0.23

Intersection Summary

Queues
7: Richard Blvd & Dos Rios St

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	538	237	1350	249	163
v/c Ratio	0.28	0.72	0.57	0.94	0.41	0.26
Control Delay	33.0	28.7	27.5	32.2	8.4	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	28.7	27.5	32.2	8.4	13.3
Queue Length 50th (ft)	16	97	78	245	54	33
Queue Length 95th (ft)	44	140	144	#389	99	77
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	152	946	463	1480	609	624
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.57	0.51	0.91	0.41	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Bannon St & I-5 SB Off

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	628	164	2130	762
v/c Ratio	0.74	0.34	0.63	0.32
Control Delay	40.3	10.3	6.4	5.6
Queue Delay	0.7	0.0	1.7	0.6
Total Delay	41.0	10.3	8.1	6.2
Queue Length 50th (ft)	195	18	132	57
Queue Length 95th (ft)	236	64	m253	m103
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1079	572	3407	2371
Starvation Cap Reductn	0	0	1040	1150
Spillback Cap Reductn	178	0	844	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.29	0.90	0.62

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
10: Bannon St & I-5 NB Off

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	240	2518	52	1730
v/c Ratio	0.33	0.92	0.05	0.86
Control Delay	6.7	31.7	10.2	24.3
Queue Delay	1.1	76.5	0.0	64.7
Total Delay	7.8	108.2	10.2	89.0
Queue Length 50th (ft)	17	379	14	384
Queue Length 95th (ft)	55	369	31	478
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	737	2730	1043	2022
Starvation Cap Reductn	292	580	0	0
Spillback Cap Reductn	0	175	0	506
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	1.17	0.05	1.14

Intersection Summary

Queues
11: Bannon St & Bercut Dr

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	217	3153	878	446	146	6
v/c Ratio	0.19	0.74	0.65	0.79	0.74	0.01
Control Delay	4.7	9.0	1.5	51.1	49.2	11.8
Queue Delay	4.4	45.5	1.8	0.0	0.0	0.0
Total Delay	9.2	54.5	3.3	51.1	49.2	11.8
Queue Length 50th (ft)	31	230	0	142	51	2
Queue Length 95th (ft)	m38	400	m7	198	#85	m5
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	1171	4241	1344	596	197	484
Starvation Cap Reductn	871	1368	292	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	1.10	0.83	0.75	0.74	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	601	2746	576	112	69	574
v/c Ratio	0.66	1.11dr	0.70	0.26	0.30	0.41
Control Delay	11.8	11.1	20.8	3.3	45.9	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	11.1	20.8	3.3	45.9	26.8
Queue Length 50th (ft)	84	104	96	1	33	127
Queue Length 95th (ft)	166	160	82	6	86	145
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	916	3219	838	441	267	1469
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.85	0.69	0.25	0.26	0.39

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	563	1311	28	321	341	216	1069
v/c Ratio	0.82	0.66	0.04	0.30	0.22	0.71	0.58
Control Delay	17.6	10.6	0.6	19.7	0.4	46.6	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	10.6	0.6	19.7	0.4	46.6	3.5
Queue Length 50th (ft)	146	93	1	46	1	86	18
Queue Length 95th (ft)	m219	124	m1	80	2	m83	m47
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	735	2110	673	1075	1583	348	1845
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.62	0.04	0.30	0.22	0.62	0.58

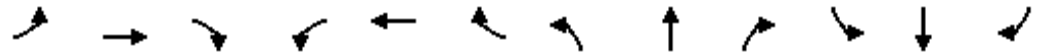
Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: N B Street & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	46	72	142	195	17	73	583	79	89	1129	143
v/c Ratio	0.54	0.11	0.18	0.49	0.49	0.05	0.45	0.36	0.10	0.23	0.55	0.15
Control Delay	44.9	30.1	8.4	42.4	40.7	18.9	50.0	10.8	0.7	31.6	10.2	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	30.1	8.4	42.4	40.7	18.9	50.0	10.8	0.7	31.6	10.2	2.7
Queue Length 50th (ft)	57	23	0	85	116	0	49	63	0	46	158	7
Queue Length 95th (ft)	110	51	34	m143	m186	m14	95	61	2	m75	312	m26
Internal Link Dist (ft)		435			1023			498			815	
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	229	484	465	352	484	424	204	1949	907	417	2067	975
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.10	0.15	0.40	0.40	0.04	0.36	0.30	0.09	0.21	0.55	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	88	57	89	130	308	80	465	381	126	1303
v/c Ratio	0.41	0.16	0.19	0.36	0.19	0.55	0.63	0.32	0.38	0.35	0.66
Control Delay	51.5	37.4	18.0	48.3	33.5	8.2	67.6	16.7	1.4	21.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	37.4	18.0	48.3	33.5	8.2	67.6	16.7	1.4	21.0	8.5
Queue Length 50th (ft)	26	30	3	28	36	0	53	114	0	64	97
Queue Length 95th (ft)	#53	45	37	53	62	71	m#108	106	m1	118	111
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	96	637	332	257	787	591	128	1481	992	390	1979
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.14	0.17	0.35	0.17	0.52	0.63	0.31	0.38	0.32	0.66

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1381	107	126	32	298	4555	383
v/c Ratio	1.71	0.19	0.37	0.12	0.55	1.07	0.30
Control Delay	356.2	41.0	12.7	46.8	53.2	52.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	356.2	41.0	12.7	46.8	53.2	52.4	5.2
Queue Length 50th (ft)	~620	37	8	23	116	~678	92
Queue Length 95th (ft)	#714	m62	m42	53	164	m#699	m101
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	806	572	341	313	623	4245	1274
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.71	0.19	0.37	0.10	0.48	1.07	0.30

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

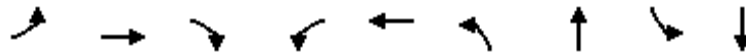
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



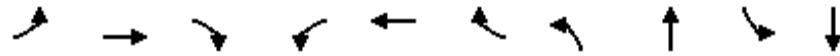
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	65	204	76	27	211	600	83	1301
v/c Ratio	0.25	0.22	0.49	0.37	0.10	0.71	0.27	0.51	0.69
Control Delay	38.5	37.2	9.5	42.8	21.1	41.2	9.6	58.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	37.2	9.5	42.8	21.1	41.2	9.6	58.9	9.0
Queue Length 50th (ft)	30	36	0	49	0	58	146	52	75
Queue Length 95th (ft)	66	74	61	m83	m3	154	198	m102	128
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	456	244	319	374	2257	188	1895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	11
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.19	0.45	0.31	0.08	0.56	0.27	0.44	0.69

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	229	11	46	187	4	5	63	255	24	1568
v/c Ratio	0.84	0.03	0.13	0.69	0.01	0.02	0.55	0.12	0.11	0.70
Control Delay	55.6	22.3	7.0	50.7	31.0	19.2	60.7	7.0	29.5	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9
Total Delay	55.6	22.3	7.0	50.7	31.0	19.2	60.7	7.0	29.5	6.4
Queue Length 50th (ft)	150	5	0	109	2	0	42	2	13	57
Queue Length 95th (ft)	#258	m16	25	184	11	10	m68	m47	m12	73
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	302	401	376	300	401	344	117	2411	222	2245
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	16
Spillback Cap Reductn	0	0	6	0	0	0	0	0	0	490
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.03	0.12	0.62	0.01	0.01	0.54	0.11	0.11	0.89

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

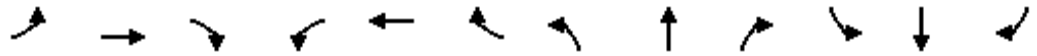
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	151	618	280	394	715	64	402	539	537	366	1005	63
v/c Ratio	0.43	0.80	0.62	1.04	0.99dl	0.15	1.12	0.53	0.65	1.12	1.01	0.13
Control Delay	38.8	35.9	16.6	49.6	16.9	0.7	125.0	32.0	7.6	117.6	61.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	35.9	16.6	49.6	16.9	0.7	125.0	32.0	7.6	117.6	61.3	9.6
Queue Length 50th (ft)	84	148	41	~281	79	0	~152	151	11	~136	~369	16
Queue Length 95th (ft)	144	217	135	m#102	m76	m0	#247	204	104	#228	#484	m23
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	372	802	468	379	778	414	360	1026	823	326	991	473
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.77	0.60	1.04	0.92	0.15	1.12	0.53	0.65	1.12	1.01	0.13

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	453	647	66	879	807	147	259	405	15	1472	182
v/c Ratio	0.75	0.89	0.18	1.60	1.20	0.85	0.19	0.47	0.17	1.24	0.31
Control Delay	41.4	45.8	12.0	309.4	140.9	87.2	21.6	4.5	59.3	139.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	45.8	12.0	309.4	140.9	87.2	21.6	4.5	59.3	139.5	8.9
Queue Length 50th (ft)	143	219	5	~415	~330	48	52	0	9	-606	11
Queue Length 95th (ft)	m169	m246	m12	#536	#450	#106	93	64	m13	#744	m34
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	618	743	381	549	672	172	1377	864	89	1186	589
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.87	0.17	1.60	1.20	0.85	0.19	0.47	0.17	1.24	0.31

Intersection Summary

- Description: 8 seconds lost time added to represent LRT.
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	74	51	56	233	419	2459
v/c Ratio	1.25	0.22	0.95	0.99	1.11	1.14
Control Delay	254.8	61.5	172.9	118.2	139.3	97.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	254.8	61.5	172.9	118.2	139.3	97.5
Queue Length 50th (ft)	~90	46	56	223	~244	~1475
Queue Length 95th (ft)	#202	90	#151	#405	#360	#1598
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	59	236	59	235	376	2155
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.22	0.95	0.99	1.11	1.14

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	118	587	456	572	94	1857	421	1676
v/c Ratio	1.48	0.30	1.95	0.60	0.73	1.06	1.55	1.83	1.14
Control Delay	269.7	5.1	457.8	16.9	9.9	92.2	280.4	418.1	99.8
Queue Delay	0.0	1.8	243.8	1.0	0.7	0.0	99.0	0.0	17.9
Total Delay	269.7	6.9	701.6	17.9	10.6	92.2	379.4	418.1	117.8
Queue Length 50th (ft)	~182	6	~587	146	83	~64	~871	~408	~659
Queue Length 95th (ft)	m#297	m18	m#756	m198	m139	m45	m#551	#596	#800
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	139	396	301	764	784	89	1198	230	1472
Starvation Cap Reductn	0	0	0	125	51	0	149	0	0
Spillback Cap Reductn	0	164	150	23	0	0	0	0	51
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	0.51	3.89	0.71	0.78	1.06	1.77	1.83	1.18

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	257	394	923	336	14	111	1053	719
v/c Ratio	0.64	0.64	0.91	0.74	0.48	0.16	0.13	0.83	0.85
Control Delay	50.6	7.8	55.4	27.1	4.8	34.6	12.4	35.9	27.0
Queue Delay	0.0	0.0	8.0	3.7	0.3	0.0	0.0	6.4	9.0
Total Delay	50.6	7.8	63.4	30.8	5.2	34.6	12.4	42.3	36.0
Queue Length 50th (ft)	63	95	263	230	23	7	49	317	280
Queue Length 95th (ft)	m38	m43	m#395	311	m45	m8	m48	402	#527
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			60			150
Base Capacity (vph)	142	402	434	1239	707	89	848	1274	849
Starvation Cap Reductn	0	0	27	228	87	0	0	179	108
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.64	0.97	0.91	0.54	0.16	0.13	0.96	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	453	626	1802	648	1577
v/c Ratio	1.17	1.09dl	1.68	1.26	0.69
Control Delay	108.3	27.0	329.4	157.1	2.7
Queue Delay	589.6	199.0	52.7	93.2	2.4
Total Delay	698.0	226.0	382.2	250.3	5.1
Queue Length 50th (ft)	~374	167	~865	~526	54
Queue Length 95th (ft)	m234	m126	m#802	m#354	m44
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	387	786	1073	513	2300
Starvation Cap Reductn	0	0	0	57	566
Spillback Cap Reductn	348	351	70	73	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	11.62	1.44	1.80	1.47	0.91

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
25: H Street & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1568	512	1052
v/c Ratio	0.93	0.83	0.85
Control Delay	21.4	26.8	23.7
Queue Delay	58.1	5.7	4.9
Total Delay	79.5	32.6	28.6
Queue Length 50th (ft)	302	156	177
Queue Length 95th (ft)	m232	m303	m311
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1684	620	1239
Starvation Cap Reductn	297	68	134
Spillback Cap Reductn	35	43	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.13	0.93	0.95

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



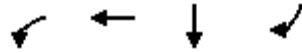
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1990	49	1264	849	790
v/c Ratio	1.15	0.08	1.01	2.92	1.20
Control Delay	87.2	8.6	38.9	886.2	121.1
Queue Delay	51.2	0.0	26.4	0.0	203.9
Total Delay	138.4	8.7	65.3	886.2	325.0
Queue Length 50th (ft)	~262	14	~312	~962	~448
Queue Length 95th (ft)	m#250	m15	m#375	#1228	#847
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1727	596	1254	291	657
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	157	99	86	120	181
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.27	0.10	1.08	4.96	1.66

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	268	1727	977	290
v/c Ratio	0.44	1.03	0.52	0.46
Control Delay	9.2	48.1	10.3	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.2	48.1	10.3	7.6
Queue Length 50th (ft)	32	~201	147	80
Queue Length 95th (ft)	87	#309	m152	m79
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	603	1683	1881	631
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	3	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	1.03	0.52	0.46

Intersection Summary

Description: 6 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
28: J St & 6th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	892	2758	87	294
v/c Ratio	0.99	0.88	0.20	1.00
Control Delay	14.9	4.9	27.6	59.2
Queue Delay	8.9	5.5	0.0	0.0
Total Delay	23.8	10.4	27.6	59.2
Queue Length 50th (ft)	150	150	39	~179
Queue Length 95th (ft)	m143	m139	80	m78
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	904	3134	434	294
Starvation Cap Reductn	31	339	0	0
Spillback Cap Reductn	0	71	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.02	0.99	0.20	1.00

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2373	540	1127
v/c Ratio	0.76	0.65	0.75
Control Delay	8.0	7.5	30.4
Queue Delay	1.9	1.4	0.1
Total Delay	10.0	8.8	30.5
Queue Length 50th (ft)	247	97	256
Queue Length 95th (ft)	m251	m116	m262
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	3102	828	1501
Starvation Cap Reductn	542	130	16
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	0.77	0.76

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
30: Richards Blvd & Dos Rios St

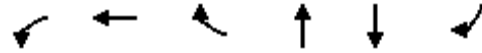
2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1427	2	313
v/c Ratio	0.51	0.00	0.40
Control Delay	8.7	11.0	6.4
Queue Delay	0.0	0.0	0.0
Total Delay	8.7	11.0	6.4
Queue Length 50th (ft)	85	1	25
Queue Length 95th (ft)	94	4	53
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2795	788	783
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.00	0.40
Intersection Summary			

Queues
31: Richards Blvd & 12th Street

2030 +Proj (Res) AM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	47	699	89	2258	4372	728
v/c Ratio	0.10	0.78	0.20	0.65	0.85	0.63
Control Delay	38.1	52.1	16.0	5.0	17.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	38.1	52.1	16.0	5.1	18.3	9.5
Queue Length 50th (ft)	31	289	18	236	624	194
Queue Length 95th (ft)	64	363	63	255	652	305
Internal Link Dist (ft)		258		468	518	
Turn Bay Length (ft)	150					300
Base Capacity (vph)	449	898	447	3481	5165	1164
Starvation Cap Reductn	0	0	0	120	0	0
Spillback Cap Reductn	0	0	0	0	437	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.78	0.20	0.67	0.92	0.63

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

Queues
32: Bannon St & 12th Street

2030 +Proj (Res) AM Peak
1/9/2007



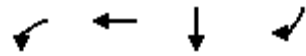
Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	811	30	549	1449	1	32	4388
v/c Ratio	0.53	0.05	1.05	0.56	0.00	0.16	0.92
Control Delay	39.0	32.4	90.9	8.5	0.0	34.1	9.0
Queue Delay	0.0	0.0	0.7	0.2	0.0	0.0	0.6
Total Delay	39.0	32.4	91.6	8.6	0.0	34.1	9.7
Queue Length 50th (ft)	201	18	~465	189	0	23	765
Queue Length 95th (ft)	244	42	#692	m9	m0	m28	290
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	1524	569	525	2752	857	206	4747
Starvation Cap Reductn	0	0	0	422	0	0	15
Spillback Cap Reductn	0	0	1	0	0	0	120
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.05	1.05	0.62	0.00	0.16	0.95

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1140	440	1796	851
v/c Ratio	0.94	0.35	0.91	0.96
Control Delay	33.1	12.9	27.8	39.8
Queue Delay	19.0	0.0	41.9	0.0
Total Delay	52.0	12.9	69.7	39.8
Queue Length 50th (ft)	310	78	506	399
Queue Length 95th (ft)	#111	103	#642	#714
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	1218	1274	1982	883
Starvation Cap Reductn	18	0	0	0
Spillback Cap Reductn	115	0	335	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.03	0.35	1.09	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues
2: Richards Blvd & I-5 NB Off

2030 +Proj (Res) PM Peak
1/9/2007



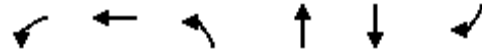
Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1481	3061	98	602
v/c Ratio	0.44	1.13	0.20	0.65
Control Delay	5.0	76.4	12.8	26.4
Queue Delay	1.1	0.0	0.0	0.0
Total Delay	6.1	76.4	12.8	26.4
Queue Length 50th (ft)	71	~792	21	134
Queue Length 95th (ft)	m70	m#634	m32	135
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)		150	300	
Base Capacity (vph)	3350	2708	673	1309
Starvation Cap Reductn	1510	0	0	0
Spillback Cap Reductn	349	0	2	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	1.13	0.15	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
3: Richards Blvd & Bercut Dr

2030 +Proj (Res) PM Peak
1/9/2007



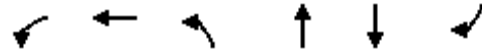
Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	3540	828	221	215	213
v/c Ratio	0.02	1.07	1.07	0.29	0.86	1.00
Control Delay	4.3	47.6	70.9	7.8	73.8	105.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	47.6	70.9	7.8	73.8	105.1
Queue Length 50th (ft)	2	~717	~302	48	136	136
Queue Length 95th (ft)	m2	m#722	m#413	m59	#266	#287
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	792	3296	772	753	250	214
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.07	1.07	0.29	0.86	1.00

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Richards Blvd & 5th Street



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	252	2493	963	645	178	273
v/c Ratio	0.37	1.02	0.96	0.65	0.48	0.90
Control Delay	10.8	36.5	33.6	10.6	39.8	69.4
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	10.8	36.5	33.6	12.2	39.8	69.4
Queue Length 50th (ft)	59	-423	-338	241	99	165
Queue Length 95th (ft)	m82	m#555	m307	m223	165	#303
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	681	2455	1000	997	401	329
Starvation Cap Reductn	0	0	0	188	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	1.02	0.96	0.80	0.44	0.83

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	299	1718	110	367	804	852	891
v/c Ratio	0.41	0.82	0.16	0.97	1.01	1.05	0.56
Control Delay	16.8	22.0	5.1	68.1	63.8	82.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	22.0	5.1	68.1	63.8	82.8	1.5
Queue Length 50th (ft)	72	267	0	261	-293	-312	0
Queue Length 95th (ft)	172	333	m13	#465	#432	#434	0
Internal Link Dist (ft)		1155			540	209	
Turn Bay Length (ft)	200			200			200
Base Capacity (vph)	733	2105	689	380	798	814	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.82	0.16	0.97	1.01	1.05	0.56

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

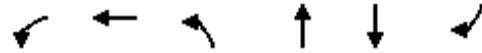
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richards Blvd & 10th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	731	930	42	33	169
v/c Ratio	0.12	0.27	0.81	0.05	0.07	0.76
Control Delay	17.5	17.7	36.5	9.9	36.2	51.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	17.7	36.5	9.9	36.2	51.4
Queue Length 50th (ft)	37	91	276	13	10	78
Queue Length 95th (ft)	63	98	319	22	22	140
Internal Link Dist (ft)		1064		356	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	742	2675	1329	1159	672	317
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.70	0.04	0.05	0.53

Intersection Summary

Queues

2030 +Proj (Res) PM Peak

7: Richard Blvd & Dos Rios St

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	797	109	1550	204	151
v/c Ratio	0.54	0.55	0.48	0.98	0.39	0.27
Control Delay	45.8	17.4	35.4	37.7	23.3	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	17.4	35.4	37.7	23.3	17.1
Queue Length 50th (ft)	33	134	44	323	72	39
Queue Length 95th (ft)	#85	186	89	#491	130	84
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	147	1457	253	1593	522	562
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.55	0.43	0.97	0.39	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
9: Bannon St & I-5 SB Off

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	1022	1066	1426	1511
v/c Ratio	0.84	0.67	0.50	0.75
Control Delay	37.1	2.3	11.3	16.0
Queue Delay	0.0	0.0	1.0	32.8
Total Delay	37.2	2.3	12.3	48.7
Queue Length 50th (ft)	305	0	150	296
Queue Length 95th (ft)	376	0	m187	m426
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1327	1583	2857	2003
Starvation Cap Reductn	0	0	1073	581
Spillback Cap Reductn	3	0	661	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.67	0.80	1.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
10: Bannon St & I-5 NB Off

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	593	1855	52	1385
v/c Ratio	0.65	0.74	0.05	0.65
Control Delay	8.0	28.0	8.5	15.4
Queue Delay	1.1	4.7	0.0	7.1
Total Delay	9.1	32.7	8.5	22.6
Queue Length 50th (ft)	71	281	13	232
Queue Length 95th (ft)	107	291	28	290
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	909	2508	1118	2166
Starvation Cap Reductn	131	579	0	0
Spillback Cap Reductn	0	175	0	736
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.96	0.05	0.97
Intersection Summary				

Queues
11: Bannon St & Bercut Dr

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	144	2396	700	853	126	22
v/c Ratio	0.15	0.69	0.59	0.87	0.61	0.03
Control Delay	8.7	13.0	2.2	34.2	37.1	25.6
Queue Delay	2.2	4.7	0.5	0.0	0.0	0.0
Total Delay	10.9	17.8	2.7	34.2	37.1	25.6
Queue Length 50th (ft)	27	198	6	194	44	15
Queue Length 95th (ft)	m43	295	22	#242	m53	m18
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	960	3476	1179	1022	206	727
Starvation Cap Reductn	693	1005	167	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.97	0.69	0.83	0.61	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	629	2132	1351	579	160	767
v/c Ratio	1.06	1.04dr	1.02	0.93	0.66	0.38
Control Delay	69.3	34.5	39.5	27.7	63.4	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.3	34.5	39.5	27.7	63.4	14.6
Queue Length 50th (ft)	~452	277	~506	247	104	123
Queue Length 95th (ft)	m#637	#454	#641	m#487	172	155
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	596	2138	1331	622	266	2028
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.00	1.02	0.93	0.60	0.38

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	492	1708	163	462	1156	230	541
v/c Ratio	0.71	0.85	0.23	0.46	0.73	0.70	0.30
Control Delay	14.9	15.7	0.5	41.5	15.7	37.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	15.7	0.5	41.5	15.7	37.5	6.7
Queue Length 50th (ft)	126	176	0	120	720	160	40
Queue Length 95th (ft)	m133	m191	m0	m136	m800	m175	m48
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	699	2009	724	1015	1583	327	1829
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.85	0.23	0.46	0.73	0.70	0.30

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: N B Street & 6th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	52	144	271	315	132	72	161	1813	167	12	1095	180
v/c Ratio	0.14	0.25	0.40	0.89	0.23	0.14	0.76	0.87	0.17	0.13	0.70	0.23
Control Delay	27.3	28.1	5.5	62.1	26.1	12.2	67.0	8.4	0.7	39.8	16.9	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	27.3	28.1	5.5	62.1	26.1	12.2	67.0	9.1	0.7	39.8	16.9	1.7
Queue Length 50th (ft)	23	67	0	209	66	3	93	57	1	7	236	8
Queue Length 95th (ft)	56	124	59	#383	139	45	m110	m#710	m0	m14	m261	m16
Internal Link Dist (ft)		435			1023			498				815
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	363	569	671	353	569	533	225	2091	974	91	1652	817
Starvation Cap Reductn	0	0	0	0	0	0	0	82	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.25	0.40	0.89	0.23	0.14	0.72	0.90	0.17	0.13	0.66	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	100	39	477	284	14	90	1491	591	158	545
v/c Ratio	0.29	0.18	0.14	0.92	0.30	0.03	0.49	0.92	0.51	1.19	0.34
Control Delay	39.5	27.8	7.7	69.5	31.1	14.4	52.2	26.4	1.7	164.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.2	0.0	0.0
Total Delay	39.5	27.8	7.7	69.5	31.1	14.4	52.2	29.5	1.9	164.0	4.2
Queue Length 50th (ft)	20	31	1	~192	79	0	49	478	6	~122	28
Queue Length 95th (ft)	39	43	12	#293	117	16	m68	#612	m13	#253	44
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	106	637	317	518	948	434	216	1625	1164	133	1585
Starvation Cap Reductn	0	0	0	0	0	0	0	75	139	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.16	0.12	0.92	0.30	0.03	0.42	0.96	0.58	1.19	0.34

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1428	515	299	58	331	3359	1150
v/c Ratio	1.69	0.86	0.67	0.21	0.52	0.81	0.87
Control Delay	349.9	67.6	18.9	48.1	31.1	22.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Total Delay	349.9	67.6	18.9	48.1	31.1	22.3	14.9
Queue Length 50th (ft)	~624	224	41	42	75	545	210
Queue Length 95th (ft)	#718	#313	143	84	124	m566	m181
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	844	599	449	313	698	4144	1316
Starvation Cap Reductn	0	0	0	0	0	0	86
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.69	0.86	0.67	0.19	0.47	0.81	0.93

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

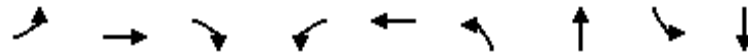
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	185	356	37	26	194	1899	162	1375
v/c Ratio	0.53	0.60	0.70	0.27	0.09	0.78	0.91	0.81	0.70
Control Delay	39.6	40.4	13.8	26.3	12.4	62.5	27.3	57.9	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	26.1	0.0	0.1
Total Delay	39.6	40.4	13.8	26.3	12.4	62.5	53.5	57.9	11.6
Queue Length 50th (ft)	58	91	28	22	12	119	554	98	168
Queue Length 95th (ft)	m88	m128	m45	m52	m20	#218	#768	m#173	m222
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	533	151	323	270	2082	204	1955
Starvation Cap Reductn	0	0	0	0	0	0	278	0	59
Spillback Cap Reductn	0	0	0	0	0	0	82	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.54	0.67	0.25	0.08	0.72	1.05	0.79	0.73

Intersection Summary

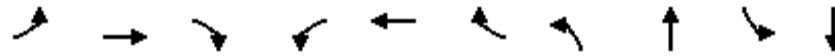
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	277	40	38	89	3	9	74	1611	63	1100
v/c Ratio	0.91	0.10	0.10	0.30	0.01	0.03	0.49	0.73	0.71	0.53
Control Delay	47.8	8.1	5.4	35.6	30.3	16.7	54.2	16.5	80.1	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.1
Total Delay	47.8	8.1	5.4	35.6	30.3	16.7	54.2	19.2	80.1	12.4
Queue Length 50th (ft)	187	13	4	47	2	0	45	373	39	264
Queue Length 95th (ft)	m#297	m21	m9	93	9	13	91	465	m#78	m304
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	317	419	386	306	419	363	173	2201	89	2094
Starvation Cap Reductn	0	0	0	0	0	0	0	454	0	208
Spillback Cap Reductn	0	0	0	0	0	0	0	264	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.10	0.10	0.29	0.01	0.02	0.43	0.92	0.71	0.58

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	756	337	306	638	199	598	1755	839	228	1366	182
v/c Ratio	0.96	1.14	0.68	1.12	1.12	0.55	1.16	1.10	0.97	1.05	1.06	0.29
Control Delay	98.1	129.4	20.4	77.4	73.2	8.0	146.5	94.7	51.1	140.2	88.8	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.2	6.5	0.0	95.5	0.0
Total Delay	98.1	129.4	20.4	77.4	73.2	8.0	146.5	141.9	57.6	140.2	184.3	22.5
Queue Length 50th (ft)	327	-457	65	-383	-400	73	-356	-1023	611	-124	-772	78
Queue Length 95th (ft)	#525	#597	198	m245	m249	m61	#479	#1161	#925	#215	#913	142
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	348	665	496	274	572	365	515	1593	865	217	1286	618
Starvation Cap Reductn	0	0	0	0	0	0	0	142	28	0	221	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	1.14	0.68	1.12	1.12	0.55	1.16	1.21	1.00	1.05	1.28	0.29

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1232	915	39	615	606	472	931	470	49	962	7
v/c Ratio	1.13	0.93	0.09	0.97	1.17	1.21	0.77	0.67	0.63	1.05	0.02
Control Delay	116.2	48.9	13.1	88.7	148.7	143.8	26.8	13.8	102.2	95.1	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
Total Delay	116.2	48.9	13.1	88.7	148.7	143.8	26.8	13.8	102.2	131.9	33.3
Queue Length 50th (ft)	~731	415	8	313	~370	~296	390	225	48	~535	3
Queue Length 95th (ft)	m#741	m427	m14	#444	#495	m188	m259	m136	#121	#673	16
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	1087	1003	462	635	519	389	1227	707	78	920	414
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	74	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.91	0.08	0.97	1.17	1.21	0.76	0.66	0.63	1.14	0.02

Intersection Summary

- Description: 8 seconds lost time added to represent LRT.
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	314	373	96	639	941	1776
v/c Ratio	1.66	0.80	0.77	1.54	1.49	1.33
Control Delay	358.5	62.5	103.6	289.6	268.9	173.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	358.5	62.5	103.6	289.6	268.9	173.3
Queue Length 50th (ft)	~445	322	94	~835	~667	~1212
Queue Length 95th (ft)	#642	#478	#189	#1081	#805	m#1204
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	189	465	130	415	632	1333
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.66	0.80	0.74	1.54	1.49	1.33

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	300	261	831	534	798	39	1908	370	3100
v/c Ratio	0.83	0.50	3.35	0.62	0.94	0.44	1.59	2.61	2.37
Control Delay	44.4	12.3	1081.4	16.5	24.8	62.5	281.3	763.5	640.7
Queue Delay	0.0	0.1	0.0	1.4	0.0	40.1	29.7	0.0	56.1
Total Delay	44.4	12.4	1081.4	17.9	24.8	102.5	311.1	763.5	696.9
Queue Length 50th (ft)	150	42	~974	152	145	24	~893	~399	~1743
Queue Length 95th (ft)	m#304	m126	m#1058	m174	m#197	m17	m#524	#578	#1875
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	360	519	248	857	852	89	1201	142	1306
Starvation Cap Reductn	0	0	0	160	0	0	48	0	0
Spillback Cap Reductn	0	12	11	138	0	44	0	0	421
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.51	3.51	0.77	0.94	0.87	1.65	2.61	3.50

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	280	351	194	1035	503	26	230	638	760
v/c Ratio	0.99	0.59	0.59	0.97	0.71	0.29	0.29	0.55	0.93
Control Delay	41.9	10.7	42.8	54.0	12.1	66.3	34.1	29.5	34.4
Queue Delay	0.0	1.1	0.0	49.3	0.8	0.0	0.0	0.1	1.6
Total Delay	41.9	11.8	42.8	103.3	12.9	66.3	34.1	29.6	36.0
Queue Length 50th (ft)	90	131	112	328	44	16	142	173	237
Queue Length 95th (ft)	m54	m87	m183	#480	100	m17	m150	230	#504
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			60			150
Base Capacity (vph)	283	598	327	1062	711	89	792	1168	813
Starvation Cap Reductn	0	92	0	139	53	0	0	0	13
Spillback Cap Reductn	0	2	0	0	0	0	0	32	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.69	0.59	1.12	0.76	0.29	0.29	0.56	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	292	587	1657	1178	2909
v/c Ratio	1.07	1.12	1.50	1.66	1.09
Control Delay	106.0	111.1	246.1	319.1	60.7
Queue Delay	92.4	100.9	14.2	296.8	192.9
Total Delay	198.3	212.0	260.3	615.9	253.5
Queue Length 50th (ft)	~226	~235	~732	~1096	~656
Queue Length 95th (ft)	m#275	m#246	m#233	m188	m48
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	274	524	1108	708	2672
Starvation Cap Reductn	0	0	1	201	759
Spillback Cap Reductn	48	90	23	0	500
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.29	1.35	1.53	2.32	1.52

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1803	399	604
v/c Ratio	0.95	0.80	0.61
Control Delay	12.4	34.7	23.8
Queue Delay	78.4	3.8	0.2
Total Delay	90.8	38.5	24.0
Queue Length 50th (ft)	178	140	108
Queue Length 95th (ft)	m123	#365	172
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1898	496	991
Starvation Cap Reductn	369	17	58
Spillback Cap Reductn	174	46	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.18	0.89	0.65

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2730	295	1208	1665	1564
v/c Ratio	1.67	0.76	1.49	2.52	2.50
Control Delay	325.7	44.0	252.6	703.5	694.3
Queue Delay	66.4	0.0	18.5	0.0	0.0
Total Delay	392.2	44.0	271.2	703.5	694.3
Queue Length 50th (ft)	~750	208	~604	~1863	~1733
Queue Length 95th (ft)	#811	m217	m#563	m#1696	m#1578
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1636	386	813	660	625
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	133	0	22	431	399
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.82	0.76	1.53	7.27	6.92

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	97	2398	1308	370
v/c Ratio	0.12	0.86	0.76	0.73
Control Delay	9.4	21.8	25.4	31.2
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	9.4	21.8	25.7	31.2
Queue Length 50th (ft)	29	463	243	181
Queue Length 95th (ft)	55	546	m284	m285
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	834	2787	1729	504
Starvation Cap Reductn	0	0	94	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.86	0.80	0.73

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	673	2105	534	760
v/c Ratio	1.17	1.12	0.73	3.15
Control Delay	96.2	67.9	19.3	984.8
Queue Delay	134.2	56.2	21.3	0.0
Total Delay	230.4	124.2	40.6	984.8
Queue Length 50th (ft)	~408	~391	120	~831
Queue Length 95th (ft)	m#372	m#283	#259	m#302
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	574	1886	733	241
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	118	193	203	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.48	1.24	1.01	3.15

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2191	780	1287
v/c Ratio	0.84	1.03	0.78
Control Delay	6.8	29.0	14.5
Queue Delay	0.0	0.0	0.0
Total Delay	6.8	29.0	14.5
Queue Length 50th (ft)	113	~148	115
Queue Length 95th (ft)	m80	m82	174
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	2593	759	1642
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	1.03	0.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
30: Richards Blvd & Dos Rios St

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1187	12	261
v/c Ratio	0.45	0.02	0.34
Control Delay	10.2	8.9	11.5
Queue Delay	0.0	0.0	0.0
Total Delay	10.2	8.9	11.5
Queue Length 50th (ft)	61	2	48
Queue Length 95th (ft)	84	9	92
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2631	764	762
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.02	0.34

Intersection Summary

Queues
31: Richards Blvd & 12th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	148	367	155	4	4231	3675	815
v/c Ratio	0.30	0.37	0.32	0.03	1.26	0.75	0.71
Control Delay	39.2	39.3	25.6	62.0	140.5	17.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	4.4	0.7	0.0
Total Delay	39.2	39.3	25.6	62.0	144.9	18.3	12.2
Queue Length 50th (ft)	99	131	65	1	~1634	467	219
Queue Length 95th (ft)	160	178	127	m1	m#1569	625	468
Internal Link Dist (ft)		258			468	518	
Turn Bay Length (ft)	150			200			300
Base Capacity (vph)	490	980	479	150	3364	4874	1149
Starvation Cap Reductn	0	0	0	0	26	0	0
Spillback Cap Reductn	0	0	0	0	0	742	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.37	0.32	0.03	1.27	0.89	0.71

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
32: Bannon St & 12th Street

2030 +Proj (Res) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	2164	92	717	2072	21	45	3780
v/c Ratio	1.07	0.12	1.05	0.86	0.03	0.66	0.94
Control Delay	80.7	24.9	83.0	41.9	8.6	76.5	19.3
Queue Delay	235.6	0.0	0.0	0.5	0.0	0.0	0.2
Total Delay	316.3	24.9	83.0	42.4	8.6	76.5	19.5
Queue Length 50th (ft)	~718	48	~620	430	0	38	724
Queue Length 95th (ft)	#808	86	#864	m245	m1	m52	147
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	2015	752	682	2401	752	68	4004
Starvation Cap Reductn	0	0	0	0	0	0	18
Spillback Cap Reductn	665	0	0	86	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.60	0.12	1.05	0.90	0.03	0.66	0.95

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Off) AM Peak

1: Richards Blvd & I-5 SB Off

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↕↕						↕↕	↗
Volume (vph)	0	0	0	448	303	0	0	0	0	0	2632	795
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	448	303	0	0	0	0	0	2632	795
RTOR Reduction (vph)	0	0	0	15	0	0	0	0	0	0	0	21
Lane Group Flow (vph)	0	0	0	433	303	0	0	0	0	0	2632	774
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6							4
Permitted Phases												4
Actuated Green, G (s)				16.5	16.5						76.0	76.0
Effective Green, g (s)				15.0	16.0						76.0	76.0
Actuated g/C Ratio				0.15	0.16						0.76	0.76
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				515	566						2690	1067
v/s Ratio Prot				c0.13	0.09						c0.74	
v/s Ratio Perm												0.55
v/c Ratio				0.84	0.54						0.98	0.73
Uniform Delay, d1				41.3	38.6						11.2	6.4
Progression Factor				0.77	0.76						1.00	1.00
Incremental Delay, d2				15.1	3.6						12.7	3.0
Delay (s)				46.8	32.9						24.0	9.5
Level of Service				D	C						C	A
Approach Delay (s)		0.0			41.2			0.0			20.6	
Approach LOS		A			D			A			C	

Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richards Blvd & I-5 NB Off

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	676	1441	74	240	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	676	1441	74	240	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	63	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	676	1441	11	240	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					76.5	100.0	16.0	16.0				
Effective Green, g (s)					76.5	100.0	15.5	15.5				
Actuated g/C Ratio					0.76	1.00	0.16	0.16				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3890	2708	274	549				
v/s Ratio Prot					0.13		0.01	0.07				
v/s Ratio Perm						c0.53						
v/c Ratio					0.17	0.53	0.04	0.44				
Uniform Delay, d1					3.2	0.0	35.9	38.3				
Progression Factor					1.30	1.00	0.80	0.90				
Incremental Delay, d2					0.1	0.7	0.1	1.1				
Delay (s)					4.2	0.7	29.0	35.7				
Level of Service					A	A	C	D				
Approach Delay (s)		0.0			1.8			34.1			0.0	
Approach LOS		A			A			C			A	

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richards Blvd & Bercut Dr

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑	↘
Volume (vph)	0	0	0	23	1559	65	466	249	0	0	90	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	6331		3433	1863			1863	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	6331		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	23	1559	65	466	249	0	0	90	91
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	0	0	23	1620	0	466	249	0	0	90	46
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				61.1	61.1		19.0	30.8			7.8	7.8
Effective Green, g (s)				61.7	61.7		18.5	30.3			7.3	7.3
Actuated g/C Ratio				0.62	0.62		0.18	0.30			0.07	0.07
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				946	3906		635	564			136	116
v/s Ratio Prot					c0.26		c0.14	0.13			c0.05	
v/s Ratio Perm				0.01								0.03
v/c Ratio				0.02	0.41		0.73	0.44			0.66	0.39
Uniform Delay, d1				7.4	9.9		38.4	28.0			45.1	44.2
Progression Factor				0.48	0.43		0.61	0.58			1.00	1.00
Incremental Delay, d2				0.0	0.3		3.9	0.2			9.0	0.8
Delay (s)				3.6	4.5		27.3	16.5			54.1	45.0
Level of Service				A	A		C	B			D	D
Approach Delay (s)		0.0			4.5			23.6			49.6	
Approach LOS		A			A			C			D	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richards Blvd & 5th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑	↘
Volume (vph)	0	0	0	207	959	39	433	697	0	0	245	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6348		3433	1863			1863	1480
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6348		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	207	959	39	433	697	0	0	245	393
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	20
Lane Group Flow (vph)	0	0	0	207	993	0	433	697	0	0	245	373
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				42.4	41.1		17.3	51.1			29.8	29.8
Effective Green, g (s)				41.4	41.4		16.8	50.6			29.3	29.8
Actuated g/C Ratio				0.41	0.41		0.17	0.51			0.29	0.30
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				733	2628		577	943			546	441
v/s Ratio Prot				0.12	c0.16		0.13	c0.37			0.13	
v/s Ratio Perm												c0.25
v/c Ratio				0.28	0.38		0.75	0.74			0.45	0.85
Uniform Delay, d1				19.4	20.4		39.6	19.5			28.8	33.0
Progression Factor				0.65	0.65		0.92	0.83			1.00	1.00
Incremental Delay, d2				0.1	0.3		2.6	1.3			0.2	13.4
Delay (s)				12.7	13.5		38.9	17.5			29.0	46.4
Level of Service				B	B		D	B			C	D
Approach Delay (s)		0.0			13.4			25.7			39.7	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richards Blvd & 7th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	304	1089	263	277	977	0	0	1013	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.91	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Fr t				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Fl t Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	5085	1518	1610	3385			3539	1583
Fl t Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	5085	1518	1610	3385			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	304	1089	263	277	977	0	0	1013	364
RTOR Reduction (vph)	0	0	0	0	0	176	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	304	1089	87	249	1005	0	0	1013	364
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				34.0	33.0	33.0	28.5	28.5			27.5	100.0
Effective Green, g (s)				33.0	33.0	33.0	28.0	28.0			27.0	100.0
Actuated g/C Ratio				0.33	0.33	0.33	0.28	0.28			0.27	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				584	1678	501	451	948			956	1583
v/s Ratio Prot				0.17	c0.21		0.15	c0.30			c0.29	
v/s Ratio Perm						0.06						0.23
v/c Ratio				0.52	0.65	0.17	0.55	1.06			1.06	0.23
Uniform Delay, d1				27.1	28.6	23.8	30.7	36.0			36.5	0.0
Progression Factor				0.72	0.72	1.23	0.96	0.96			1.00	1.00
Incremental Delay, d2				0.3	1.7	0.7	0.7	44.7			46.2	0.3
Delay (s)				19.9	22.4	29.9	30.1	79.3			82.7	0.3
Level of Service				B	C	C	C	E			F	A
Approach Delay (s)		0.0			23.1			69.6			61.0	
Approach LOS		A			C			E			E	

Intersection Summary

HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑↑	↗
Volume (vph)	0	0	0	211	662	87	1092	34	0	0	24	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.74
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.98		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6296		3433	1863			3539	1176
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6296		3433	1863			3539	1176
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	211	662	87	1092	34	0	0	24	36
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	0	0	211	730	0	1092	34	0	0	24	2
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				43.9	42.9		40.4	49.1			4.7	4.7
Effective Green, g (s)				43.4	43.4		39.9	48.6			4.2	4.2
Actuated g/C Ratio				0.43	0.43		0.40	0.49			0.04	0.04
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				768	2732		1370	905			149	49
v/s Ratio Prot				c0.12	0.12		c0.32	0.02			c0.01	
v/s Ratio Perm												0.00
v/c Ratio				0.27	0.27		0.80	0.04			0.16	0.03
Uniform Delay, d1				18.2	18.1		26.5	13.5			46.2	45.9
Progression Factor				1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.2		3.3	0.0			0.2	0.1
Delay (s)				18.3	18.4		29.8	13.5			46.4	46.0
Level of Service				B	B		C	B			D	D
Approach Delay (s)		0.0			18.3			29.3			46.2	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	488	50	237	1216	199	35	150	64	21	75	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.97			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3490		1770	3393			1751			1739	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.94	
Satd. Flow (perm)	1770	3490		1770	3393			1662			1654	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	488	50	237	1216	199	35	150	64	21	75	67
RTOR Reduction (vph)	0	13	0	0	20	0	0	18	0	0	37	0
Lane Group Flow (vph)	43	525	0	237	1395	0	0	231	0	0	126	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	3.1	13.1		17.1	27.1			21.3			21.3	
Effective Green, g (s)	3.6	13.6		17.6	27.6			20.8			20.8	
Actuated g/C Ratio	0.06	0.21		0.27	0.42			0.32			0.32	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	98	730		479	1441			532			529	
v/s Ratio Prot	0.02	c0.15		0.13	c0.41							
v/s Ratio Perm								c0.14			0.08	
v/c Ratio	0.44	0.72		0.49	0.97			0.43			0.24	
Uniform Delay, d1	29.7	23.9		20.0	18.3			17.4			16.3	
Progression Factor	1.00	1.00		1.00	1.00			0.46			1.00	
Incremental Delay, d2	3.1	2.8		0.8	16.4			2.4			1.1	
Delay (s)	32.8	26.8		20.8	34.7			10.4			17.3	
Level of Service	C	C		C	C			B			B	
Approach Delay (s)		27.2			32.7			10.4			17.3	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 +Proj (Off) AM Peak
 12/22/2006

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	628	164	0	0	0	0	0	0	2318	762	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	628	164	0	0	0	0	0	0	2318	762	0
RTOR Reduction (vph)	0	0	96	0	0	0	0	0	0	52	0	0
Lane Group Flow (vph)	0	628	69	0	0	0	0	0	0	2266	762	0
Turn Type			Perm								Split	
Protected Phases		4								2	2	
Permitted Phases			4									
Actuated Green, G (s)		23.6	23.6							67.4	67.4	
Effective Green, g (s)		23.6	23.6							67.4	67.4	
Actuated g/C Ratio		0.24	0.24							0.67	0.67	
Clearance Time (s)		4.5	4.5							4.5	4.5	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		835	374							3363	2385	
v/s Ratio Prot		c0.18								c0.45	0.22	
v/s Ratio Perm			0.04									
v/c Ratio		0.75	0.18							0.67	0.32	
Uniform Delay, d1		35.5	30.5							9.7	6.8	
Progression Factor		1.00	1.00							0.67	0.71	
Incremental Delay, d2		3.9	0.2							0.3	0.1	
Delay (s)		39.3	30.7							6.9	4.9	
Level of Service		D	C							A	A	
Approach Delay (s)		37.6			0.0			0.0			6.4	
Approach LOS		D			A			A			A	

Intersection Summary		
HCM Average Control Delay	12.8	HCM Level of Service
HCM Volume to Capacity ratio	0.69	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	93.0%	9.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		F

HCM Signalized Intersection Capacity Analysis
 10: Bannon St & I-5 NB Off

2030 +Proj (Off) AM Peak























12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   							   			
Volume (vph)	240	2706	0	0	0	0	0	52	1730	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	2706	0	0	0	0	0	52	1730	0	0	0
RTOR Reduction (vph)	90	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	150	2706	0	0	0	0	0	52	1730	0	0	0
Turn Type	Split						Prot					
Protected Phases	2	2						1	4			1
Permitted Phases												
Actuated Green, G (s)	38.2	38.2						53.8	53.8			
Effective Green, g (s)	38.2	38.2						53.8	53.8			
Actuated g/C Ratio	0.38	0.38						0.54	0.54			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	676	2882						1002	1942			
v/s Ratio Prot	0.08	c0.36						0.03	c0.48			
v/s Ratio Perm												
v/c Ratio	0.22	0.94						0.05	0.89			
Uniform Delay, d1	20.9	29.8						11.0	20.5			
Progression Factor	0.64	0.85						1.00	1.00			
Incremental Delay, d2	0.6	5.8						0.0	5.6			
Delay (s)	14.0	31.2						11.0	26.1			
Level of Service	B	C						B	C			
Approach Delay (s)		29.8			0.0			25.6			0.0	
Approach LOS		C			A			C			A	
Intersection Summary												
HCM Average Control Delay			28.2		HCM Level of Service				C			
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			78.4%		ICU Level of Service				D			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
11: Bannon St & Bercut Dr

2030 +Proj (Off) AM Peak

12/22/2006

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						 		 			
Volume (vph)	217	3341	878	0	0	0	0	404	42	146	6	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0		
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00		
Frt	1.00	1.00	0.85					0.99		1.00	1.00		
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1770	6408	1583					3489		3433	1863		
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00		
Satd. Flow (perm)	1770	6408	1583					3489		3433	1863		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	217	3341	878	0	0	0	0	404	42	146	6	0	
RTOR Reduction (vph)	0	0	297	0	0	0	0	2	0	0	0	0	
Lane Group Flow (vph)	217	3341	581	0	0	0	0	444	0	146	6	0	
Turn Type	Split		Perm							Prot			
Protected Phases	6	6						8		7	4		
Permitted Phases			6										
Actuated Green, G (s)	66.2	66.2	66.2					16.1		5.7	25.8		
Effective Green, g (s)	66.2	66.2	66.2					16.1		5.7	25.8		
Actuated g/C Ratio	0.66	0.66	0.66					0.16		0.06	0.26		
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	1172	4242	1048					562		196	481		
v/s Ratio Prot	0.12	c0.52						c0.13		c0.04	0.00		
v/s Ratio Perm			0.37										
v/c Ratio	0.19	0.79	0.55					0.79		0.74	0.01		
Uniform Delay, d1	6.5	11.9	9.0					40.3		46.4	27.6		
Progression Factor	0.69	0.77	0.61					1.00		0.58	0.42		
Incremental Delay, d2	0.1	0.6	0.8					7.5		14.1	0.0		
Delay (s)	4.6	9.8	6.3					47.8		41.1	11.6		
Level of Service	A	A	A					D		D	B		
Approach Delay (s)		8.9			0.0			47.8			39.9		
Approach LOS		A			A			D			D		
Intersection Summary													
HCM Average Control Delay			13.2									HCM Level of Service	B
HCM Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			75.1%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	786	1740	1009	0	0	0	0	747	124	69	570	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6055						3382	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6055						3382	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	786	1740	1009	0	0	0	0	747	124	69	570	0
RTOR Reduction (vph)	0	101	0	0	0	0	0	1	68	0	0	0
Lane Group Flow (vph)	786	2648	0	0	0	0	0	758	44	69	570	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	48.4	48.4						26.6	26.6	12.0	42.6	
Effective Green, g (s)	48.4	48.4						26.6	26.6	12.0	42.6	
Actuated g/C Ratio	0.48	0.48						0.27	0.27	0.12	0.43	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	857	2931						900	383	212	1508	
v/s Ratio Prot		0.44						c0.22		0.04	c0.16	
v/s Ratio Perm	c0.44							0.03				
v/c Ratio	0.92	1.16dr						0.84	0.12	0.33	0.38	
Uniform Delay, d1	23.9	23.7						34.7	27.8	40.3	19.6	
Progression Factor	0.49	0.45						0.49	0.20	1.03	1.13	
Incremental Delay, d2	9.5	2.7						8.9	0.6	0.9	0.2	
Delay (s)	21.1	13.3						25.8	6.0	42.5	22.4	
Level of Service	C	B						C	A	D	C	
Approach Delay (s)		15.0			0.0			23.2			24.6	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
























dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: Bannon St & 7th Street

2030 +Proj (Off) AM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	566	1311	28	0	0	0	0	480	341	199	1055	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	566	1311	28	0	0	0	0	480	341	199	1055	0
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	566	1311	11	0	0	0	0	480	341	199	1055	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	38.9	38.9	38.9					31.3	100.0	16.3	52.1	
Effective Green, g (s)	38.9	38.9	38.9					31.3	100.0	16.3	52.1	
Actuated g/C Ratio	0.39	0.39	0.39					0.31	1.00	0.16	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	689	1978	616					1108	1583	289	1844	
v/s Ratio Prot		0.26						0.14		c0.11	c0.30	
v/s Ratio Perm	c0.32		0.01						0.22			
v/c Ratio	0.82	0.66	0.02					0.43	0.22	0.69	0.57	
Uniform Delay, d1	27.4	25.2	18.8					27.3	0.0	39.5	16.3	
Progression Factor	0.39	0.37	0.06					0.64	1.00	0.88	0.17	
Incremental Delay, d2	4.2	0.4	0.0					1.1	0.3	2.4	0.5	
Delay (s)	14.8	9.8	1.2					18.7	0.3	37.2	3.2	
Level of Service	B	A	A					B	A	D	A	
Approach Delay (s)		11.1			0.0			11.1			8.6	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

























Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 +Proj (Off) AM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	46	72	142	195	17	73	766	79	89	1125	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.47	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	878	1863	1583	1354	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	103	46	72	142	195	17	73	766	79	89	1125	143
RTOR Reduction (vph)	0	0	57	0	0	13	0	0	40	0	0	51
Lane Group Flow (vph)	103	46	15	142	195	4	73	766	39	89	1125	92
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.0	49.1	49.1	16.4	57.5	57.5
Effective Green, g (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.0	49.1	49.1	16.4	57.5	57.5
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.08	0.49	0.49	0.16	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	189	401	340	291	401	340	142	1738	777	290	2035	910
v/s Ratio Prot		0.02			0.10		c0.04	0.22		0.05	c0.32	
v/s Ratio Perm	c0.12		0.01	0.10		0.00			0.02			0.06
v/c Ratio	0.54	0.11	0.05	0.49	0.49	0.01	0.51	0.44	0.05	0.31	0.55	0.10
Uniform Delay, d1	34.9	31.6	31.1	34.4	34.4	30.9	44.1	16.5	13.3	36.8	13.2	9.6
Progression Factor	1.00	1.00	1.00	1.08	1.08	1.41	1.07	0.20	0.07	1.08	0.63	0.58
Incremental Delay, d2	3.2	0.1	0.1	1.2	0.9	0.0	3.0	0.8	0.1	0.4	0.7	0.2
Delay (s)	38.1	31.7	31.2	38.5	37.9	43.5	50.3	4.0	1.1	40.0	9.1	5.7
Level of Service	D	C	C	D	D	D	D	A	A	D	A	A
Approach Delay (s)		34.5			38.4			7.4			10.8	
Approach LOS		C			D			A			B	

Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 +Proj (Off) AM Peak

12/22/2006



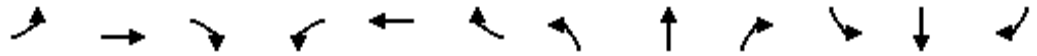
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	88	57	89	130	308	80	624	381	117	1228	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	88	57	89	130	308	80	624	381	117	1228	70
RTOR Reduction (vph)	0	0	49	0	0	248	0	0	203	0	3	0
Lane Group Flow (vph)	39	88	8	89	130	60	80	624	178	117	1295	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.1	14.4	14.4	8.2	19.5	19.5	5.9	38.5	46.7	20.9	53.5	53.5
Effective Green, g (s)	3.1	14.4	14.4	8.2	19.5	19.5	5.9	38.5	46.7	20.9	53.5	53.5
Actuated g/C Ratio	0.03	0.14	0.14	0.08	0.20	0.20	0.06	0.38	0.47	0.21	0.54	0.54
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	55	510	228	282	690	309	104	1363	810	370	1878	1878
v/s Ratio Prot	c0.02	0.02		c0.03	0.04		c0.05	0.18	0.02	0.07	c0.37	
v/s Ratio Perm			0.01			c0.04			0.09			
v/c Ratio	0.71	0.17	0.04	0.32	0.19	0.19	0.77	0.46	0.22	0.32	0.69	0.69
Uniform Delay, d1	48.0	37.6	36.8	43.3	33.6	33.7	46.4	23.0	15.8	33.5	17.1	17.1
Progression Factor	0.88	1.08	1.50	1.00	1.00	1.00	0.98	0.82	0.89	0.60	0.34	0.34
Incremental Delay, d2	34.0	0.2	0.1	0.6	0.1	0.3	28.0	1.1	0.1	0.5	1.9	1.9
Delay (s)	76.3	40.6	55.3	43.9	33.8	34.0	73.2	19.8	14.2	20.7	7.7	7.7
Level of Service	E	D	E	D	C	C	E	B	B	C	A	A
Approach Delay (s)		52.7			35.6			21.8			8.8	8.8
Approach LOS		D			D			C			A	A

Intersection Summary

HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 +Proj (Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕↕						←←←←	↗
Volume (vph)	1381	107	117	32	269	29	0	0	0	81	4474	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3488						7537	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3488						7537	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1381	107	117	32	269	29	0	0	0	81	4474	383
RTOR Reduction (vph)	0	0	98	0	7	0	0	0	0	0	0	55
Lane Group Flow (vph)	1381	107	19	32	291	0	0	0	0	0	4555	328
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	21.0	21.0	21.0	19.8	19.8						70.7	91.7
Effective Green, g (s)	21.0	21.0	21.0	19.8	19.8						73.7	91.7
Actuated g/C Ratio	0.16	0.16	0.16	0.15	0.15						0.57	0.71
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	806	572	235	270	531						4273	1238
v/s Ratio Prot	c0.28	0.03		0.02	c0.08							0.04
v/s Ratio Perm			0.01								0.60	0.16
v/c Ratio	1.71	0.19	0.08	0.12	0.55						1.07	0.26
Uniform Delay, d1	54.5	47.1	46.3	47.6	51.0						28.1	6.9
Progression Factor	0.84	0.82	1.13	1.00	1.00						0.96	2.24
Incremental Delay, d2	325.3	0.3	0.3	0.4	2.0						31.9	0.1
Delay (s)	371.2	39.0	52.4	48.0	53.0						59.0	15.6
Level of Service	F	D	D	D	D						E	B
Approach Delay (s)		325.8			52.5			0.0			55.7	
Approach LOS		F			D			A			E	

Intersection Summary

HCM Average Control Delay	118.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th Street

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	65	204	76	7	20	211	783	0	83	1170	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1656		1770	3539		1770	3487	
Flt Permitted	0.74	1.00	1.00	0.71	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1378	1863	1583	1331	1656		1770	3539		1770	3487	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	65	204	76	7	20	211	783	0	83	1170	127
RTOR Reduction (vph)	0	0	172	0	17	0	0	0	0	0	7	0
Lane Group Flow (vph)	54	65	32	76	10	0	211	783	0	83	1290	0
Turn Type	Perm		Perm	Perm				Prot			Prot	
Protected Phases	4				8			5	2		1	6
Permitted Phases	4	4		8								
Actuated Green, G (s)	15.6	15.6	15.6	15.6	15.6			16.7	45.5		25.4	54.2
Effective Green, g (s)	15.6	15.6	15.6	15.6	15.6			16.7	45.5		25.4	54.2
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16			0.17	0.46		0.25	0.54
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	215	291	247	208	258			296	1610		450	1890
v/s Ratio Prot		0.03			0.01			c0.12	0.22		0.05	c0.37
v/s Ratio Perm	0.04		0.02	c0.06								
v/c Ratio	0.25	0.22	0.13	0.37	0.04			0.71	0.49		0.18	0.68
Uniform Delay, d1	37.1	36.9	36.3	37.8	35.8			39.4	19.1		29.2	16.6
Progression Factor	1.00	1.00	1.00	1.09	1.19			0.67	0.40		0.48	0.40
Incremental Delay, d2	0.6	0.4	0.2	0.9	0.1			6.5	0.9		0.2	1.8
Delay (s)	37.7	37.3	36.6	41.9	42.8			32.8	8.6		14.3	8.5
Level of Service	D	D	D	D	D			C	A		B	A
Approach Delay (s)		36.9		42.2					13.7		8.8	
Approach LOS		D		D					B		A	

Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	11	46	187	4	5	63	414	0	24	1521	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3525	
Flt Permitted	0.76	1.00	1.00	0.75	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1407	1863	1583	1398	1863	1583	1770	3539		1770	3525	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	11	46	187	4	5	63	414	0	24	1521	42
RTOR Reduction (vph)	0	0	37	0	0	4	0	0	0	0	2	0
Lane Group Flow (vph)	229	11	9	187	4	1	63	414	0	24	1561	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	19.5	19.5	19.5	19.5	19.5	19.5	6.8	65.5		2.0	61.2	
Effective Green, g (s)	19.5	19.5	19.5	19.5	19.5	19.5	6.8	65.5		2.0	61.2	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.07	0.66		0.02	0.61	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	274	363	309	273	363	309	120	2318		35	2157	
v/s Ratio Prot		0.01			0.00		c0.04	0.12		0.01	c0.44	
v/s Ratio Perm	c0.16		0.01	0.13		0.00						
v/c Ratio	0.84	0.03	0.03	0.68	0.01	0.00	0.52	0.18		0.69	0.72	
Uniform Delay, d1	38.7	32.6	32.6	37.4	32.5	32.4	45.0	6.7		48.7	13.5	
Progression Factor	1.13	1.16	1.66	1.00	1.00	1.00	0.88	0.44		1.34	0.22	
Incremental Delay, d2	19.3	0.0	0.0	6.9	0.0	0.0	3.5	0.1		38.4	1.8	
Delay (s)	63.1	37.9	54.1	44.3	32.5	32.4	43.1	3.1		103.7	4.8	
Level of Service	E	D	D	D	C	C	D	A		F	A	
Approach Delay (s)		60.7			43.8			8.4			6.3	
Approach LOS		E			D			A			A	

Intersection Summary

























HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2030 +Proj (Off) AM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	349	549	788	321	64	402	722	537	366	1001	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.93	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	349	549	788	321	64	402	722	537	366	1001	63
RTOR Reduction (vph)	0	139	167	0	0	40	0	0	356	0	0	30
Lane Group Flow (vph)	151	479	113	394	715	24	402	722	181	366	1001	33
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Effective Green, g (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Actuated g/C Ratio	0.20	0.20	0.20	0.24	0.24	0.24	0.10	0.29	0.29	0.10	0.28	0.28
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	352	631	287	380	779	374	360	1026	459	326	991	443
v/s Ratio Prot	0.09	c0.15		c0.24	0.22		c0.12	0.20		0.11	c0.28	
v/s Ratio Perm			0.08			0.01			0.11			0.02
v/c Ratio	0.43	0.76	0.39	1.04	0.99dl	0.06	1.12	0.70	0.39	1.12	1.01	0.07
Uniform Delay, d1	35.1	37.8	34.8	38.2	37.3	29.6	44.8	31.7	28.5	45.2	36.0	26.5
Progression Factor	1.00	1.00	1.00	0.21	0.20	0.04	1.00	1.00	1.00	0.75	0.89	0.64
Incremental Delay, d2	0.8	5.2	0.9	33.7	5.1	0.0	82.8	4.0	2.5	81.6	27.6	0.3
Delay (s)	35.9	43.0	35.7	41.6	12.6	1.3	127.6	35.7	31.0	115.6	59.5	17.2
Level of Service	D	D	D	D	B	A	F	D	C	F	E	B
Approach Delay (s)		40.1			21.7			56.4			72.0	
Approach LOS		D			C			E			E	

Intersection Summary

HCM Average Control Delay	49.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

























dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 +Proj (Off) AM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	453	647	66	879	807	0	147	418	405	15	1467	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	453	647	66	879	807	0	147	418	405	15	1467	182
RTOR Reduction (vph)	0	0	49	0	0	0	0	0	257	0	0	61
Lane Group Flow (vph)	453	647	17	879	807	0	147	418	148	15	1467	121
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.9	19.9	19.9	17.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Effective Green, g (s)	17.9	19.9	19.9	17.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Actuated g/C Ratio	0.18	0.20	0.20	0.17	0.19		0.07	0.36	0.36	0.02	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	615	704	315	584	672		254	1292	578	35	1101	492
v/s Ratio Prot	0.13	c0.18		c0.26	0.23		c0.04	0.12		0.01	c0.41	
v/s Ratio Perm			0.01						0.09			0.08
v/c Ratio	0.74	0.92	0.05	1.51	1.20		0.58	0.32	0.26	0.43	1.33	0.25
Uniform Delay, d1	38.8	39.3	32.4	41.5	40.5		44.8	22.9	22.2	48.4	34.4	25.7
Progression Factor	0.93	0.94	1.15	1.00	1.00		1.00	1.00	1.00	1.19	0.67	0.49
Incremental Delay, d2	2.5	10.4	0.0	236.2	104.3		3.2	0.7	1.1	6.1	154.2	0.9
Delay (s)	38.8	47.2	37.4	277.7	144.8		48.0	23.5	23.3	63.9	177.5	13.6
Level of Service	D	D	D	F	F		D	C	C	E	F	B
Approach Delay (s)		43.4			214.1			27.1			158.5	
Approach LOS		D			F			C			F	

Intersection Summary

HCM Average Control Delay	127.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Volume (vph)	74	51	0	56	174	59	25	518	35	684	1486	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	1.00		1.00	0.96			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1792			3500			3430	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1792			3500			3430	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	74	51	0	56	174	59	25	518	35	684	1486	284
RTOR Reduction (vph)	0	0	0	0	8	0	0	3	0	0	6	0
Lane Group Flow (vph)	74	51	0	56	225	0	0	575	0	0	2448	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	5.0	19.0		5.0	19.0			20.0			90.0	
Effective Green, g (s)	5.0	19.0		5.0	19.0			20.0			90.0	
Actuated g/C Ratio	0.03	0.13		0.03	0.13			0.13			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	59	236		59	227			467			2058	
v/s Ratio Prot	c0.04	0.03		0.03	c0.13			c0.16			c0.71	
v/s Ratio Perm												
v/c Ratio	1.25	0.22		0.95	0.99			1.23			1.19	
Uniform Delay, d1	72.5	58.8		72.4	65.4			65.0			30.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	200.4	0.5		97.7	57.2			121.2			90.5	
Delay (s)	272.9	59.3		170.1	122.6			186.2			120.5	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		185.7			131.8			186.2			120.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	134.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	38	168	118	587	456	572	94	1935	105	421	1494	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1846	1583	1770	1863	1583	1770	3512		1770	3483	
Flt Permitted		0.40	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		747	1583	1770	1863	1583	1770	3512		1770	3483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	168	118	587	456	572	94	1935	105	421	1494	178
RTOR Reduction (vph)	0	0	79	0	0	179	0	4	0	0	9	0
Lane Group Flow (vph)	0	206	39	587	456	393	94	2036	0	421	1663	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		21.0	21.0	15.0	40.0	40.0	5.0	36.0		12.0	43.0	
Effective Green, g (s)		21.0	21.0	15.0	40.0	40.0	5.0	36.0		12.0	43.0	
Actuated g/C Ratio		0.21	0.21	0.15	0.40	0.40	0.05	0.36		0.12	0.43	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		157	332	266	745	633	89	1264		212	1498	
v/s Ratio Prot				c0.33	0.24		0.05	c0.58		c0.24	0.48	
v/s Ratio Perm		c0.28	0.02			0.25						
v/c Ratio		1.31	0.12	2.21	0.61	0.62	1.06	1.61		1.99	1.11	
Uniform Delay, d1		39.5	32.0	42.5	23.8	24.0	47.5	32.0		44.0	28.5	
Progression Factor		0.59	0.37	0.72	0.51	0.36	0.94	0.92		1.00	1.00	
Incremental Delay, d2		169.6	0.5	550.3	2.2	2.7	44.7	275.2		460.1	59.6	
Delay (s)		192.9	12.3	580.7	14.3	11.4	89.3	304.6		504.1	88.1	
Level of Service		F	B	F	B	B	F	F		F	F	
Approach Delay (s)		127.1			219.2			295.1			171.8	
Approach LOS		F			F			F			F	

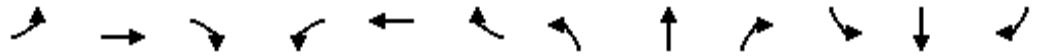
Intersection Summary

HCM Average Control Delay	224.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	137.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 23: G Street & 7th Street

2030 +Proj (Off) AM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↖	↖	↕	↖	↖	↕			↕	↖
Volume (vph)	91	0	257	394	923	402	14	203	0	0	1048	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	0	257	394	923	402	14	203	0	0	1048	719
RTOR Reduction (vph)	0	0	117	0	0	263	0	0	0	0	0	129
Lane Group Flow (vph)	91	0	140	394	923	139	14	203	0	0	1048	590
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					custom
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0		18.0	25.0	35.0	35.0	5.0	45.5			36.5	45.5
Effective Green, g (s)	8.0		18.0	24.5	35.0	34.5	5.0	45.5			36.0	45.5
Actuated g/C Ratio	0.08		0.18	0.24	0.35	0.34	0.05	0.46			0.36	0.46
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	142		285	434	1239	487	89	848			1274	720
v/s Ratio Prot	0.05			c0.22	c0.26		0.01	0.11			0.30	
v/s Ratio Perm			c0.09			0.10						c0.37
v/c Ratio	0.64		0.49	0.91	0.74	0.28	0.16	0.24			0.82	0.82
Uniform Delay, d1	44.6		36.9	36.7	28.6	23.8	45.5	16.7			29.1	23.7
Progression Factor	1.34		2.13	0.97	0.89	1.37	0.86	0.57			1.00	1.00
Incremental Delay, d2	2.0		0.5	18.1	2.6	0.9	1.1	0.2			6.1	10.1
Delay (s)	61.9		79.0	53.5	28.1	33.6	40.0	9.7			35.2	33.8
Level of Service	E		E	D	C	C	D	A			D	C
Approach Delay (s)		74.6			35.2			11.6			34.6	
Approach LOS		E			D			B			C	

Intersection Summary			
HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1077	189	67	0	0	0	0	1276	547	652	1569	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99						0.95		1.00	1.00	
Flpb, ped/bikes	0.87	0.91						1.00		1.00	1.00	
Frt	1.00	0.99						0.95		1.00	1.00	
Flt Protected	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (prot)	1406	2925						3203		1770	3539	
Flt Permitted	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (perm)	1406	2925						3203		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1077	189	67	0	0	0	0	1276	547	652	1569	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	538	789	0	0	0	0	0	1775	0	652	1569	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)	29.5	29.5						30.5		29.5	63.5	
Effective Green, g (s)	29.5	29.0						30.0		29.0	63.0	
Actuated g/C Ratio	0.30	0.29						0.30		0.29	0.63	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	415	848						961		513	2230	
v/s Ratio Prot								c0.55		c0.37	0.44	
v/s Ratio Perm	c0.38	0.27										
v/c Ratio	1.30	1.21dl						1.85		1.27	0.70	
Uniform Delay, d1	35.2	34.5						35.0		35.5	12.3	
Progression Factor	0.59	0.59						1.01		1.23	0.47	
Incremental Delay, d2	135.1	2.4						381.7		123.4	0.2	
Delay (s)	155.9	22.6						417.2		167.1	6.0	
Level of Service	F	C						F		F	A	
Approach Delay (s)		76.4			0.0			417.2			53.3	
Approach LOS		E			A			F			D	

Intersection Summary

HCM Average Control Delay	182.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	130.2%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	274	1205	185	0	0	0	0	0	0	512	1047	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3415								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3415								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	274	1205	185	0	0	0	0	0	0	512	1047	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1655	0	0	0	0	0	0	0	512	1047	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		50.5								34.5	34.5	
Effective Green, g (s)		50.0								34.0	34.0	
Actuated g/C Ratio		0.50								0.34	0.34	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1708								602	1203	
v/s Ratio Prot		c0.48								0.29	c0.30	
v/s Ratio Perm												
v/c Ratio		0.97								0.85	0.87	
Uniform Delay, d1		24.2								30.6	30.9	
Progression Factor		0.83								0.70	0.70	
Incremental Delay, d2		2.5								8.3	5.1	
Delay (s)		22.6								29.7	26.8	
Level of Service		C								C	C	
Approach Delay (s)		22.6			0.0			0.0			27.7	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	120	1240	630	54	1279	0	0	402	1230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.95		1.00	1.00			0.92	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					5998		1610	3390			1630	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					5998		1610	3390			1630	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	120	1240	630	54	1279	0	0	402	1230
RTOR Reduction (vph)	0	0	0	0	167	0	0	0	0	0	79	461
Lane Group Flow (vph)	0	0	0	0	1824	0	49	1284	0	0	766	326
Confl. Peds. (#/hr)						36						
Turn Type				Perm		custom					custom	
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					13.5		19.0	19.0			7.0	7.0
Effective Green, g (s)					13.0		18.5	18.5			6.5	6.5
Actuated g/C Ratio					0.26		0.37	0.37			0.13	0.13
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1559		596	1254			212	196
v/s Ratio Prot							0.03	c0.38			c0.47	0.22
v/s Ratio Perm					0.30							
v/c Ratio					1.17		0.08	1.02			3.61	1.66
Uniform Delay, d1					18.5		10.2	15.7			21.8	21.8
Progression Factor					0.60		0.82	1.24			1.88	5.17
Incremental Delay, d2					78.9		0.1	22.3			1183.6	313.3
Delay (s)					90.0		8.5	41.8			1224.5	425.7
Level of Service					F		A	D			F	F
Approach Delay (s)		0.0			90.0			40.6			839.3	
Approach LOS		A			F			D			F	

Intersection Summary

HCM Average Control Delay	323.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	151.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↔						↗	↘
Volume (vph)	0	0	0	298	1699	0	0	0	0	0	973	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.96
Flpb, ped/bikes				0.97	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1479	4799						5085	1520
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1479	4799						5085	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	298	1699	0	0	0	0	0	973	288
RTOR Reduction (vph)	0	0	0	86	3	0	0	0	0	0	0	69
Lane Group Flow (vph)	0	0	0	182	1726	0	0	0	0	0	973	219
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				18.0	18.0						19.0	19.0
Effective Green, g (s)				17.5	17.5						18.5	18.5
Actuated g/C Ratio				0.35	0.35						0.37	0.37
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				518	1680						1881	562
v/s Ratio Prot											c0.19	
v/s Ratio Perm				0.12	0.36							0.14
v/c Ratio				0.35	1.03						0.52	0.39
Uniform Delay, d1				12.0	16.2						12.3	11.6
Progression Factor				1.00	1.00						0.63	0.54
Incremental Delay, d2				1.9	29.2						0.5	1.0
Delay (s)				13.9	45.5						8.2	7.2
Level of Service				B	D						A	A
Approach Delay (s)		0.0			41.2			0.0			8.0	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 6 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	1371	2299	0	0	0	0	0	58	29	292	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.89	0.98						1.00		0.90		
Frt	1.00	1.00						0.96		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1349	4671						1706		1591		
Flt Permitted	0.95	0.99						1.00		0.70		
Satd. Flow (perm)	1349	4671						1706		1173		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1371	2299	0	0	0	0	0	58	29	292	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	891	2779	0	0	0	0	0	79	0	292	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						4 8					
Actuated Green, G (s)	68.1						24.9					
Effective Green, g (s)	67.6						24.4					
Actuated g/C Ratio	0.68						0.24					
Clearance Time (s)	3.5						3.5					
Lane Grp Cap (vph)	912	3158						416		286		
v/s Ratio Prot							0.05					
v/s Ratio Perm	c0.66		0.59				c0.25					
v/c Ratio	0.98		0.88				0.19		1.02			
Uniform Delay, d1	15.5		13.0				30.0		37.8			
Progression Factor	0.29		0.30				1.00		1.12			
Incremental Delay, d2	5.1		0.4				1.0		21.5			
Delay (s)	9.6		4.2				31.0		63.9			
Level of Service	A		A				C		E			
Approach Delay (s)			5.5				0.0		31.0		63.9	
Approach LOS			A				A		C		E	

Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	151.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Off) AM Peak

29: J St & 7th Street

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2373	537	0	0	0	0	0	0	320	803	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.91	1.00								0.91	
Frbp, ped/bikes		1.00	0.84								1.00	
Flpb, ped/bikes		1.00	1.00								0.96	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5085	1325								4832	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5085	1325								4832	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2373	537	0	0	0	0	0	0	320	803	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	2373	524	0	0	0	0	0	0	0	1120	0
Confl. Peds. (#/hr)			72								72	
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		61.5	61.5								31.5	
Effective Green, g (s)		61.0	61.5								31.0	
Actuated g/C Ratio		0.61	0.62								0.31	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		3102	815								1498	
v/s Ratio Prot		0.47										
v/s Ratio Perm			0.40								0.23	
v/c Ratio		0.76	0.64								0.75	
Uniform Delay, d1		14.3	12.3								31.0	
Progression Factor		0.49	0.42								0.82	
Incremental Delay, d2		1.1	2.3								3.0	
Delay (s)		8.0	7.5								28.4	
Level of Service		A	A								C	
Approach Delay (s)		7.9			0.0			0.0			28.4	
Approach LOS		A			A			A			C	

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 +Proj (Off) AM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1494	186	0	2	0	0	276	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.98	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6301			1863			1833	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6301			1863			1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1494	186	0	2	0	0	276	37
RTOR Reduction (vph)	0	0	0	0	34	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	1646	0	0	2	0	0	306	0
Turn Type				Prot				Perm				
Protected Phases				2				4			8	
Permitted Phases					2			4				
Actuated Green, G (s)					30.5			25.5			25.5	
Effective Green, g (s)					30.5			25.5			25.5	
Actuated g/C Ratio					0.47			0.39			0.39	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2957			731			719	
v/s Ratio Prot								0.00			c0.17	
v/s Ratio Perm					c0.26							
v/c Ratio					0.56			0.00			0.43	
Uniform Delay, d1					12.4			12.0			14.4	
Progression Factor					0.61			1.00			0.45	
Incremental Delay, d2					0.4			0.0			1.7	
Delay (s)					8.0			12.0			8.2	
Level of Service					A			B			A	
Approach Delay (s)		0.0			8.0			12.0			8.2	
Approach LOS		A			A			B			A	

Intersection Summary

HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Richards Blvd & 12th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	47	827	89	0	2241	0	0	4372	853
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00		0.91			0.81	1.00
Fr _t				1.00	1.00	0.85		1.00			1.00	0.85
Fl _t Protected				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583		5085			7544	1583
Fl _t Permitted				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583		5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	47	827	89	0	2241	0	0	4372	853
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	0	0	0	77
Lane Group Flow (vph)	0	0	0	47	827	43	0	2241	0	0	4372	776
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				33.0	33.0	33.0		89.0			89.0	89.0
Effective Green, g (s)				33.0	33.0	33.0		89.0			89.0	89.0
Actuated g/C Ratio				0.25	0.25	0.25		0.68			0.68	0.68
Clearance Time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)				449	898	402		3481			5165	1084
v/s Ratio Prot					c0.23			0.44			c0.58	
v/s Ratio Perm				0.03		0.03						0.49
v/c Ratio				0.10	0.92	0.11		0.64			0.85	0.72
Uniform Delay, d ₁				37.2	47.2	37.2		11.6			15.4	12.7
Progression Factor				1.00	1.00	1.00		0.35			1.00	1.00
Incremental Delay, d ₂				0.5	16.1	0.5		0.8			1.9	4.1
Delay (s)				37.6	63.3	37.8		4.9			17.2	16.7
Level of Service				D	E	D		A			B	B
Approach Delay (s)		0.0			59.7			4.9			17.2	
Approach LOS		A			E			A			B	

Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Bannon St & 12th Street

2030 +Proj (Off) AM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔↔	↑	↔					↔↔↔	↔	↔	↑↑↑↑	
Volume (vph)	794	30	549	0	0	0	0	1449	1	32	4388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	794	30	549	0	0	0	0	1449	1	32	4388	0
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	794	30	507	0	0	0	0	1449	0	32	4388	0
Turn Type	custom		Perm						Perm	Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	39.7	39.7	39.7					64.8	64.8	12.5	81.8	
Effective Green, g (s)	39.7	39.7	39.7					64.8	64.8	12.5	81.8	
Actuated g/C Ratio	0.31	0.31	0.31					0.50	0.50	0.10	0.63	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1524	569	483					2535	789	170	4747	
v/s Ratio Prot	0.16	0.02						0.28		0.02	c0.58	
v/s Ratio Perm			c0.32						0.00			
v/c Ratio	0.52	0.05	1.05					0.57	0.00	0.19	0.92	
Uniform Delay, d1	37.3	31.9	45.2					22.9	16.4	54.1	21.4	
Progression Factor	1.00	1.00	1.00					0.35	0.00	0.68	0.30	
Incremental Delay, d2	0.3	0.0	54.8					0.1	0.0	0.3	2.2	
Delay (s)	37.6	31.9	100.0					8.2	0.0	36.9	8.8	
Level of Service	D	C	F					A	A	D	A	
Approach Delay (s)		62.4			0.0			8.2			9.0	
Approach LOS		E			A			A			A	

Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 33: Riverfront Dr & 5th Street

2030 +Proj (Off) AM Peak
 12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2030 +Proj (Off) AM Peak
 12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak

1: Richards Blvd & I-5 SB Off

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖↗	↖↗						↖↗	↖↗
Volume (vph)	0	0	0	1140	440	0	0	0	0	0	1798	851
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	1140	440	0	0	0	0	0	1798	851
RTOR Reduction (vph)	0	0	0	17	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	0	0	1123	440	0	0	0	0	0	1798	754
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6						4	
Permitted Phases												4
Actuated Green, G (s)				36.5	36.5						56.0	56.0
Effective Green, g (s)				35.0	36.0						56.0	56.0
Actuated g/C Ratio				0.35	0.36						0.56	0.56
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				1202	1274						1982	786
v/s Ratio Prot				c0.33	0.12						0.51	
v/s Ratio Perm												c0.54
v/c Ratio				0.93	0.35						0.91	0.96
Uniform Delay, d1				31.4	23.4						19.7	20.9
Progression Factor				0.61	0.54						1.00	1.00
Incremental Delay, d2				13.5	0.7						6.9	22.8
Delay (s)				32.7	13.3						26.5	43.7
Level of Service				C	B						C	D
Approach Delay (s)		0.0			27.3			0.0			32.0	
Approach LOS		A			C			A			C	

Intersection Summary

HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richards Blvd & I-5 NB Off

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	1481	3221	98	602	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1481	3221	98	602	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	21	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1481	3221	77	602	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					65.9	100.0	26.6	26.6				
Effective Green, g (s)					65.9	100.0	26.1	26.1				
Actuated g/C Ratio					0.66	1.00	0.26	0.26				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3351	2708	462	924				
v/s Ratio Prot					0.29		0.04	0.17				
v/s Ratio Perm						c1.19						
v/c Ratio					0.44	1.19	0.17	0.65				
Uniform Delay, d1					8.2	50.0	28.5	32.9				
Progression Factor					0.58	1.00	0.64	0.74				
Incremental Delay, d2					0.0	85.6	0.3	1.9				
Delay (s)					4.8	135.6	18.6	26.2				
Level of Service					A	F	B	C				
Approach Delay (s)		0.0			94.4			25.2			0.0	
Approach LOS		A			F			C			A	

Intersection Summary

HCM Average Control Delay	85.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Richards Blvd & Bercut Dr

2030 +Proj(Off) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑	↘
Volume (vph)	0	0	0	13	3661	39	828	221	0	0	215	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Fr _t				1.00	1.00		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	6388		3433	1863			1863	1583
Fl _t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	6388		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	13	3661	39	828	221	0	0	215	213
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	13	3699	0	828	221	0	0	215	211
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				52.4	52.4		22.0	39.5			13.5	13.5
Effective Green, g (s)				53.0	53.0		21.5	39.0			13.0	13.0
Actuated g/C Ratio				0.53	0.53		0.22	0.39			0.13	0.13
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				813	3386		738	727			242	206
v/s Ratio Prot					c0.58		c0.24	0.12			0.12	
v/s Ratio Perm				0.01								c0.13
v/c Ratio				0.02	1.09		1.12	0.30			0.89	1.03
Uniform Delay, d ₁				11.1	23.5		39.2	21.1			42.8	43.5
Progression Factor				0.36	0.38		0.51	0.46			1.00	1.00
Incremental Delay, d ₂				0.0	42.1		68.3	0.1			29.3	69.5
Delay (s)				4.0	51.1		88.3	9.7			72.1	113.0
Level of Service				A	D		F	A			E	F
Approach Delay (s)		0.0			50.9			71.8			92.5	
Approach LOS		A			D			E			F	

Intersection Summary

HCM Average Control Delay	58.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak

4: Richards Blvd & 5th Street

1/9/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	416	2587	61	963	650	0	0	197	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.86		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6372		3433	1863			1863	1480
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6372		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	416	2587	61	963	650	0	0	197	281
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	416	2645	0	963	650	0	0	197	279
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				41.5	40.2		27.2	52.0			20.8	20.8
Effective Green, g (s)				40.5	40.5		26.7	51.5			20.3	20.8
Actuated g/C Ratio				0.40	0.40		0.27	0.52			0.20	0.21
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				717	2581		917	959			378	308
v/s Ratio Prot				0.24	c0.42		c0.28	0.35			0.11	
v/s Ratio Perm												c0.19
v/c Ratio				0.58	1.02		1.05	0.68			0.52	0.91
Uniform Delay, d1				23.1	29.8		36.6	18.1			35.5	38.7
Progression Factor				0.40	0.47		0.81	0.65			1.00	1.00
Incremental Delay, d2				0.5	20.4		25.8	0.1			0.6	28.0
Delay (s)				9.7	34.4		55.5	11.8			36.1	66.7
Level of Service				A	C		E	B			D	E
Approach Delay (s)		0.0			31.1			37.9			54.1	
Approach LOS		A			C			D			D	

Intersection Summary

HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	128.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richards Blvd & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙	↑↑			↑↑	↗
Volume (vph)	0	0	0	299	1720	109	408	764	0	0	1225	896
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.91	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	5085	1518	1610	3382			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	5085	1518	1610	3382			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	299	1720	109	408	764	0	0	1225	896
RTOR Reduction (vph)	0	0	0	0	0	61	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	299	1720	48	367	805	0	0	1225	896
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				39.5	38.5	38.5	24.0	24.0			26.5	100.0
Effective Green, g (s)				38.5	38.5	38.5	23.5	23.5			26.0	100.0
Actuated g/C Ratio				0.38	0.38	0.38	0.24	0.24			0.26	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				681	1958	584	378	795			920	1583
v/s Ratio Prot				0.17	c0.34		0.23	c0.24			c0.35	
v/s Ratio Perm						0.03						0.57
v/c Ratio				0.44	0.88	0.08	0.97	1.01			1.33	0.57
Uniform Delay, d1				22.8	28.6	19.5	37.9	38.2			37.0	0.0
Progression Factor				0.73	0.73	1.03	0.91	0.91			1.00	1.00
Incremental Delay, d2				0.2	5.5	0.3	35.3	32.9			156.7	1.5
Delay (s)				16.8	26.3	20.4	69.7	67.7			193.7	1.5
Level of Service				B	C	C	E	E			F	A
Approach Delay (s)		0.0			24.7			68.3			112.5	
Approach LOS		A			C			E			F	

Intersection Summary

HCM Average Control Delay	68.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑↑	↔
Volume (vph)	0	0	0	91	705	28	930	42	0	0	33	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.91
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6371		3433	1863			3539	1434
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6371		3433	1863			3539	1434
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	91	705	28	930	42	0	0	33	169
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	91	728	0	930	42	0	0	33	131
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				42.2	41.2		33.8	50.8			13.0	13.0
Effective Green, g (s)				41.7	41.7		33.3	50.3			12.5	12.5
Actuated g/C Ratio				0.42	0.42		0.33	0.50			0.12	0.12
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				738	2657		1143	937			442	179
v/s Ratio Prot				0.05	c0.11		c0.27	0.02			0.01	
v/s Ratio Perm												c0.09
v/c Ratio				0.12	0.27		0.81	0.04			0.07	0.73
Uniform Delay, d1				17.9	19.2		30.5	12.6			38.6	42.1
Progression Factor				0.78	0.84		1.00	1.00			1.00	1.00
Incremental Delay, d2				0.0	0.2		4.5	0.0			0.0	11.8
Delay (s)				14.1	16.3		35.1	12.6			38.7	54.0
Level of Service				B	B		D	B			D	D
Approach Delay (s)		0.0			16.0			34.1			51.5	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			1.00			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3514		1770	3455			1846			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			1.00	
Satd. Flow (perm)	1770	3514		1770	3455			1725			1783	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
RTOR Reduction (vph)	0	5	0	0	9	0	0	0	0	0	23	0
Lane Group Flow (vph)	79	792	0	109	1541	0	0	204	0	0	128	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	4.2	28.3		7.3	31.4			20.9			20.9	
Effective Green, g (s)	4.7	28.8		7.8	31.9			20.4			20.4	
Actuated g/C Ratio	0.07	0.41		0.11	0.46			0.29			0.29	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	119	1446		197	1574			503			520	
v/s Ratio Prot	0.04	0.23		c0.06	c0.45						0.07	
v/s Ratio Perm								c0.12				
v/c Ratio	0.66	0.55		0.55	0.98			0.41			0.25	
Uniform Delay, d1	31.9	15.6		29.5	18.7			19.9			18.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	13.1	0.2		3.3	17.6			2.4			1.1	
Delay (s)	45.0	15.9		32.8	36.3			22.3			20.0	
Level of Service	D	B		C	D			C			C	
Approach Delay (s)		18.5			36.1			22.3			20.0	
Approach LOS		B			D			C			C	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 +Proj(Off) PM Peak
 12/22/2006

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	1022	1066	0	0	0	0	0	0	1428	1511	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1022	1066	0	0	0	0	0	0	1428	1511	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	33	0	0
Lane Group Flow (vph)	0	1022	1066	0	0	0	0	0	0	1395	1511	0
Turn Type			Free							Split		
Protected Phases		4								2	2	
Permitted Phases			Free									
Actuated Green, G (s)		34.4	100.0							56.6	56.6	
Effective Green, g (s)		34.4	100.0							56.6	56.6	
Actuated g/C Ratio		0.34	1.00							0.57	0.57	
Clearance Time (s)		4.5								4.5	4.5	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		1217	1583							2824	2003	
v/s Ratio Prot		c0.29								0.28	c0.43	
v/s Ratio Perm			0.67									
v/c Ratio		0.84	0.67							0.49	0.75	
Uniform Delay, d1		30.3	0.0							13.1	16.4	
Progression Factor		1.00	1.00							0.86	0.86	
Incremental Delay, d2		5.3	2.3							0.2	1.0	
Delay (s)		35.5	2.3							11.5	15.1	
Level of Service		D	A							B	B	
Approach Delay (s)		18.6			0.0			0.0			13.3	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	129.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			























HCM Signalized Intersection Capacity Analysis
 10: Bannon St & I-5 NB Off

2030 +Proj(Off) PM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   							   			
Volume (vph)	593	1857	0	0	0	0	0	52	1385	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	593	1857	0	0	0	0	0	52	1385	0	0	0
RTOR Reduction (vph)	320	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	273	1857	0	0	0	0	0	52	1385	0	0	0
Turn Type	Split						Prot					
Protected Phases	2	2						1	4	1	4	
Permitted Phases												
Actuated Green, G (s)	33.2	33.2						58.8	58.8			
Effective Green, g (s)	33.2	33.2						58.8	58.8			
Actuated g/C Ratio	0.33	0.33						0.59	0.59			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	588	2505						1095	2123			
v/s Ratio Prot	0.15	c0.25						0.03	c0.38			
v/s Ratio Perm												
v/c Ratio	0.46	0.74						0.05	0.65			
Uniform Delay, d1	26.4	29.6						8.7	13.8			
Progression Factor	0.70	0.84						1.00	1.00			
Incremental Delay, d2	2.1	1.6						0.0	0.7			
Delay (s)	20.5	26.5						8.7	14.5			
Level of Service	C	C						A	B			
Approach Delay (s)		25.1			0.0			14.3			0.0	
Approach LOS		C			A			B			A	
Intersection Summary												
HCM Average Control Delay			21.1		HCM Level of Service				C			
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			60.5%		ICU Level of Service				B			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2030 +Proj(Off) PM Peak
 12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 		 		
Volume (vph)	144	2398	700	0	0	0	0	806	47	126	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00	
Frt	1.00	1.00	0.85					0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	6408	1583					3510		3433	1863	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	6408	1583					3510		3433	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	2398	700	0	0	0	0	806	47	126	22	0
RTOR Reduction (vph)	0	0	321	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	144	2398	379	0	0	0	0	849	0	126	22	0
Turn Type	Split		Perm							Prot		
Protected Phases	6	6						8		7	4	
Permitted Phases			6									
Actuated Green, G (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Effective Green, g (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Actuated g/C Ratio	0.54	0.54	0.54					0.28		0.06	0.38	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	959	3473	858					976		206	704	
v/s Ratio Prot	0.08	c0.37						c0.24		c0.04	0.01	
v/s Ratio Perm			0.24									
v/c Ratio	0.15	0.69	0.44					0.87		0.61	0.03	
Uniform Delay, d1	11.4	16.8	13.8					34.4		45.9	19.6	
Progression Factor	0.71	0.71	0.55					0.73		0.57	1.16	
Incremental Delay, d2	0.2	0.8	1.2					6.9		2.8	0.0	
Delay (s)	8.3	12.8	8.7					31.8		28.8	22.7	
Level of Service	A	B	A					C		C	C	
Approach Delay (s)		11.7			0.0			31.8			27.9	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			16.3					HCM Level of Service		B		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			100.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			72.7%					ICU Level of Service		C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	630	1500	634	0	0	0	0	1269	665	160	948	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.96						0.99	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6122						3358	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6122						3358	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	630	1500	634	0	0	0	0	1269	665	160	948	0
RTOR Reduction (vph)	0	76	0	0	0	0	0	5	52	0	0	0
Lane Group Flow (vph)	630	2058	0	0	0	0	0	1350	527	160	948	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Effective Green, g (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Actuated g/C Ratio	0.34	0.34						0.40	0.40	0.14	0.57	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	596	2063						1326	569	244	2028	
v/s Ratio Prot		0.34						c0.40		c0.09	0.27	
v/s Ratio Perm	c0.36								0.37			
v/c Ratio	1.06	1.04dr						1.02	0.93	0.66	0.47	
Uniform Delay, d1	33.1	33.1						30.2	28.9	40.8	12.5	
Progression Factor	0.56	0.55						0.44	0.34	1.26	0.95	
Incremental Delay, d2	48.4	16.6						23.4	15.4	6.0	0.2	
Delay (s)	67.1	34.7						36.8	25.2	57.6	12.0	
Level of Service	E	C						D	C	E	B	
Approach Delay (s)		42.1			0.0			33.3			18.6	
Approach LOS		D			A			C			B	

Intersection Summary

HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	128.2%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: Bannon St & 7th Street

2030 +Proj(Off) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	494	1708	163	0	0	0	0	462	1156	384	760	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	494	1708	163	0	0	0	0	462	1156	384	760	0
RTOR Reduction (vph)	0	0	103	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	494	1708	60	0	0	0	0	462	1156	384	760	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	35.5	35.5	35.5					27.5	100.0	23.5	55.5	
Effective Green, g (s)	35.5	35.5	35.5					27.5	100.0	23.5	55.5	
Actuated g/C Ratio	0.36	0.36	0.36					0.28	1.00	0.24	0.56	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	628	1805	562					973	1583	416	1964	
v/s Ratio Prot		c0.34						0.13		c0.22	0.21	
v/s Ratio Perm	0.28		0.04						c0.73			
v/c Ratio	0.79	0.95	0.11					0.47	0.73	0.92	0.39	
Uniform Delay, d1	28.9	31.3	21.6					30.2	0.0	37.4	12.6	
Progression Factor	0.52	0.54	0.08					1.19	1.00	0.68	0.30	
Incremental Delay, d2	2.3	4.6	0.0					0.7	1.2	3.7	0.1	
Delay (s)	17.4	21.5	1.7					36.6	1.2	29.1	3.9	
Level of Service	B	C	A					D	A	C	A	
Approach Delay (s)		19.3			0.0			11.3			12.3	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 +Proj(Off) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	144	271	315	132	72	161	1817	167	12	1276	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.63	1.00	1.00	0.62	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1183	1863	1583	1146	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	52	144	271	315	132	72	161	1817	167	12	1276	180
RTOR Reduction (vph)	0	0	130	0	0	51	0	0	41	0	0	73
Lane Group Flow (vph)	52	144	141	315	132	21	161	1817	126	12	1276	107
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	29.0	29.0	29.0	29.0	29.0	29.0	16.3	57.0	57.0	1.0	41.7	41.7
Effective Green, g (s)	29.0	29.0	29.0	29.0	29.0	29.0	16.3	57.0	57.0	1.0	41.7	41.7
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.29	0.16	0.57	0.57	0.01	0.42	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	343	540	459	332	540	459	289	2017	902	18	1476	660
v/s Ratio Prot		0.08			0.07		c0.09	c0.51		0.01	0.36	
v/s Ratio Perm	0.04		0.09	c0.27		0.01			0.08			0.07
v/c Ratio	0.15	0.27	0.31	0.95	0.24	0.05	0.56	0.90	0.14	0.67	0.86	0.16
Uniform Delay, d1	26.4	27.3	27.7	34.8	27.1	25.5	38.5	19.0	10.0	49.3	26.6	18.2
Progression Factor	1.00	1.00	1.00	1.14	1.11	2.24	0.75	0.28	0.03	0.89	0.86	0.74
Incremental Delay, d2	0.2	0.3	0.4	35.1	0.2	0.0	1.2	3.9	0.2	51.3	5.2	0.4
Delay (s)	26.6	27.6	28.1	74.8	30.3	57.2	30.2	9.2	0.5	95.4	28.1	13.8
Level of Service	C	C	C	E	C	E	C	A	A	F	C	B
Approach Delay (s)		27.7			61.1			10.1			26.9	
Approach LOS		C			E			B			C	

Intersection Summary

HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 +Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	100	39	477	284	14	90	1491	591	263	612	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3502	3502
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3502	3502
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	100	39	477	284	14	90	1491	591	263	612	46
RTOR Reduction (vph)	0	0	33	0	0	10	0	0	152	0	5	0
Lane Group Flow (vph)	30	100	6	477	284	4	90	1491	439	263	653	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.6	14.4	14.4	15.9	26.7	26.7	9.1	40.3	56.2	11.4	42.6	42.6
Effective Green, g (s)	3.6	14.4	14.4	15.9	26.7	26.7	9.1	40.3	56.2	11.4	42.6	42.6
Actuated g/C Ratio	0.04	0.14	0.14	0.16	0.27	0.27	0.09	0.40	0.56	0.11	0.43	0.43
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	64	510	228	546	945	423	161	1426	961	202	1492	1492
v/s Ratio Prot	c0.02	0.03		c0.14	c0.08		0.05	c0.42	0.07	c0.15	0.19	0.19
v/s Ratio Perm			0.00			0.00			0.20			
v/c Ratio	0.47	0.20	0.02	0.87	0.30	0.01	0.56	1.05	0.46	1.30	0.44	0.44
Uniform Delay, d1	47.3	37.7	36.8	41.1	29.2	26.9	43.5	29.9	12.9	44.3	20.3	20.3
Progression Factor	0.86	0.73	0.43	1.00	1.00	1.00	1.04	0.72	0.14	0.78	0.82	0.82
Incremental Delay, d2	5.3	0.2	0.0	14.4	0.2	0.0	3.1	33.7	0.3	165.8	0.9	0.9
Delay (s)	46.1	27.5	15.9	55.5	29.4	26.9	48.3	55.3	2.1	200.3	17.5	17.5
Level of Service	D	C	B	E	C	C	D	E	A	F	B	B
Approach Delay (s)		28.2			45.4			40.6			69.7	
Approach LOS		C			D			D			E	

Intersection Summary

HCM Average Control Delay	47.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 +Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕↕						↔↔↔↔	↗
Volume (vph)	1428	515	404	58	182	149	0	0	0	111	3248	1150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3300						7532	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3300						7532	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1428	515	404	58	182	149	0	0	0	111	3248	1150
RTOR Reduction (vph)	0	0	203	0	117	0	0	0	0	0	0	121
Lane Group Flow (vph)	1428	515	201	58	214	0	0	0	0	0	3359	1029
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	22.0	22.0	22.0	20.4	20.4						69.1	91.1
Effective Green, g (s)	22.0	22.0	22.0	20.4	20.4						72.1	91.1
Actuated g/C Ratio	0.17	0.17	0.17	0.16	0.16						0.55	0.70
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	844	599	246	278	518						4177	1231
v/s Ratio Prot	c0.29	0.15		0.03	c0.06							c0.14
v/s Ratio Perm			0.14								0.45	0.51
v/c Ratio	1.69	0.86	0.82	0.21	0.41						0.80	0.84
Uniform Delay, d1	54.0	52.5	52.1	47.8	49.4						23.3	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.84	1.30
Incremental Delay, d2	316.5	12.9	20.8	0.8	1.1						0.5	1.6
Delay (s)	370.5	65.4	72.9	48.5	50.5						43.2	19.9
Level of Service	F	E	E	D	D						D	B
Approach Delay (s)		252.3			50.2			0.0			37.3	
Approach LOS		F			D			A			D	

Intersection Summary

HCM Average Control Delay	107.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th Street

2030 +Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	185	356	37	10	16	194	1893	10	162	1400	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1691		1770	3536		1770	3486	
Flt Permitted	0.74	1.00	1.00	0.44	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1379	1863	1583	824	1691		1770	3536		1770	3486	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	185	356	37	10	16	194	1893	10	162	1400	156
RTOR Reduction (vph)	0	0	237	0	13	0	0	0	0	0	8	0
Lane Group Flow (vph)	119	185	119	37	13	0	194	1903	0	162	1548	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	16.4	16.4	16.4	16.4	16.4		14.1	58.9		11.2	56.0	
Effective Green, g (s)	16.4	16.4	16.4	16.4	16.4		14.1	58.9		11.2	56.0	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.14	0.59		0.11	0.56	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	306	260	135	277		250	2083		198	1952	
v/s Ratio Prot		c0.10			0.01		0.11	c0.54		0.09	c0.44	
v/s Ratio Perm	0.09		0.07	0.04								
v/c Ratio	0.53	0.60	0.46	0.27	0.05		0.78	0.91		0.82	0.79	
Uniform Delay, d1	38.2	38.8	37.8	36.6	35.2		41.4	18.3		43.4	17.4	
Progression Factor	0.83	0.83	0.74	0.74	0.80		1.00	1.00		0.71	0.39	
Incremental Delay, d2	2.1	3.2	1.2	1.0	0.1		14.0	7.6		15.1	2.2	
Delay (s)	33.7	35.5	29.0	28.2	28.4		55.4	25.9		46.1	8.9	
Level of Service	C	D	C	C	C		E	C		D	A	
Approach Delay (s)		31.7			28.3			28.6			12.4	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	277	40	38	89	3	9	74	1611	0	63	1187	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3528	
Flt Permitted	0.76	1.00	1.00	0.73	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1408	1863	1583	1362	1863	1583	1770	3539		1770	3528	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	277	40	38	89	3	9	74	1611	0	63	1187	26
RTOR Reduction (vph)	0	0	30	0	0	7	0	0	0	0	1	0
Lane Group Flow (vph)	277	40	8	89	3	2	74	1611	0	63	1212	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.2	61.3		4.1	58.7	
Effective Green, g (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.2	61.3		4.1	58.7	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.07	0.61		0.04	0.59	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	304	402	342	294	402	342	127	2169		73	2071	
v/s Ratio Prot		0.02			0.00		0.04	c0.46		0.04	c0.34	
v/s Ratio Perm	c0.20		0.01	0.07		0.00						
v/c Ratio	0.91	0.10	0.02	0.30	0.01	0.01	0.58	0.74		0.86	0.59	
Uniform Delay, d1	38.3	31.4	30.9	32.9	30.8	30.8	44.9	13.7		47.7	13.0	
Progression Factor	0.35	0.17	0.25	1.00	1.00	1.00	1.00	1.00		0.95	0.85	
Incremental Delay, d2	24.0	0.1	0.0	0.6	0.0	0.0	6.7	2.3		54.2	1.0	
Delay (s)	37.5	5.3	7.6	33.5	30.8	30.8	51.6	16.1		99.7	12.1	
Level of Service	D	A	A	C	C	C	D	B		F	B	
Approach Delay (s)		30.7			33.1			17.7			16.4	
Approach LOS		C			C			B			B	

Intersection Summary

























HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
19: Big Four Blvd & 6th Street

2030 +Proj(Off) PM Peak

12/22/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	531	562	403	541	199	598	1759	839	228	1547	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	334	531	562	403	541	199	598	1759	839	228	1547	182
RTOR Reduction (vph)	0	28	203	0	0	95	0	0	152	0	0	37
Lane Group Flow (vph)	334	728	135	306	638	104	598	1759	687	228	1547	145
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	28.5	28.5	28.5	25.5	25.5	25.5	21.5	69.5	69.5	8.5	56.5	56.5
Effective Green, g (s)	28.5	28.5	28.5	25.5	25.5	25.5	21.5	69.5	69.5	8.5	56.5	56.5
Actuated g/C Ratio	0.19	0.19	0.19	0.17	0.17	0.17	0.14	0.46	0.46	0.06	0.38	0.38
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	336	615	274	274	572	269	492	1640	733	195	1333	596
v/s Ratio Prot	0.19	c0.22		c0.19	0.19		c0.17	0.50		0.07	c0.44	
v/s Ratio Perm			0.09			0.07			0.43			0.09
v/c Ratio	0.99	1.18	0.49	1.12	1.12	0.38	1.22	1.07	0.94	1.17	1.16	0.24
Uniform Delay, d1	60.7	60.8	54.3	62.2	62.2	55.3	64.2	40.2	38.2	70.8	46.8	32.1
Progression Factor	1.00	1.00	1.00	0.53	0.53	0.70	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.2	98.3	1.4	57.7	54.5	0.1	114.4	44.5	20.9	117.5	81.0	1.0
Delay (s)	107.9	159.0	55.7	90.6	87.5	39.0	178.7	84.8	59.1	188.2	127.7	33.0
Level of Service	F	F	E	F	F	D	F	F	E	F	F	C
Approach Delay (s)		122.7			79.9			95.6			126.0	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM Average Control Delay			106.0			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			113.3%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1232	915	39	615	606	0	472	931	470	49	1075	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1232	915	39	615	606	0	472	931	470	49	1075	7
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	163	0	0	2
Lane Group Flow (vph)	1232	915	25	615	606	0	472	931	307	49	1075	5
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	45.5	40.9	40.9	26.6	22.0		17.8	51.0	51.0	7.0	40.2	40.2
Effective Green, g (s)	45.5	40.9	40.9	26.6	22.0		17.8	51.0	51.0	7.0	40.2	40.2
Actuated g/C Ratio	0.30	0.27	0.27	0.18	0.15		0.12	0.34	0.34	0.05	0.27	0.27
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1041	965	432	609	519		407	1203	538	83	948	424
v/s Ratio Prot	c0.36	0.26		0.18	c0.17		c0.14	0.26		0.03	c0.30	
v/s Ratio Perm			0.02						0.19			0.00
v/c Ratio	1.18	0.95	0.06	1.01	1.17		1.16	0.77	0.57	0.59	1.13	0.01
Uniform Delay, d1	52.2	53.5	40.3	61.7	64.0		66.1	44.3	40.5	70.1	54.9	40.3
Progression Factor	1.04	1.03	1.08	1.00	1.00		0.67	0.42	0.20	1.00	1.00	1.00
Incremental Delay, d2	88.9	12.4	0.0	38.9	94.7		74.6	0.5	0.4	10.7	73.5	0.0
Delay (s)	143.3	67.3	43.5	100.6	158.7		118.7	18.9	8.7	80.8	128.4	40.4
Level of Service	F	E	D	F	F		F	B	A	F	F	D
Approach Delay (s)		109.7			129.4			41.5			125.8	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	96.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	108.8%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Volume (vph)	314	200	173	96	221	418	0	823	118	664	1092	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.93		1.00	0.90			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1770	1733		1770	1680			3473			3441	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (perm)	1770	1733		1770	1680			3473			3441	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	314	200	173	96	221	418	0	823	118	664	1092	133
RTOR Reduction (vph)	0	21	0	0	45	0	0	7	0	0	4	0
Lane Group Flow (vph)	314	352	0	96	594	0	0	934	0	0	1885	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	15.0	37.4		10.6	33.0			34.0			52.0	
Effective Green, g (s)	15.0	37.4		10.6	33.0			34.0			52.0	
Actuated g/C Ratio	0.10	0.25		0.07	0.22			0.23			0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	177	432		125	370			787			1193	
v/s Ratio Prot	c0.18	0.20		0.05	c0.35			c0.27			c0.55	
v/s Ratio Perm												
v/c Ratio	1.77	0.81		0.77	1.60			1.19			1.58	
Uniform Delay, d1	67.5	53.0		68.5	58.5			58.0			49.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.33	
Incremental Delay, d2	370.2	11.2		24.2	284.5			96.7			262.3	
Delay (s)	437.7	64.3		92.6	343.0			154.7			278.6	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		235.0			310.3			154.7			278.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	249.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	148.2%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: G Street & 6th Street

2030 +Proj(Off) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	104	196	261	831	534	798	39	1875	37	370	3168	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1831	1583	1770	1863	1583	1770	3529		1770	3521	
Flt Permitted		0.68	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1261	1583	1770	1863	1583	1770	3529		1770	3521	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	196	261	831	534	798	39	1875	37	370	3168	113
RTOR Reduction (vph)	0	0	73	0	0	135	0	1	0	0	2	0
Lane Group Flow (vph)	0	300	188	831	534	663	39	1911	0	370	3279	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		20.0	20.0	17.0	41.0	41.0	5.0	38.0		9.0	42.0	
Effective Green, g (s)		20.0	20.0	17.0	41.0	41.0	5.0	38.0		9.0	42.0	
Actuated g/C Ratio		0.20	0.20	0.17	0.41	0.41	0.05	0.38		0.09	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		252	317	301	764	649	89	1341		159	1479	
v/s Ratio Prot				c0.47	0.29		0.02	c0.54		0.21	c0.93	
v/s Ratio Perm		c0.24	0.12			0.42						
v/c Ratio		1.19	0.59	2.76	0.70	1.02	0.44	1.42		2.33	2.22	
Uniform Delay, d1		40.0	36.3	41.5	24.4	29.5	46.1	31.0		45.5	29.0	
Progression Factor		0.76	0.61	1.27	0.61	0.44	1.37	0.11		1.00	1.00	
Incremental Delay, d2		116.7	7.5	797.7	3.1	32.4	1.4	191.6		616.4	549.8	
Delay (s)		147.1	29.8	850.5	18.1	45.3	64.8	194.9		661.9	578.8	
Level of Service		F	C	F	B	D	E	F		F	F	
Approach Delay (s)		92.5			347.9			192.3			587.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	399.2	HCM Level of Service	F
HCM Volume to Capacity ratio	2.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	170.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	280	0	351	194	1035	503	26	230	0	0	751	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	280	0	351	194	1035	503	26	230	0	0	751	760
RTOR Reduction (vph)	0	0	150	0	0	294	0	0	0	0	0	289
Lane Group Flow (vph)	280	0	201	194	1035	209	26	230	0	0	751	471
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2				6
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		28.0	18.0	30.0	30.0	5.0	42.5			33.5	33.5
Effective Green, g (s)	16.0		28.0	17.5	30.0	29.5	5.0	42.5			33.0	33.5
Actuated g/C Ratio	0.16		0.28	0.18	0.30	0.29	0.05	0.42			0.33	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		443	310	1062	417	89	792			1168	530
v/s Ratio Prot	c0.16			0.11	c0.29		0.01	c0.12			0.21	
v/s Ratio Perm			0.13			0.15						c0.30
v/c Ratio	0.99		0.45	0.63	0.97	0.50	0.29	0.29			0.64	0.89
Uniform Delay, d1	41.9		29.7	38.2	34.6	29.2	45.8	18.9			28.5	31.5
Progression Factor	1.36		0.78	1.03	1.03	1.22	1.46	1.86			1.00	1.00
Incremental Delay, d2	13.8		0.3	7.2	18.9	3.3	2.6	0.3			2.7	19.6
Delay (s)	70.8		23.6	46.7	54.7	38.9	69.5	35.4			31.2	51.1
Level of Service	E		C	D	D	D	E	D			C	D
Approach Delay (s)		44.6			49.2			38.9			41.2	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	445	314	122	0	0	0	0	1618	41	1182	3086	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.97						1.00		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3151						3511		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3151						3511		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	445	314	122	0	0	0	0	1618	41	1182	3086	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	294	584	0	0	0	0	0	1657	0	1182	3086	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	17.0	17.0						32.0		40.5	76.0	
Effective Green, g (s)	17.0	16.5						31.5		40.0	75.5	
Actuated g/C Ratio	0.17	0.16						0.32		0.40	0.76	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	274	520						1106		708	2672	
v/s Ratio Prot	0.18	c0.19						c0.47		c0.67	0.87	
v/s Ratio Perm												
v/c Ratio	1.07	1.12						1.50		1.67	1.15	
Uniform Delay, d1	41.5	41.8						34.2		30.0	12.2	
Progression Factor	0.79	0.81						0.16		0.63	1.17	
Incremental Delay, d2	66.1	71.9						224.6		301.8	70.2	
Delay (s)	98.9	105.9						230.1		320.8	84.5	
Level of Service	F	F						F		F	F	
Approach Delay (s)		103.6			0.0			230.1			149.9	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	163.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	139.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	259	1210	338	0	0	0	0	0	0	399	717	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.98								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.97								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3354								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3354								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	259	1210	338	0	0	0	0	0	0	399	717	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1787	0	0	0	0	0	0	0	399	717	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		56.5								28.5	28.5	
Effective Green, g (s)		56.0								28.0	28.0	
Actuated g/C Ratio		0.56								0.28	0.28	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1878								496	991	
v/s Ratio Prot		c0.53								c0.23	0.20	
v/s Ratio Perm												
v/c Ratio		0.95								0.80	0.72	
Uniform Delay, d1		20.7								33.5	32.5	
Progression Factor		0.51								0.55	0.55	
Incremental Delay, d2		1.6								10.4	3.6	
Delay (s)		12.1								28.8	21.4	
Level of Service		B								C	C	
Approach Delay (s)		12.1			0.0			0.0			24.1	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	368	2116	301	328	1177	0	0	856	2550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.92	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6210		1770	3539			1632	1504
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6210		1770	3539			1632	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	368	2116	301	328	1177	0	0	856	2550
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	38	48
Lane Group Flow (vph)	0	0	0	0	2764	0	328	1177	0	0	1736	1584
Confl. Peds. (#/hr)						36						
Turn Type				Perm			Split					Prot
Protected Phases					4		1	1			2	2
Permitted Phases				4								
Actuated Green, G (s)					26.5		23.5	23.5			39.5	39.5
Effective Green, g (s)					26.0		23.0	23.0			39.0	39.0
Actuated g/C Ratio					0.26		0.23	0.23			0.39	0.39
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1615		407	814			636	587
v/s Ratio Prot							0.19	c0.33			c1.06	1.05
v/s Ratio Perm					0.45							
v/c Ratio					1.71		0.81	1.45			2.73	2.70
Uniform Delay, d1					37.0		36.4	38.5			30.5	30.5
Progression Factor					0.67		1.05	1.05			0.86	0.85
Incremental Delay, d2					321.2		6.7	203.4			778.4	764.6
Delay (s)					346.1		44.7	243.9			804.6	790.6
Level of Service					F		D	F			F	F
Approach Delay (s)		0.0			346.1			200.5			797.9	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	517.6	HCM Level of Service	F
HCM Volume to Capacity ratio	2.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	220.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	108	2388	0	0	0	0	0	1368	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.93
Flpb, ped/bikes				0.94	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1435	4804						5085	1476
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1435	4804						5085	1476
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	108	2388	0	0	0	0	0	1368	424
RTOR Reduction (vph)	0	0	0	3	0	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	94	2399	0	0	0	0	0	1368	422
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				56.5	56.5						36.5	36.5
Effective Green, g (s)				56.0	56.0						36.0	36.0
Actuated g/C Ratio				0.56	0.56						0.36	0.36
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				804	2690						1831	531
v/s Ratio Prot											0.27	
v/s Ratio Perm				0.07	0.50							c0.29
v/c Ratio				0.12	0.89						0.75	0.79
Uniform Delay, d1				10.4	19.3						28.0	28.7
Progression Factor				1.00	1.00						0.68	0.68
Incremental Delay, d2				0.3	5.0						2.6	10.6
Delay (s)				10.7	24.3						21.5	30.2
Level of Service				B	C						C	C
Approach Delay (s)		0.0			23.8			0.0			23.6	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↙↙						↘		↘		
Volume (vph)	1037	1743	0	0	0	0	0	244	290	831	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.94	0.99						1.00		0.98		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1435	4718						1663		1732		
Flt Permitted	0.95	0.99						1.00		0.30		
Satd. Flow (perm)	1435	4718						1663		547		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1037	1743	0	0	0	0	0	244	290	831	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	674	2106	0	0	0	0	0	533	0	831	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	20.5	20.5						22.5		22.5		
Effective Green, g (s)	20.0	20.0						22.0		22.0		
Actuated g/C Ratio	0.40	0.40						0.44		0.44		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	574	1887						732		241		
v/s Ratio Prot								0.32				
v/s Ratio Perm	c0.47	0.45								c1.52		
v/c Ratio	1.17	1.12						0.73		3.45		
Uniform Delay, d1	15.0	15.0						11.5		14.0		
Progression Factor	0.54	0.54						1.00		1.28		
Incremental Delay, d2	80.3	53.0						6.3		1102.6		
Delay (s)	88.3	61.1						17.8		1120.5		
Level of Service	F	E						B		F		
Approach Delay (s)		67.7			0.0			17.8			1120.5	
Approach LOS		E			A			B			F	

Intersection Summary

HCM Average Control Delay	272.3	HCM Level of Service	F
HCM Volume to Capacity ratio	2.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	220.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↑								↑↑↑			
Volume (vph)	0	2214	828	0	0	0	0	0	0	297	1050	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		4.0	3.5								4.0			
Lane Util. Factor		0.91	1.00								0.91			
Frbp, ped/bikes		1.00	0.91								1.00			
Flpb, ped/bikes		1.00	1.00								0.99			
Frt		1.00	0.85								1.00			
Flt Protected		1.00	1.00								0.99			
Satd. Flow (prot)		5085	1445								4959			
Flt Permitted		1.00	1.00								0.99			
Satd. Flow (perm)		5085	1445								4959			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	0	2214	828	0	0	0	0	0	0	297	1050	0		
RTOR Reduction (vph)	0	0	7	0	0	0	0	0	0	0	2	0		
Lane Group Flow (vph)	0	2214	821	0	0	0	0	0	0	0	1345	0		
Confl. Peds. (#/hr)			72							72				
Turn Type			Perm								Perm			
Protected Phases		1										2		
Permitted Phases			1							2				
Actuated Green, G (s)		26.0	26.0								17.0			
Effective Green, g (s)		25.5	26.0								16.5			
Actuated g/C Ratio		0.51	0.52								0.33			
Clearance Time (s)		3.5	3.5								3.5			
Lane Grp Cap (vph)		2593	751								1636			
v/s Ratio Prot		0.44												
v/s Ratio Perm			c0.57								0.27			
v/c Ratio		0.85	1.09								0.82			
Uniform Delay, d1		10.6	12.0								15.4			
Progression Factor		0.66	0.64								0.86			
Incremental Delay, d2		0.4	44.5								3.4			
Delay (s)		7.4	52.2								16.6			
Level of Service		A	D								B			
Approach Delay (s)		19.6			0.0			0.0			16.6			
Approach LOS		B			A			A			B			
Intersection Summary														
HCM Average Control Delay			18.7									HCM Level of Service	B	
HCM Volume to Capacity ratio			0.99											
Actuated Cycle Length (s)			50.0								7.5		Sum of lost time (s)	
Intersection Capacity Utilization			89.3%										ICU Level of Service	E
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 +Proj(Off) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1002	187	0	12	0	0	248	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.99	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6257			1863			1850	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6257			1863			1850	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1002	187	0	12	0	0	248	13
RTOR Reduction (vph)	0	0	0	0	67	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	1122	0	0	12	0	0	257	0
Turn Type				Prot				Perm				
Protected Phases				2				4			8	
Permitted Phases					2		4					
Actuated Green, G (s)					20.5			20.5			20.5	
Effective Green, g (s)					20.5			20.5			20.5	
Actuated g/C Ratio					0.41			0.41			0.41	
Clearance Time (s)					4.5			4.5			4.5	
Lane Grp Cap (vph)					2565			764			759	
v/s Ratio Prot								0.01			c0.14	
v/s Ratio Perm					c0.18							
v/c Ratio					0.44			0.02			0.34	
Uniform Delay, d1					10.6			8.8			10.1	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.5			0.0			1.2	
Delay (s)					11.1			8.8			11.3	
Level of Service					B			A			B	
Approach Delay (s)		0.0			11.1			8.8			11.3	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
31: Richards Blvd & 12th Street

2030 +Proj(Off) PM Peak
12/22/2006



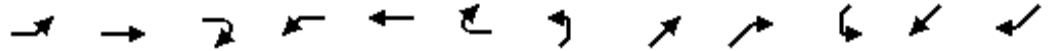
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	148	369	155	4	4385	0	0	3675	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00	0.97	0.91			0.81	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583	3433	5085			7544	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583	3433	5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	148	369	155	4	4385	0	0	3675	815
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	126
Lane Group Flow (vph)	0	0	0	148	369	113	4	4385	0	0	3675	689
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Effective Green, g (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Actuated g/C Ratio				0.25	0.25	0.25	0.01	0.69			0.65	0.65
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				447	893	399	32	3489			4875	1023
v/s Ratio Prot					c0.10		0.00	c0.86			0.49	
v/s Ratio Perm				0.08		0.07						0.44
v/c Ratio				0.33	0.41	0.28	0.12	1.26			0.75	0.67
Uniform Delay, d1				39.7	40.6	39.1	63.9	20.4			15.9	14.4
Progression Factor				1.00	1.00	1.00	1.00	0.91			1.00	1.00
Incremental Delay, d2				2.0	1.4	1.8	0.2	115.8			1.1	3.6
Delay (s)				41.6	42.0	40.9	64.4	134.3			17.0	18.0
Level of Service				D	D	D	E	F			B	B
Approach Delay (s)		0.0			41.7			134.3			17.2	
Approach LOS		A			D			F			B	

Intersection Summary

HCM Average Control Delay	72.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	145.3%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Richards & 12th Street

2030 +Proj(Off) PM Peak
12/22/2006



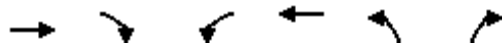
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	2318	92	717	0	0	0	0	2072	21	45	3780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2318	92	717	0	0	0	0	2072	21	45	3780	0
RTOR Reduction (vph)	0	0	44	0	0	0	0	0	5	0	0	0
Lane Group Flow (vph)	2318	92	673	0	0	0	0	2072	16	45	3780	0
Turn Type	Split		Perm				Perm		Prot			
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	54.5	54.5	54.5					58.5	58.5	4.0	67.0	
Effective Green, g (s)	54.5	54.5	54.5					58.5	58.5	4.0	67.0	
Actuated g/C Ratio	0.42	0.42	0.42					0.45	0.45	0.03	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2092	781	664					2288	712	54	3888	
v/s Ratio Prot	c0.46	0.05						0.41		0.03	c0.50	
v/s Ratio Perm			0.43						0.01			
v/c Ratio	1.11	0.12	1.01					0.91	0.02	0.83	0.97	
Uniform Delay, d1	37.8	23.1	37.8					33.2	19.9	62.7	30.6	
Progression Factor	1.00	1.00	1.00					1.33	0.76	0.76	0.54	
Incremental Delay, d2	56.2	0.1	38.5					0.7	0.0	48.5	6.9	
Delay (s)	94.0	23.1	76.3					44.7	15.2	96.1	23.5	
Level of Service	F	C	E					D	B	F	C	
Approach Delay (s)		87.8			0.0			44.4			24.4	
Approach LOS		F			A			D			C	

Intersection Summary

HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	145.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2030 +Proj(Off) PM Peak
12/28/2006



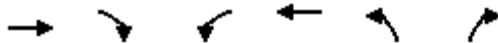
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	100	5	5	50	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	50	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			105		162	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		162	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		825	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	55	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	906
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.7	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.0
Approach LOS			A

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		16.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2030 +Proj(Off) PM Peak
 12/28/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	100	5	5	50	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	50	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			105		162	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		162	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		825	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	55	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	906
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.7	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.0
Approach LOS			A

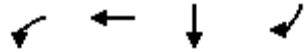
Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		16.8%	ICU Level of Service A
Analysis Period (min)		15	

Queues

2030 +Proj (Off) AM Peak

1/9/2007

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	448	303	2632	795
v/c Ratio	0.85	0.54	0.98	0.73
Control Delay	46.7	33.2	25.3	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.7	33.2	25.3	10.6
Queue Length 50th (ft)	146	103	677	195
Queue Length 95th (ft)	#212	121	#1038	341
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	530	566	2690	1088
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.54	0.98	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 +Proj (Off) AM Peak

2: Richards Blvd & I-5 NB Off

1/9/2007

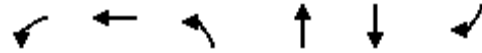


Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	676	1441	74	240
v/c Ratio	0.17	0.53	0.22	0.44
Control Delay	4.5	2.0	8.6	36.7
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	4.7	2.0	8.6	36.7
Queue Length 50th (ft)	54	29	0	58
Queue Length 95th (ft)	63	36	21	97
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)		150	300	
Base Capacity (vph)	3892	2708	718	1345
Starvation Cap Reductn	2347	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.53	0.10	0.18

Intersection Summary

Queues
3: Richards Blvd & Bercut Dr

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	23	1624	466	249	90	91
v/c Ratio	0.02	0.42	0.74	0.44	0.66	0.57
Control Delay	4.7	4.8	29.8	18.0	67.4	36.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	4.8	29.8	18.0	67.4	36.8
Queue Length 50th (ft)	3	72	71	66	57	26
Queue Length 95th (ft)	m8	85	184	m90	105	74
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	947	3913	944	876	279	279
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.42	0.49	0.28	0.32	0.33

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Richards Blvd & 5th Street

1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	207	998	433	697	245	393
v/c Ratio	0.28	0.38	0.75	0.74	0.45	0.85
Control Delay	15.6	14.6	40.4	18.0	30.1	47.6
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.3
Total Delay	15.6	14.6	40.4	18.6	30.1	47.9
Queue Length 50th (ft)	89	127	132	162	126	219
Queue Length 95th (ft)	m176	m192	m154	m126	171	296
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	733	2635	669	1166	719	596
Starvation Cap Reductn	0	0	0	173	0	23
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.38	0.65	0.70	0.34	0.69

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	304	1089	263	249	1005	1013	364
v/c Ratio	0.52	0.65	0.39	0.55	1.06	1.06	0.23
Control Delay	22.9	22.6	5.5	34.2	79.3	82.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	22.6	5.5	34.2	79.3	82.5	0.3
Queue Length 50th (ft)	126	189	27	143	~381	~375	0
Queue Length 95th (ft)	196	218	46	m221	#520	#503	0
Internal Link Dist (ft)		1155			540	199	
Turn Bay Length (ft)	200			200			200
Base Capacity (vph)	584	1678	677	451	948	956	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.65	0.39	0.55	1.06	1.06	0.23

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richards Blvd & 10th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	211	749	1092	34	24	36
v/c Ratio	0.27	0.27	0.80	0.04	0.13	0.35
Control Delay	21.5	18.7	31.0	11.0	46.2	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	18.7	31.0	11.0	46.2	24.1
Queue Length 50th (ft)	85	83	308	11	7	0
Queue Length 95th (ft)	164	126	341	21	21	31
Internal Link Dist (ft)		1064		1473	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	782	2801	1665	1155	319	157
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.27	0.66	0.03	0.08	0.23

Intersection Summary

Queues

2030 +Proj (Off) AM Peak

7: Richard Blvd & Dos Rios St

1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	538	237	1415	249	163
v/c Ratio	0.28	0.72	0.55	0.97	0.42	0.27
Control Delay	33.0	28.7	26.6	36.4	9.3	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	28.7	26.6	36.4	9.3	13.4
Queue Length 50th (ft)	16	97	78	267	51	33
Queue Length 95th (ft)	44	140	144	#421	94	77
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	152	946	463	1482	595	611
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.57	0.51	0.95	0.42	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
9: Bannan St & I-5 SB Off

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	628	164	2318	762
v/c Ratio	0.75	0.35	0.68	0.32
Control Delay	41.2	11.0	6.9	5.3
Queue Delay	0.6	0.0	5.1	0.7
Total Delay	41.8	11.0	11.9	6.0
Queue Length 50th (ft)	196	20	93	58
Queue Length 95th (ft)	242	68	m258	m88
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1009	541	3416	2385
Starvation Cap Reductn	0	0	1030	1193
Spillback Cap Reductn	119	0	944	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.30	0.97	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
10: Bannon St & I-5 NB Off

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	240	2706	52	1730
v/c Ratio	0.31	0.94	0.05	0.89
Control Delay	6.4	31.7	11.1	27.7
Queue Delay	1.2	90.7	0.0	94.1
Total Delay	7.6	122.4	11.1	121.8
Queue Length 50th (ft)	19	413	15	404
Queue Length 95th (ft)	m50	#417	33	503
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	766	2881	1006	1949
Starvation Cap Reductn	327	634	0	0
Spillback Cap Reductn	0	175	0	518
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	1.20	0.05	1.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Bannon St & Bercut Dr

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	217	3341	878	446	146	6
v/c Ratio	0.19	0.79	0.65	0.79	0.74	0.01
Control Delay	4.8	10.0	1.3	51.3	52.5	11.7
Queue Delay	4.7	57.5	2.0	0.0	0.0	0.0
Total Delay	9.5	67.5	3.3	51.3	52.5	11.7
Queue Length 50th (ft)	32	355	0	143	51	2
Queue Length 95th (ft)	m37	525	m0	198	#108	m5
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	1171	4241	1344	595	197	484
Starvation Cap Reductn	875	1272	308	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.13	0.85	0.75	0.74	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	786	2749	759	112	69	570
v/c Ratio	0.92	1.16dr	0.82	0.24	0.30	0.38
Control Delay	24.7	13.7	26.0	3.0	42.8	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	13.7	26.0	3.0	42.8	22.9
Queue Length 50th (ft)	114	96	270	10	37	133
Queue Length 95th (ft)	#704	147	#348	3	73	122
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	858	3034	930	463	266	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.91	0.82	0.24	0.26	0.37

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	566	1311	28	480	341	199	1055
v/c Ratio	0.82	0.66	0.04	0.43	0.22	0.69	0.57
Control Delay	16.5	10.1	0.5	20.1	0.3	38.8	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	10.1	0.5	20.1	0.3	38.8	3.4
Queue Length 50th (ft)	123	77	1	64	0	74	21
Queue Length 95th (ft)	m163	m97	m1	115	0	m49	m17
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	735	2110	673	1106	1583	330	1842
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.62	0.04	0.43	0.22	0.60	0.57

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: N B Street & 6th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	46	72	142	195	17	73	766	79	89	1125	143
v/c Ratio	0.54	0.11	0.18	0.49	0.49	0.05	0.45	0.43	0.10	0.29	0.54	0.15
Control Delay	44.9	30.1	8.4	41.7	40.0	18.4	54.1	4.5	0.6	37.8	10.2	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	30.1	8.4	41.7	40.0	18.4	54.1	4.5	0.6	37.8	10.2	2.3
Queue Length 50th (ft)	57	23	0	85	117	0	50	30	0	55	169	5
Queue Length 95th (ft)	110	51	34	m143	m185	m14	96	157	1	m78	m315	m22
Internal Link Dist (ft)		435			1023			498			815	
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	229	484	465	352	484	424	204	1949	907	334	2067	975
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	19	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.10	0.15	0.40	0.40	0.04	0.36	0.39	0.09	0.27	0.55	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	88	57	89	130	308	80	624	381	117	1298
v/c Ratio	0.41	0.16	0.19	0.36	0.19	0.55	0.63	0.43	0.37	0.33	0.66
Control Delay	53.1	38.4	16.4	48.3	33.5	8.2	66.8	20.7	2.6	22.2	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	38.4	16.4	48.3	33.5	8.2	66.8	20.7	2.6	22.2	7.7
Queue Length 50th (ft)	26	0	2	28	36	0	52	156	6	65	78
Queue Length 95th (ft)	#63	45	19	53	62	71	m#106	186	m26	117	114
Internal Link Dist (ft)	1023				1129				471		779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	96	637	332	257	787	591	128	1519	1000	374	1979
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.14	0.17	0.35	0.17	0.52	0.63	0.41	0.38	0.31	0.66

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1381	107	117	32	298	4555	383
v/c Ratio	1.71	0.19	0.35	0.12	0.55	1.07	0.30
Control Delay	355.5	39.6	11.9	46.8	53.2	52.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	355.5	39.6	11.9	46.8	53.2	52.4	5.2
Queue Length 50th (ft)	~613	35	7	23	116	~678	92
Queue Length 95th (ft)	#710	m61	m37	53	164	m#699	m101
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	806	572	333	313	623	4245	1274
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.71	0.19	0.35	0.10	0.48	1.07	0.30

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

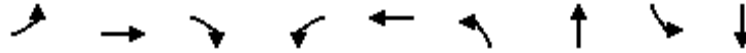
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj (Off) AM Peak
1/9/2007



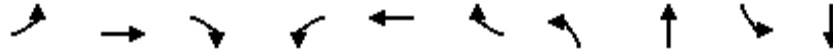
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	65	204	76	27	211	783	83	1297
v/c Ratio	0.25	0.22	0.49	0.37	0.10	0.71	0.48	0.18	0.68
Control Delay	38.5	37.2	9.5	43.9	21.9	37.3	10.0	13.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	38.5	37.2	9.5	43.9	21.9	37.3	10.0	13.2	9.2
Queue Length 50th (ft)	30	36	0	48	0	57	75	35	296
Queue Length 95th (ft)	66	74	61	m80	m3	m120	194	m44	92
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	456	244	319	374	2235	487	1895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	35
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.19	0.45	0.31	0.08	0.56	0.35	0.17	0.70

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	229	11	46	187	4	5	63	414	24	1563
v/c Ratio	0.84	0.03	0.13	0.69	0.01	0.02	0.55	0.17	0.27	0.70
Control Delay	69.2	36.5	17.1	50.7	31.0	19.2	56.4	3.1	68.4	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
Total Delay	69.2	36.5	17.1	50.7	31.0	19.2	56.4	3.1	68.4	6.2
Queue Length 50th (ft)	149	7	2	109	2	0	42	4	15	50
Queue Length 95th (ft)	#258	24	38	184	11	10	m71	54	m28	87
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	302	401	376	300	401	344	117	2404	89	2245
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	32
Spillback Cap Reductn	0	0	6	0	0	0	0	0	0	483
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.03	0.12	0.62	0.01	0.01	0.54	0.17	0.27	0.89

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	151	618	280	394	715	64	402	722	537	366	1001	63
v/c Ratio	0.43	0.80	0.62	1.04	0.99dl	0.15	1.12	0.70	0.66	1.12	1.01	0.13
Control Delay	38.8	35.9	16.6	49.6	16.9	0.7	125.0	36.1	8.1	115.9	60.7	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	35.9	16.6	49.6	16.9	0.7	125.0	36.1	8.1	115.9	60.7	8.6
Queue Length 50th (ft)	84	148	41	~281	78	0	~152	215	16	~136	~351	17
Queue Length 95th (ft)	144	217	135	m#101	m76	m0	#247	281	113	#227	#482	m23
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	372	802	468	379	778	414	360	1026	815	326	991	473
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.77	0.60	1.04	0.92	0.15	1.12	0.70	0.66	1.12	1.01	0.13

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	453	647	66	879	807	147	418	405	15	1467	182
v/c Ratio	0.74	0.92	0.18	1.51	1.20	0.85	0.30	0.47	0.17	1.24	0.31
Control Delay	40.9	49.6	12.5	267.9	140.9	87.2	22.8	4.5	57.9	136.1	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	49.6	12.5	267.9	140.9	87.2	22.8	4.5	57.9	136.1	7.3
Queue Length 50th (ft)	143	223	5	~403	~330	48	89	0	9	~601	7
Queue Length 95th (ft)	m169	m#273	m12	#524	#450	#106	146	64	m13	#741	m31
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	618	708	365	584	672	172	1377	864	89	1186	589
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.91	0.18	1.51	1.20	0.85	0.30	0.47	0.17	1.24	0.31

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	74	51	56	233	578	2454
v/c Ratio	1.25	0.22	0.95	0.99	1.23	1.19
Control Delay	254.8	61.5	172.9	118.2	172.5	119.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	254.8	61.5	172.9	118.2	172.5	119.3
Queue Length 50th (ft)	~90	46	56	223	~365	~1520
Queue Length 95th (ft)	#202	90	#151	#405	#492	#1643
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	59	236	59	235	470	2064
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.22	0.95	0.99	1.23	1.19

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	118	587	456	572	94	2040	421	1672
v/c Ratio	1.31	0.29	2.21	0.61	0.70	1.06	1.61	1.99	1.11
Control Delay	195.5	4.8	571.5	14.7	7.3	90.5	299.7	486.3	87.8
Queue Delay	0.0	2.0	128.3	1.1	0.7	0.0	124.4	0.0	25.7
Total Delay	195.5	6.8	699.7	15.8	8.0	90.5	424.1	486.3	113.4
Queue Length 50th (ft)	~170	6	~625	123	51	~64	~981	~420	~644
Queue Length 95th (ft)	m#285	m18	m#797	m174	m92	m41	m#579	#608	#784
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	157	411	266	745	812	89	1268	212	1507
Starvation Cap Reductn	0	0	0	117	59	0	186	0	0
Spillback Cap Reductn	0	183	122	22	0	0	0	0	76
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.52	4.08	0.73	0.76	1.06	1.89	1.99	1.17

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	257	394	923	402	14	203	1048	719
v/c Ratio	0.64	0.64	0.91	0.74	0.54	0.16	0.24	0.82	0.85
Control Delay	62.5	37.4	54.9	28.4	5.4	40.4	9.9	35.7	27.0
Queue Delay	0.0	0.1	5.6	3.7	0.4	0.0	0.0	6.0	9.0
Total Delay	62.5	37.5	60.5	32.1	5.8	40.4	9.9	41.7	36.0
Queue Length 50th (ft)	63	105	224	234	29	8	76	315	280
Queue Length 95th (ft)	m38	m41	m#382	294	m50	m8	m75	400	#527
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			60			150
Base Capacity (vph)	142	402	434	1239	750	89	848	1274	849
Starvation Cap Reductn	0	0	21	228	86	0	0	180	108
Spillback Cap Reductn	0	4	0	7	0	0	0	94	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.65	0.95	0.91	0.61	0.16	0.24	0.96	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	538	795	1823	652	1569
v/c Ratio	1.30	1.21dl	1.81	1.27	0.70
Control Delay	158.5	24.1	388.4	160.5	6.2
Queue Delay	77.2	34.9	74.8	151.2	5.3
Total Delay	235.7	59.0	463.1	311.7	11.4
Queue Length 50th (ft)	~481	235	~957	~543	112
Queue Length 95th (ft)	m#371	m182	m#662	m#368	m86
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	415	854	1009	513	2230
Starvation Cap Reductn	0	0	0	74	594
Spillback Cap Reductn	49	114	85	108	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.47	1.07	1.97	1.61	0.96

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
25: H Street & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1664	512	1047
v/c Ratio	0.97	0.85	0.87
Control Delay	23.6	31.1	27.5
Queue Delay	80.9	7.1	6.4
Total Delay	104.5	38.1	33.9
Queue Length 50th (ft)	336	242	270
Queue Length 95th (ft)	m254	m#347	m#336
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1717	602	1203
Starvation Cap Reductn	318	61	122
Spillback Cap Reductn	2	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.19	0.95	0.97

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

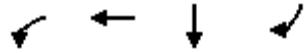
2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1990	49	1284	845	787
v/c Ratio	1.15	0.08	1.02	2.90	1.20
Control Delay	85.5	8.6	43.9	880.0	121.7
Queue Delay	39.2	0.1	22.0	0.0	227.3
Total Delay	124.7	8.7	65.8	880.0	348.9
Queue Length 50th (ft)	~262	14	~329	~1007	~354
Queue Length 95th (ft)	m#255	m15	m#399	m#1263	m#836
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1727	596	1254	291	657
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	123	131	68	123	196
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.24	0.11	1.08	5.03	1.71

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	268	1729	973	288
v/c Ratio	0.44	1.03	0.52	0.46
Control Delay	9.2	48.4	8.2	5.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.2	48.4	8.2	5.1
Queue Length 50th (ft)	32	~202	68	22
Queue Length 95th (ft)	87	#310	m73	m22
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	603	1683	1881	632
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	1.03	0.52	0.46

Intersection Summary

Description: 6 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	891	2779	87	292
v/c Ratio	0.98	0.88	0.21	1.02
Control Delay	12.8	4.4	28.1	64.5
Queue Delay	8.0	5.1	0.0	0.0
Total Delay	20.8	9.5	28.1	64.5
Queue Length 50th (ft)	143	143	39	~179
Queue Length 95th (ft)	m133	m132	80	m78
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	912	3156	424	286
Starvation Cap Reductn	32	332	0	0
Spillback Cap Reductn	0	76	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.01	0.98	0.21	1.02

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2373	537	1123
v/c Ratio	0.76	0.65	0.75
Control Delay	8.1	7.4	28.5
Queue Delay	2.0	1.4	0.5
Total Delay	10.2	8.8	29.0
Queue Length 50th (ft)	247	101	246
Queue Length 95th (ft)	m258	m121	m279
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	3102	828	1502
Starvation Cap Reductn	550	133	102
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	0.77	0.80

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
30: Richards Blvd & Dos Rios St

2030 +Proj (Off) AM Peak
1/9/2007



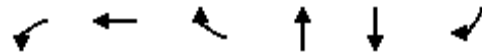
Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1680	2	313
v/c Ratio	0.56	0.00	0.43
Control Delay	7.7	12.0	8.2
Queue Delay	0.0	0.0	0.0
Total Delay	7.7	12.0	8.2
Queue Length 50th (ft)	100	1	26
Queue Length 95th (ft)	m89	4	54
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2990	731	726
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.00	0.43

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
31: Richards Blvd & 12th Street

2030 +Proj (Off) AM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	47	827	89	2241	4372	853
v/c Ratio	0.10	0.92	0.20	0.64	0.85	0.73
Control Delay	38.1	63.5	16.0	4.9	17.5	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	38.1	63.5	16.0	5.0	18.3	13.3
Queue Length 50th (ft)	31	358	18	231	624	300
Queue Length 95th (ft)	64	#477	63	249	652	465
Internal Link Dist (ft)		258		468	518	
Turn Bay Length (ft)	150					300
Base Capacity (vph)	449	898	447	3481	5165	1161
Starvation Cap Reductn	0	0	0	120	0	0
Spillback Cap Reductn	0	0	0	0	437	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.92	0.20	0.67	0.92	0.73

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
32: Bannon St & 12th Street

2030 +Proj (Off) AM Peak
1/9/2007



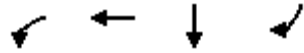
Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	794	30	549	1449	1	32	4388
v/c Ratio	0.52	0.05	1.05	0.56	0.00	0.16	0.92
Control Delay	38.8	32.4	90.9	8.4	0.0	34.1	9.0
Queue Delay	0.0	0.0	0.7	0.2	0.0	0.0	0.6
Total Delay	38.8	32.4	91.6	8.6	0.0	34.1	9.7
Queue Length 50th (ft)	196	18	~465	189	0	23	765
Queue Length 95th (ft)	238	42	#692	m9	m0	m28	290
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	1524	569	525	2752	857	206	4747
Starvation Cap Reductn	0	0	0	422	0	0	15
Spillback Cap Reductn	0	0	1	0	0	0	120
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.05	1.05	0.62	0.00	0.16	0.95

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1140	440	1798	851
v/c Ratio	0.94	0.35	0.91	0.96
Control Delay	33.7	13.4	27.9	39.8
Queue Delay	19.0	0.0	42.3	0.0
Total Delay	52.7	13.4	70.3	39.8
Queue Length 50th (ft)	314	80	507	399
Queue Length 95th (ft)	#110	113	#646	#714
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	1218	1274	1982	883
Starvation Cap Reductn	18	0	0	0
Spillback Cap Reductn	115	0	335	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.03	0.35	1.09	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues
2: Richards Blvd & I-5 NB Off

2030 +Proj(Off) PM Peak
1/9/2007



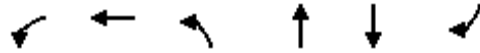
Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1481	3221	98	602
v/c Ratio	0.44	1.19	0.20	0.65
Control Delay	5.2	103.4	13.0	26.9
Queue Delay	1.1	0.0	0.0	0.0
Total Delay	6.3	103.4	13.0	26.9
Queue Length 50th (ft)	73	~1230	21	134
Queue Length 95th (ft)	m71	m#856	m32	135
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)		150	300	
Base Capacity (vph)	3350	2708	673	1309
Starvation Cap Reductn	1518	0	0	0
Spillback Cap Reductn	357	0	2	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	1.19	0.15	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
3: Richards Blvd & Bercut Dr

2030 +Proj(Off) PM Peak
1/9/2007



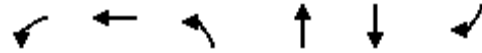
Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	3700	828	221	215	213
v/c Ratio	0.02	1.09	1.12	0.30	0.89	1.02
Control Delay	4.0	54.9	91.0	10.6	79.2	113.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	54.9	91.0	10.6	79.2	113.0
Queue Length 50th (ft)	2	~763	~317	85	137	~145
Queue Length 95th (ft)	m2	m#728	m#438	m99	#271	#292
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	813	3385	738	727	242	208
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.09	1.12	0.30	0.89	1.02

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
4: Richards Blvd & 5th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	416	2648	963	650	197	281
v/c Ratio	0.58	1.02	1.05	0.68	0.52	0.91
Control Delay	11.5	36.2	57.4	12.4	40.6	71.6
Queue Delay	0.0	0.0	0.0	1.7	0.0	0.0
Total Delay	11.5	36.2	57.4	14.1	40.6	71.6
Queue Length 50th (ft)	92	-455	-362	302	111	172
Queue Length 95th (ft)	m121	m#577	m#342	m281	182	#318
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	717	2585	916	959	401	327
Starvation Cap Reductn	0	0	0	161	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	1.02	1.05	0.81	0.49	0.86

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	299	1720	109	367	805	1225	896
v/c Ratio	0.44	0.88	0.17	0.97	1.01	1.33	0.57
Control Delay	18.9	26.8	5.9	72.8	69.1	188.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	26.8	5.9	72.8	69.1	188.7	1.5
Queue Length 50th (ft)	87	308	1	276	-308	-536	0
Queue Length 95th (ft)	173	381	m17	m#450	#439	#668	0
Internal Link Dist (ft)		1155			540	181	
Turn Bay Length (ft)	200			200			200
Base Capacity (vph)	681	1958	645	378	794	920	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.88	0.17	0.97	1.01	1.33	0.57

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

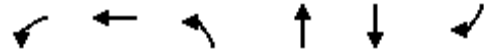
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: Richards Blvd & 10th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	733	930	42	33	169
v/c Ratio	0.12	0.28	0.81	0.05	0.07	0.76
Control Delay	17.4	17.6	36.5	9.9	36.2	51.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	17.6	36.5	9.9	36.2	51.4
Queue Length 50th (ft)	37	92	276	13	10	78
Queue Length 95th (ft)	63	98	319	22	22	140
Internal Link Dist (ft)		1064		356	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	742	2675	1329	1159	672	317
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.70	0.04	0.05	0.53

Intersection Summary

Queues
7: Richard Blvd & Dos Rios St

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	797	109	1550	204	151
v/c Ratio	0.54	0.55	0.48	0.98	0.39	0.27
Control Delay	45.8	17.5	35.4	38.2	23.2	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	17.5	35.4	38.2	23.2	17.1
Queue Length 50th (ft)	33	134	44	323	72	39
Queue Length 95th (ft)	#85	186	89	#491	130	84
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	147	1453	253	1593	524	564
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.55	0.43	0.97	0.39	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Bannon St & I-5 SB Off

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	1022	1066	1428	1511
v/c Ratio	0.84	0.67	0.50	0.75
Control Delay	37.1	2.3	11.3	16.0
Queue Delay	0.3	0.0	1.0	33.0
Total Delay	37.4	2.3	12.3	49.1
Queue Length 50th (ft)	305	0	150	296
Queue Length 95th (ft)	376	0	m187	m425
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1327	1583	2857	2003
Starvation Cap Reductn	0	0	1072	582
Spillback Cap Reductn	47	0	512	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	0.67	0.80	1.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
10: Bannon St & I-5 NB Off

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	593	1857	52	1385
v/c Ratio	0.65	0.74	0.05	0.65
Control Delay	7.1	26.9	8.5	15.4
Queue Delay	0.9	4.8	0.0	7.1
Total Delay	8.0	31.7	8.5	22.6
Queue Length 50th (ft)	71	266	13	232
Queue Length 95th (ft)	106	264	28	290
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	908	2508	1118	2166
Starvation Cap Reductn	115	579	0	0
Spillback Cap Reductn	0	175	0	736
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.75	0.96	0.05	0.97

Intersection Summary

Queues
11: Bannon St & Bercut Dr

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	144	2398	700	853	126	22
v/c Ratio	0.15	0.69	0.59	0.87	0.61	0.03
Control Delay	8.7	13.0	2.2	33.9	33.3	22.1
Queue Delay	2.2	4.8	0.5	0.0	0.0	0.0
Total Delay	10.9	17.8	2.7	33.9	33.3	22.1
Queue Length 50th (ft)	27	201	6	190	44	15
Queue Length 95th (ft)	m42	292	21	#242	m52	m17
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	960	3476	1179	1022	206	727
Starvation Cap Reductn	693	1004	168	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.97	0.69	0.83	0.61	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	630	2134	1355	579	160	948
v/c Ratio	1.06	1.04dr	1.02	0.93	0.66	0.47
Control Delay	70.3	35.3	40.0	26.9	64.1	12.8
Queue Delay	3.9	0.0	0.0	0.0	0.0	0.0
Total Delay	74.2	35.3	40.0	26.9	64.1	12.8
Queue Length 50th (ft)	~455	338	~515	251	105	136
Queue Length 95th (ft)	m#637	#455	#643	m#509	173	167
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	596	2138	1331	622	266	2028
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	6	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.07	1.00	1.02	0.93	0.60	0.47

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	494	1708	163	462	1156	384	760
v/c Ratio	0.79	0.95	0.25	0.47	0.73	0.92	0.39
Control Delay	19.5	23.0	0.6	36.9	15.9	32.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	23.0	0.6	36.9	15.9	32.1	3.9
Queue Length 50th (ft)	161	264	0	101	326	267	41
Queue Length 95th (ft)	m178	m284	m0	m107	m340	m232	m37
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	628	1805	665	973	1583	416	1964
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.95	0.25	0.47	0.73	0.92	0.39

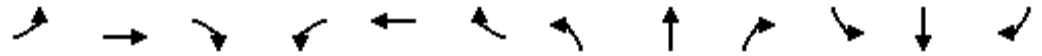
Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: N B Street & 6th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	52	144	271	315	132	72	161	1817	167	12	1276	180
v/c Ratio	0.15	0.27	0.46	0.95	0.24	0.14	0.72	0.85	0.17	0.13	0.80	0.23
Control Delay	28.5	29.3	12.9	78.3	32.1	15.9	43.1	8.3	0.3	43.2	23.5	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.2	0.0
Total Delay	28.5	29.3	12.9	78.3	32.1	15.9	43.1	11.3	0.3	43.2	23.7	4.6
Queue Length 50th (ft)	25	72	43	215	82	3	108	51	1	7	258	9
Queue Length 95th (ft)	56	124	116	#385	139	46	m125	m#711	m0	m12	m343	m26
Internal Link Dist (ft)		435			1023			498				815
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	343	541	589	333	541	510	225	2144	997	91	1646	804
Starvation Cap Reductn	0	0	0	0	0	0	0	231	0	0	0	0
Spillback Cap Reductn	0	0	3	0	0	0	0	0	0	0	55	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.27	0.46	0.95	0.24	0.14	0.72	0.95	0.17	0.13	0.80	0.22

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	100	39	477	284	14	90	1491	591	263	658
v/c Ratio	0.29	0.18	0.14	0.93	0.30	0.03	0.49	0.98	0.53	1.41	0.41
Control Delay	46.1	26.4	6.0	71.3	31.6	14.9	50.0	37.4	2.0	244.1	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.2	0.0	0.0
Total Delay	46.1	26.4	6.0	71.3	31.6	14.9	50.0	46.3	2.3	244.1	16.8
Queue Length 50th (ft)	14	21	1	~204	80	0	49	494	11	~217	85
Queue Length 95th (ft)	42	37	13	#305	119	16	m68	#638	m15	#372	113
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	106	637	317	515	945	433	216	1522	1120	186	1592
Starvation Cap Reductn	0	0	0	0	0	0	0	57	121	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.16	0.12	0.93	0.30	0.03	0.42	1.02	0.59	1.41	0.41

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1428	515	404	58	331	3359	1150
v/c Ratio	1.69	0.86	0.90	0.21	0.52	0.81	0.87
Control Delay	349.9	67.6	44.8	48.1	31.1	23.1	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	3.1
Total Delay	349.9	67.6	44.8	48.1	31.1	23.1	15.7
Queue Length 50th (ft)	~624	224	143	42	75	559	196
Queue Length 95th (ft)	#718	#313	#336	84	124	m576	m185
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	844	599	449	313	698	4144	1316
Starvation Cap Reductn	0	0	0	0	0	0	95
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.69	0.86	0.90	0.19	0.47	0.81	0.94

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

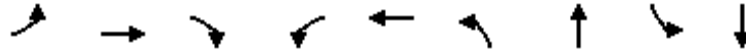
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	185	356	37	26	194	1903	162	1556
v/c Ratio	0.53	0.60	0.71	0.27	0.09	0.78	0.91	0.81	0.80
Control Delay	39.4	40.2	15.0	31.3	16.8	62.5	27.5	53.3	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	26.7	0.0	0.2
Total Delay	39.4	40.2	15.0	31.3	16.8	62.5	54.2	53.3	9.6
Queue Length 50th (ft)	58	91	28	23	12	119	556	95	149
Queue Length 95th (ft)	m88	m128	m60	m49	m16	#218	#772	m#143	m254
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	522	151	323	270	2082	204	1957
Starvation Cap Reductn	0	0	0	0	0	0	277	0	57
Spillback Cap Reductn	0	0	0	0	0	0	83	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.54	0.68	0.25	0.08	0.72	1.05	0.79	0.82

Intersection Summary

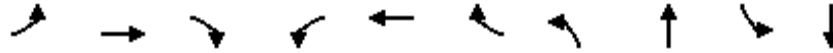
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	277	40	38	89	3	9	74	1611	63	1213
v/c Ratio	0.91	0.10	0.10	0.30	0.01	0.03	0.50	0.73	0.71	0.58
Control Delay	43.2	5.5	2.9	35.6	30.3	16.7	55.4	16.5	79.7	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.1
Total Delay	43.2	5.5	2.9	35.6	30.3	16.7	55.4	19.2	79.7	12.7
Queue Length 50th (ft)	96	8	3	47	2	0	45	373	39	301
Queue Length 95th (ft)	m#282	m13	m9	93	9	13	92	465	m#82	m342
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	317	419	386	306	419	363	165	2201	89	2105
Starvation Cap Reductn	0	0	0	0	0	0	0	454	0	123
Spillback Cap Reductn	0	0	0	0	0	0	0	344	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.10	0.10	0.29	0.01	0.02	0.45	0.92	0.71	0.61

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

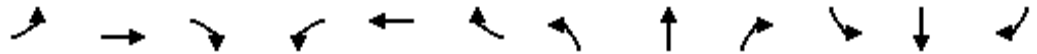
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	756	337	306	638	199	598	1759	839	228	1547	182
v/c Ratio	0.99	1.17	0.71	1.12	1.12	0.55	1.22	1.07	0.95	1.17	1.16	0.29
Control Delay	107.3	143.1	24.1	90.9	87.1	17.6	166.5	83.2	45.3	176.0	122.7	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.5	6.0	0.0	105.5	0.0
Total Delay	107.3	143.1	24.1	90.9	87.1	17.6	166.5	134.7	51.3	176.0	228.2	22.8
Queue Length 50th (ft)	330	-469	85	-352	-367	73	-368	-1002	586	-136	-940	81
Queue Length 95th (ft)	#537	#609	219	m176	m179	m61	#491	#1139	#902	#227	#1080	144
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	336	644	476	274	572	365	492	1640	886	195	1333	634
Starvation Cap Reductn	0	0	0	0	0	0	0	164	36	0	226	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	1.17	0.71	1.12	1.12	0.55	1.22	1.19	0.99	1.17	1.40	0.29

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1232	915	39	615	606	472	931	470	49	1075	7
v/c Ratio	1.18	0.95	0.09	1.01	1.17	1.21	0.76	0.66	0.50	1.11	0.02
Control Delay	135.5	67.9	26.8	99.4	148.7	137.3	19.0	4.4	85.7	114.0	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.0	0.0
Total Delay	135.5	67.9	26.8	99.4	148.7	137.3	19.0	4.4	85.7	171.0	32.0
Queue Length 50th (ft)	~744	461	9	~331	~370	~296	286	58	47	~631	3
Queue Length 95th (ft)	m#744	m468	m22	#456	#495	m206	m181	m35	#121	#770	16
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	1041	979	452	608	519	389	1274	728	98	967	435
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	102	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.93	0.09	1.01	1.17	1.21	0.73	0.65	0.50	1.24	0.02

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	314	373	96	639	941	1889
v/c Ratio	1.77	0.82	0.77	1.54	1.19	1.58
Control Delay	406.4	65.1	103.6	289.6	144.5	281.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	406.4	65.1	103.6	289.6	144.5	281.8
Queue Length 50th (ft)	~457	325	94	~835	~578	~1352
Queue Length 95th (ft)	#654	#490	#189	#1081	#717	m#1245
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	177	453	130	415	794	1197
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.77	0.82	0.74	1.54	1.19	1.58

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	300	261	831	534	798	39	1912	370	3281
v/c Ratio	1.19	0.67	2.76	0.70	1.02	0.44	1.42	2.33	2.21
Control Delay	147.4	23.4	818.5	18.5	41.7	65.7	205.7	639.5	569.2
Queue Delay	0.0	0.4	0.0	3.1	0.0	14.7	31.0	0.0	128.1
Total Delay	147.4	23.8	818.5	21.6	41.7	80.4	236.7	639.5	697.3
Queue Length 50th (ft)	~237	86	~899	147	~138	25	~844	~387	~1808
Queue Length 95th (ft)	m#400	m164	m#984	m167	m#509	m18	m#123	#566	#1937
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	252	389	301	764	784	89	1342	159	1482
Starvation Cap Reductn	0	0	0	121	0	0	62	0	0
Spillback Cap Reductn	0	12	11	139	0	33	0	0	493
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.69	2.87	0.85	1.02	0.70	1.49	2.33	3.32

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	280	351	194	1035	503	26	230	751	760
v/c Ratio	0.99	0.59	0.63	0.97	0.71	0.29	0.29	0.64	0.93
Control Delay	70.4	10.2	47.5	55.5	12.4	70.3	36.1	31.6	32.9
Queue Delay	0.0	1.0	0.0	49.3	0.8	0.0	0.0	0.5	1.4
Total Delay	70.4	11.2	47.5	104.8	13.1	70.3	36.1	32.0	34.2
Queue Length 50th (ft)	164	44	120	340	45	18	157	212	229
Queue Length 95th (ft)	m101	m14	m185	#480	114	m19	m165	276	#496
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	283	594	310	1062	711	89	792	1168	819
Starvation Cap Reductn	0	84	0	139	53	0	0	122	13
Spillback Cap Reductn	0	2	0	10	0	0	0	36	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.69	0.63	1.12	0.76	0.29	0.29	0.72	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	294	587	1659	1182	3086
v/c Ratio	1.07	1.12	1.50	1.67	1.15
Control Delay	100.5	105.3	240.0	323.0	87.8
Queue Delay	93.7	385.8	14.3	295.7	189.9
Total Delay	194.2	491.0	254.2	618.8	277.7
Queue Length 50th (ft)	~203	~217	~740	~1111	~1226
Queue Length 95th (ft)	m#264	m#237	m#418	m277	m68
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	274	523	1108	708	2672
Starvation Cap Reductn	0	0	17	200	717
Spillback Cap Reductn	48	228	23	0	558
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.30	1.99	1.53	2.33	1.58

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1807	399	717
v/c Ratio	0.95	0.80	0.72
Control Delay	13.2	30.2	21.6
Queue Delay	79.4	3.6	0.4
Total Delay	92.6	33.8	22.1
Queue Length 50th (ft)	189	127	119
Queue Length 95th (ft)	m131	#367	176
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1898	496	991
Starvation Cap Reductn	369	21	52
Spillback Cap Reductn	152	44	23
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.18	0.88	0.76

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2785	328	1177	1774	1632
v/c Ratio	1.70	0.81	1.45	2.63	2.57
Control Delay	340.2	45.8	235.6	750.6	724.7
Queue Delay	8.5	0.0	18.9	0.0	0.0
Total Delay	348.7	45.8	254.5	750.6	724.7
Queue Length 50th (ft)	~772	212	~554	~2007	~1828
Queue Length 95th (ft)	#831	m220	m#517	m#1708	m#1550
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1636	407	814	675	635
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	18	0	23	504	465
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.72	0.81	1.49	10.37	9.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	97	2399	1368	424
v/c Ratio	0.12	0.89	0.75	0.80
Control Delay	10.2	24.8	21.7	31.3
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	10.2	24.8	21.9	31.3
Queue Length 50th (ft)	30	490	175	148
Queue Length 95th (ft)	59	577	m204	m#267
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	806	2691	1831	533
Starvation Cap Reductn	0	0	74	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.89	0.78	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	674	2106	534	831
v/c Ratio	1.17	1.12	0.73	3.45
Control Delay	94.9	65.9	19.3	1116.5
Queue Delay	123.0	52.4	16.4	0.0
Total Delay	217.9	118.3	35.7	1116.5
Queue Length 50th (ft)	~370	~360	120	~926
Queue Length 95th (ft)	m#334	m#284	#259	m#327
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	574	1886	733	241
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	110	181	192	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.45	1.24	0.99	3.45

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2214	828	1347
v/c Ratio	0.85	1.09	0.82
Control Delay	7.5	56.7	16.7
Queue Delay	0.0	0.0	0.0
Total Delay	7.5	56.7	16.7
Queue Length 50th (ft)	126	~344	130
Queue Length 95th (ft)	m86	m95	180
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	2593	758	1638
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.85	1.09	0.82

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
30: Richards Blvd & Dos Rios St

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1189	12	261
v/c Ratio	0.45	0.02	0.34
Control Delay	10.2	8.9	11.5
Queue Delay	0.0	0.0	0.0
Total Delay	10.2	8.9	11.5
Queue Length 50th (ft)	61	2	48
Queue Length 95th (ft)	84	9	92
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2631	764	762
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.02	0.34

Intersection Summary

Queues
31: Richards Blvd & 12th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	148	369	155	4	4385	3675	815
v/c Ratio	0.30	0.38	0.32	0.03	1.30	0.75	0.71
Control Delay	39.2	39.3	25.6	59.8	159.3	17.6	12.3
Queue Delay	0.0	0.0	0.0	0.0	4.7	0.5	0.0
Total Delay	39.2	39.3	25.6	59.8	164.0	18.1	12.3
Queue Length 50th (ft)	99	132	65	1	~1736	467	220
Queue Length 95th (ft)	160	179	127	m1	m#1617	625	470
Internal Link Dist (ft)		258			468	518	
Turn Bay Length (ft)	150			200			300
Base Capacity (vph)	490	980	479	150	3364	4874	1148
Starvation Cap Reductn	0	0	0	0	27	0	0
Spillback Cap Reductn	0	0	0	0	0	627	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.32	0.03	1.31	0.87	0.71

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
32: Richards & 12th Street

2030 +Proj(Off) PM Peak
1/9/2007



Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	2318	92	717	2072	21	45	3780
v/c Ratio	1.11	0.12	1.01	0.89	0.03	0.66	0.97
Control Delay	92.2	23.7	71.3	44.3	11.0	77.0	24.1
Queue Delay	305.3	0.0	6.7	10.8	0.0	0.0	0.4
Total Delay	397.5	23.7	78.0	55.1	11.0	77.0	24.5
Queue Length 50th (ft)	~789	47	~577	446	0	38	748
Queue Length 95th (ft)	#879	83	#841	m261	m2	m50	145
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	2092	781	707	2323	728	68	3888
Starvation Cap Reductn	0	0	0	0	0	0	17
Spillback Cap Reductn	797	0	15	266	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.79	0.12	1.04	1.01	0.03	0.66	0.98

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Baseline + Project (Mitigated)

HCM Signalized Intersection Capacity Analysis

Baseline +Proj(Res) AM Peak (Mitigated)

1: Richard Blvd & I-5 SB Off

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑↑	↑	
Volume (vph)	0	481	61	498	244	0	0	0	0	1288	0	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		0.97	1.00					0.97	1.00	
Frbp, ped/bikes		0.98		1.00	1.00					1.00	0.78	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.98		1.00	1.00					1.00	0.85	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3399		3433	1863					3433	1232	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3399		3433	1863					3433	1232	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	481	61	498	244	0	0	0	0	1288	0	344
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	226	0
Lane Group Flow (vph)	0	534	0	498	244	0	0	0	0	1288	118	0
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		
Protected Phases		2		1 9 3 12 13						4	4	
Permitted Phases												
Actuated Green, G (s)		39.0		29.5	71.5					41.0	41.0	
Effective Green, g (s)		39.0		28.0	71.0					41.0	41.0	
Actuated g/C Ratio		0.32		0.23	0.59					0.34	0.34	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		1105		801	1102					1173	421	
v/s Ratio Prot		c0.16		c0.15	0.13					c0.38	0.10	
v/s Ratio Perm												
v/c Ratio		0.48		0.62	0.22					1.10	0.28	
Uniform Delay, d1		32.4		41.3	11.5					39.5	28.7	
Progression Factor		1.00		0.38	0.96					1.00	1.00	
Incremental Delay, d2		0.9		1.7	0.2					57.3	0.8	
Delay (s)		33.4		17.3	11.2					96.8	29.5	
Level of Service		C		B	B					F	C	
Approach Delay (s)		33.4			15.3			0.0			82.6	
Approach LOS		C			B			A			F	

Intersection Summary

HCM Average Control Delay	56.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	135.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	183	1589	0	0	698	561	44	0	1465	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frpb, ped/bikes	1.00	1.00			1.00	0.56		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1569		1515	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1569		1515	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	1589	0	0	698	561	44	0	1465	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	379	0	119	4	0	0	0
Lane Group Flow (vph)	183	1589	0	0	698	182	0	643	743	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	20.5	54.3			42.5	39.0		46.0	58.7			
Effective Green, g (s)	20.0	53.8			39.0	39.0		45.5	53.7			
Actuated g/C Ratio	0.17	0.45			0.32	0.32		0.38	0.45			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	295	1587			1150	510		574	673			
v/s Ratio Prot	0.10	c0.45			0.20	0.03		c0.42	c0.49			
v/s Ratio Perm						0.09						
v/c Ratio	0.62	1.00			0.61	0.36		1.12	1.10			
Uniform Delay, d1	46.5	33.1			34.1	30.9		37.2	33.2			
Progression Factor	1.29	0.26			0.66	2.08		1.00	1.00			
Incremental Delay, d2	2.1	13.8			1.3	0.9		75.4	66.5			
Delay (s)	62.2	22.5			23.7	65.2		112.7	99.6			
Level of Service	E	C			C	E		F	F			
Approach Delay (s)		26.6			42.2			106.2			0.0	
Approach LOS		C			D			F			A	

Intersection Summary

HCM Average Control Delay	57.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	135.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↗		↕	↗
Volume (vph)	206	2708	164	19	1064	10	77	16	7	28	16	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1762	3489		1770	5071			1789	1481		1753	1583
Flt Permitted	0.23	1.00		0.05	1.00			0.73	1.00		0.80	1.00
Satd. Flow (perm)	420	3489		87	5071			1364	1481		1454	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	2708	164	19	1064	10	77	16	7	28	16	110
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	5	0	0	95
Lane Group Flow (vph)	206	2869	0	19	1073	0	0	93	2	0	44	15
Confl. Peds. (#/hr)	36		36	36		36			36	36		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8				4
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	94.8	94.8		84.9	84.9			17.1	17.1		17.1	17.1
Effective Green, g (s)	94.3	95.4		85.5	85.5			16.6	16.6		16.6	16.6
Actuated g/C Ratio	0.79	0.80		0.71	0.71			0.14	0.14		0.14	0.14
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	396	2774		62	3613			189	205		201	219
v/s Ratio Prot	0.03	c0.82			0.21							
v/s Ratio Perm	0.38			0.22				c0.07	0.00		0.03	0.01
v/c Ratio	0.52	1.03		0.31	0.30			0.49	0.01		0.22	0.07
Uniform Delay, d1	3.8	12.3		6.3	6.3			47.8	44.6		45.9	45.0
Progression Factor	0.99	1.10		0.95	0.80			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	17.0		10.7	0.2			0.7	0.0		0.2	0.0
Delay (s)	3.8	30.5		16.7	5.2			48.5	44.6		46.1	45.0
Level of Service	A	C		B	A			D	D		D	D
Approach Delay (s)		28.7			5.4			48.3			45.3	
Approach LOS		C			A			D			D	

Intersection Summary

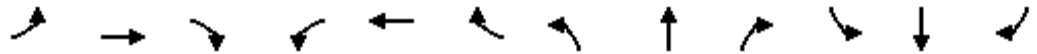
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	124.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	183	1928	12	10	1205	54	17	0	7	144	1	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	0.93	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.94	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3534		1770	3508		1711	1473		1666	1475	
Flt Permitted	0.95	1.00		0.95	1.00		0.26	1.00		0.75	1.00	
Satd. Flow (perm)	3433	3534		1770	3508		474	1473		1321	1475	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	1928	12	10	1205	54	17	0	7	144	1	222
RTOR Reduction (vph)	0	0	0	0	2	0	0	6	0	0	152	0
Lane Group Flow (vph)	183	1940	0	10	1257	0	17	1	0	144	71	0
Confl. Peds. (#/hr)			36			36	36		36	36		36
Turn Type	Prot		Prot		Perm		Perm		Perm		Perm	
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	10.3	86.6		4.0	80.3		18.6	18.6		18.6	18.6	
Effective Green, g (s)	9.3	86.9		3.0	80.6		18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.08	0.72		0.02	0.67		0.15	0.15		0.15	0.15	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	266	2559		44	2356		71	222		199	222	
v/s Ratio Prot	c0.05	c0.55		0.01	0.36			0.00			0.05	
v/s Ratio Perm							0.04			c0.11		
v/c Ratio	0.69	0.76		0.23	0.53		0.24	0.00		0.72	0.32	
Uniform Delay, d1	53.9	10.1		57.4	10.1		44.9	43.3		48.6	45.5	
Progression Factor	1.19	0.18		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		1.0	0.9		0.6	0.0		10.5	0.3	
Delay (s)	64.8	2.1		58.3	10.9		45.5	43.3		59.0	45.8	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		7.5			11.3			44.9			51.0	
Approach LOS		A			B			D			D	

Intersection Summary

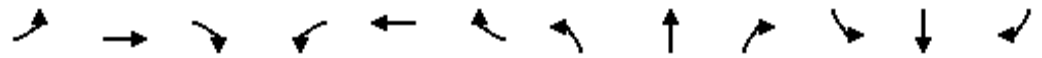
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	532	1213	334	171	784	290	277	383	51	214	426	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	0.88
Frbp, ped/bikes	1.00	0.98		1.00	0.97		1.00	1.00	0.94	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3355		1770	3310		1681	1764	1495	1770	1863	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3355		1770	3310		1681	1764	1495	1770	1863	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	532	1213	334	171	784	290	277	383	51	214	426	131
RTOR Reduction (vph)	0	17	0	0	26	0	0	0	27	0	0	81
Lane Group Flow (vph)	532	1530	0	171	1048	0	249	411	24	214	426	50
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	1	6		5	2		8	8		7		7
Permitted Phases									8			7
Actuated Green, G (s)	36.0	63.0		13.0	40.0		31.5	31.5	31.5	28.5	28.5	28.5
Effective Green, g (s)	35.0	63.0		12.0	40.0		31.0	31.0	31.0	28.0	28.0	28.5
Actuated g/C Ratio	0.23	0.42		0.08	0.27		0.21	0.21	0.21	0.19	0.19	0.19
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	413	1409		142	883		347	365	309	330	348	530
v/s Ratio Prot	c0.30	0.46		0.10	c0.32		0.15	c0.23		0.12	c0.23	
v/s Ratio Perm									0.02			0.02
v/c Ratio	1.29	1.09		1.20	1.19		0.72	1.13	0.08	0.65	1.22	0.09
Uniform Delay, d1	57.5	43.5		69.0	55.0		55.4	59.5	48.0	56.4	61.0	50.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	146.9	51.0		140.7	95.6		5.8	85.8	0.0	3.3	123.9	0.0
Delay (s)	204.4	94.5		209.7	150.6		61.2	145.3	48.0	59.7	184.9	50.1
Level of Service	F	F		F	F		E	F	D	E	F	D
Approach Delay (s)		122.6			158.8			108.9			127.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	130.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	116.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	1173	41	12	1122	87	14	20	11	13	11	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1421	1770	3475		1682	1863	1583	1770	1863	1437
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1421	1770	3475		1328	1863	1583	1386	1863	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1173	41	12	1122	87	14	20	11	13	11	36
RTOR Reduction (vph)	0	0	7	0	4	0	0	0	10	0	0	31
Lane Group Flow (vph)	175	1173	34	12	1205	0	14	20	1	13	11	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	16.2	90.8	90.8	1.8	76.4		15.9	15.9	15.9	15.9	15.9	15.9
Effective Green, g (s)	15.7	91.3	91.3	1.3	76.9		15.4	15.4	15.4	15.4	15.4	15.4
Actuated g/C Ratio	0.13	0.76	0.76	0.01	0.64		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	232	2693	1081	19	2227		170	239	203	178	239	184
v/s Ratio Prot	c0.10	0.33		0.01	c0.35			c0.01			0.01	
v/s Ratio Perm			0.02				0.01		0.00	0.01		0.00
v/c Ratio	0.75	0.44	0.03	0.63	0.54		0.08	0.08	0.01	0.07	0.05	0.03
Uniform Delay, d1	50.3	5.1	3.5	59.1	11.9		46.1	46.1	45.6	46.0	45.9	45.7
Progression Factor	1.00	1.00	1.00	1.04	0.83		0.97	0.96	0.95	1.00	1.00	1.00
Incremental Delay, d2	11.6	0.5	0.1	30.8	0.7		0.1	0.1	0.0	0.1	0.0	0.0
Delay (s)	61.9	5.6	3.6	92.2	10.5		44.6	44.4	43.4	46.1	45.9	45.8
Level of Service	E	A	A	F	B		D	D	D	D	D	D
Approach Delay (s)		12.7			11.3			44.2			45.9	
Approach LOS		B			B			D			D	

Intersection Summary

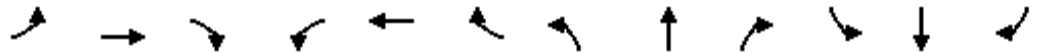
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	1115	50	23	1145	32	35	22	24	17	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			0.98			0.99	
Frt	1.00	0.99		1.00	1.00			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1748	3499		1747	3513			1694			1731	
Flt Permitted	0.15	1.00		0.15	1.00			0.90			0.93	
Satd. Flow (perm)	268	3499		267	3513			1560			1633	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	1115	50	23	1145	32	35	22	24	17	19	10
RTOR Reduction (vph)	0	5	0	0	3	0	0	14	0	0	6	0
Lane Group Flow (vph)	16	1160	0	23	1174	0	0	67	0	0	40	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	27.0	27.0		27.0	27.0			25.0			25.0	
Effective Green, g (s)	27.5	27.5		27.5	27.5			24.5			24.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.41			0.41	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	123	1604		122	1610			637			667	
v/s Ratio Prot		0.33			c0.33							
v/s Ratio Perm	0.06			0.09				c0.04			0.02	
v/c Ratio	0.13	0.72		0.19	0.73			0.10			0.06	
Uniform Delay, d1	9.4	13.2		9.6	13.2			11.0			10.8	
Progression Factor	0.69	0.91		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	2.7		3.4	2.9			0.3			0.2	
Delay (s)	8.5	14.6		13.0	16.2			11.3			10.9	
Level of Service	A	B		B	B			B			B	
Approach Delay (s)		14.5			16.1			11.3			10.9	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	940	76	20	0	20	100	1181	50	2993	1171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		5.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	940	76	20	0	20	100	1181	50	2993	1171
RTOR Reduction (vph)	0	62	0	18	0	0	0	33	0	586
Lane Group Flow (vph)	940	14	0	22	0	100	1181	17	2993	585
Confl. Peds. (#/hr)		36								36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	6 14
Permitted Phases								2		6
Actuated Green, G (s)	18.0	18.0		11.8		8.3	52.7	34.2	39.4	39.4
Effective Green, g (s)	18.0	17.0		10.8		8.3	52.7	34.2	39.4	39.4
Actuated g/C Ratio	0.18	0.17		0.11		0.08	0.53	0.34	0.39	0.39
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	618	269		183		147	3377	541	2525	624
v/s Ratio Prot	c0.27	0.01		c0.01		c0.06	0.18		c0.47	0.37
v/s Ratio Perm								0.01		
v/c Ratio	1.52	0.05		0.12		0.68	0.35	0.03	1.19	0.94
Uniform Delay, d1	41.0	34.7		40.3		44.6	13.7	21.9	30.3	29.1
Progression Factor	1.00	1.00		1.00		1.08	0.72	0.97	1.00	1.00
Incremental Delay, d2	242.7	0.0		0.1		11.6	0.1	0.1	87.7	21.7
Delay (s)	283.7	34.8		40.4		59.7	10.0	21.4	118.0	50.8
Level of Service	F	C		D		E	A	C	F	D
Approach Delay (s)				40.4			14.1			
Approach LOS				D			B			

Intersection Summary

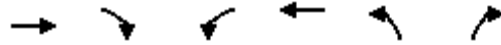
HCM Average Control Delay	107.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 11: Bercut Dr & Bannon St

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	102	14	0	35	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	14	0	35	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	490					
pX, platoon unblocked						
vC, conflicting volume			116		144	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		144	109
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1473		849	945

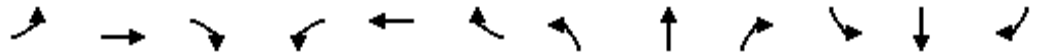
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	116	35	1
Volume Left	0	0	0
Volume Right	14	0	1
cSH	1700	1473	945
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		16.2%	ICU Level of Service
Analysis Period (min)		15	A
Description: SB coded as EB			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Volume (vph)	12	47	21	171	36	399	9	283	13	219	704	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.96			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783			1789	1583	1770	1850		1770	1859	
Flt Permitted		0.95			0.78	1.00	0.39	1.00		0.95	1.00	
Satd. Flow (perm)		1698			1456	1583	734	1850		1770	1859	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	47	21	171	36	399	9	283	13	219	704	9
RTOR Reduction (vph)	0	16	0	0	0	311	0	2	0	0	1	0
Lane Group Flow (vph)	0	64	0	0	207	88	9	294	0	219	712	0
Turn Type	Perm			Perm		Perm	Perm			Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)		13.3			13.3	13.3	22.8	22.8		11.9	38.7	
Effective Green, g (s)		13.3			13.3	13.3	22.8	22.8		11.9	38.7	
Actuated g/C Ratio		0.22			0.22	0.22	0.38	0.38		0.20	0.64	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		376			323	351	279	703		351	1199	
v/s Ratio Prot								0.16		0.12	c0.38	
v/s Ratio Perm		0.04			c0.14	0.06	0.01					
v/c Ratio		0.17			0.64	0.25	0.03	0.42		0.62	0.59	
Uniform Delay, d1		18.9			21.2	19.2	11.7	13.7		22.0	6.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			4.3	0.4	0.2	1.8		3.4	2.2	
Delay (s)		19.1			25.5	19.6	11.9	15.5		25.4	8.3	
Level of Service		B			C	B	B	B		C	A	
Approach Delay (s)		19.1			21.6			15.4			12.3	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
16: North B Street & 12th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	40	209	35	420	29	23	2577	172	34	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	1.00		1.00	0.99			1.00		0.97		
Flpb, ped/bikes	1.00		0.97	1.00			1.00		1.00		
Frt	0.87		1.00	0.99			0.99		0.95		
Flt Protected	1.00		0.95	1.00			1.00		0.97		
Satd. Flow (prot)	3094		1718	1834			6313		1664		
Flt Permitted	1.00		0.55	1.00			1.00		0.97		
Satd. Flow (perm)	3094		998	1834			6313		1664		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	209	35	420	29	23	2577	172	34	16	7
RTOR Reduction (vph)	157	0	0	0	0	0	0	0	5	0	0
Lane Group Flow (vph)	92	0	35	449	0	0	2772	0	52	0	0
Confl. Peds. (#/hr)			36		36	36		36			36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	25.0		25.0	25.0			42.8		13.2		
Effective Green, g (s)	25.0		25.0	25.0			45.8		13.2		
Actuated g/C Ratio	0.25		0.25	0.25			0.46		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	774		250	459			2891		220		
v/s Ratio Prot	0.03			c0.24							
v/s Ratio Perm			0.04				0.44		c0.03		
v/c Ratio	0.12		0.14	0.98			0.96		0.24		
Uniform Delay, d1	29.0		29.1	37.2			26.2		38.9		
Progression Factor	1.00		0.99	1.03			1.00		1.00		
Incremental Delay, d2	0.1		0.5	35.8			9.6		1.2		
Delay (s)	29.1		29.5	74.1			35.8		40.0		
Level of Service	C		C	E			D		D		
Approach Delay (s)	29.1			70.9			35.8		40.0		
Approach LOS	C			E			D		D		

Intersection Summary

HCM Average Control Delay	40.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘			↕		↗	↘	
Volume (vph)	0	0	0	48	19	124	25	210	3	188	625	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor				1.00	1.00			1.00		1.00	1.00	
Fr _t				1.00	0.87			1.00		1.00	0.99	
Fl _t Protected				0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)				1770	1620			1850		1770	1843	
Fl _t Permitted				0.95	1.00			0.90		0.95	1.00	
Satd. Flow (perm)				1770	1620			1673		1770	1843	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	48	19	124	25	210	3	188	625	47
RTOR Reduction (vph)	0	0	0	0	109	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	0	0	48	34	0	0	237	0	188	670	0
Turn Type	Split		Split		Perm			Prot				
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)				6.1	6.1			13.5		18.4	35.9	
Effective Green, g (s)				6.1	6.1			13.5		18.4	35.9	
Actuated g/C Ratio				0.12	0.12			0.27		0.37	0.72	
Clearance Time (s)				4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)				3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)				216	198			452		651	1323	
v/s Ratio Prot				c0.03	0.02					0.11	c0.36	
v/s Ratio Perm								0.14				
v/c Ratio				0.22	0.17			0.52		0.29	0.51	
Uniform Delay, d ₁				19.8	19.7			15.5		11.2	3.1	
Progression Factor				1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d ₂				0.5	0.4			4.3		0.2	1.4	
Delay (s)				20.3	20.1			19.8		11.4	4.5	
Level of Service				C	C			B		B	A	
Approach Delay (s)		0.0			20.2			19.8			6.0	
Approach LOS		A			C			B			A	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↘	↙				↗↗
Volume (vph)	229	274	0	0	0	684
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				0.95
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				3539
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	274	0	0	0	684
RTOR Reduction (vph)	133	159	0	0	0	0
Lane Group Flow (vph)	96	115	0	0	0	684
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				1486
v/s Ratio Prot	0.03	c0.07				c0.19
v/s Ratio Perm						
v/c Ratio	0.07	0.17				0.46
Uniform Delay, d1	8.7	9.1				10.4
Progression Factor	3.72	3.59				0.84
Incremental Delay, d2	0.1	0.5				1.0
Delay (s)	32.3	33.1				9.7
Level of Service	C	C				A
Approach Delay (s)	32.7		0.0			9.7
Approach LOS	C		A			A
Intersection Summary						
HCM Average Control Delay			19.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.32			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			43.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	378	55	0	0	0	0	20	280	5	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.99						0.92			1.00	
Flpb, ped/bikes	0.93	1.00						1.00			0.99	
Frt	1.00	0.98						0.86			1.00	
Flt Protected	0.95	1.00						1.00			0.99	
Satd. Flow (prot)	1642	3435						2809			1827	
Flt Permitted	0.95	1.00						1.00			0.95	
Satd. Flow (perm)	1642	3435						2809			1752	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	378	55	0	0	0	0	20	280	5	20	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	140	0	0	0	0
Lane Group Flow (vph)	20	410	0	0	0	0	0	160	0	0	25	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1								2			
Actuated Green, G (s)	22.5	22.5						20.5			20.5	
Effective Green, g (s)	22.0	22.0						20.0			20.0	
Actuated g/C Ratio	0.44	0.44						0.40			0.40	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	722	1511						1124			701	
v/s Ratio Prot		c0.12						c0.06				
v/s Ratio Perm	0.01										0.01	
v/c Ratio	0.03	0.27						0.14			0.04	
Uniform Delay, d1	7.9	8.9						9.5			9.1	
Progression Factor	0.30	0.32						0.29			1.00	
Incremental Delay, d2	0.1	0.4						0.3			0.1	
Delay (s)	2.5	3.2						3.0			9.2	
Level of Service	A	A						A			A	
Approach Delay (s)		3.2			0.0			3.0			9.2	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	3.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑								↘	↗↑	
Volume (vph)	0	631	32	0	0	0	0	0	0	140	711	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								0.91	0.91	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.93	1.00	
Frt		0.99								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		3500								1494	3382	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		3500								1494	3382	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	631	32	0	0	0	0	0	0	140	711	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	78	2	0
Lane Group Flow (vph)	0	656	0	0	0	0	0	0	0	48	723	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		23.5								19.5	19.5	
Effective Green, g (s)		23.0								19.0	19.0	
Actuated g/C Ratio		0.46								0.38	0.38	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1610								568	1285	
v/s Ratio Prot		0.19										
v/s Ratio Perm										0.03	0.21	
v/c Ratio		0.41								0.08	0.56	
Uniform Delay, d1		9.0								9.9	12.2	
Progression Factor		0.58								1.24	0.59	
Incremental Delay, d2		0.8								0.3	1.7	
Delay (s)		6.0								12.6	8.8	
Level of Service		A								B	A	
Approach Delay (s)		6.0			0.0			0.0			9.4	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	53	1010	73	34	239	0	0	20	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Frt					0.99		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4970		1610	3388			1640	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4970		1610	3388			1640	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	53	1010	73	34	239	0	0	20	55
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	16	31
Lane Group Flow (vph)	0	0	0	0	1120	0	31	242	0	0	23	5
Confl. Peds. (#/hr)				72		72						
Turn Type				Perm		custom					custom	
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					16.5		15.5	15.5			7.5	7.5
Effective Green, g (s)					16.0		15.0	15.0			7.0	7.0
Actuated g/C Ratio					0.32		0.30	0.30			0.14	0.14
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1590		483	1016			230	211
v/s Ratio Prot							0.02	c0.07			c0.01	0.00
v/s Ratio Perm					0.23							
v/c Ratio					0.70		0.06	0.24			0.10	0.02
Uniform Delay, d1					14.9		12.5	13.2			18.7	18.6
Progression Factor					0.82		1.34	1.32			0.63	0.65
Incremental Delay, d2					2.5		0.2	0.5			0.8	0.2
Delay (s)					14.8		16.9	17.9			12.7	12.3
Level of Service					B		B	B			B	B
Approach Delay (s)		0.0			14.8			17.8			12.5	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	253	808	0	0	0	0	0	483	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4788						3539	2787
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4788						3539	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	253	808	0	0	0	0	0	483	326
RTOR Reduction (vph)	0	0	0	112	6	0	0	0	0	0	0	117
Lane Group Flow (vph)	0	0	0	116	827	0	0	0	0	0	483	209
Confl. Peds. (#/hr)				72								
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				23.5	23.5						19.5	19.5
Effective Green, g (s)				23.0	23.0						19.0	19.0
Actuated g/C Ratio				0.46	0.46						0.38	0.38
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				650	2202						1345	1059
v/s Ratio Prot											c0.14	
v/s Ratio Perm				0.08	0.17							0.08
v/c Ratio				0.18	0.38						0.36	0.20
Uniform Delay, d1				7.9	8.8						11.1	10.4
Progression Factor				1.00	1.00						0.70	1.09
Incremental Delay, d2				0.6	0.5						0.7	0.4
Delay (s)				8.5	9.3						8.4	11.7
Level of Service				A	A						A	B
Approach Delay (s)		0.0			9.1			0.0			9.8	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.94		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.94		
Frt	1.00	1.00						0.89		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4796						1564		1669		
Flt Permitted	0.95	1.00						1.00		0.73		
Satd. Flow (perm)	1404	4796						1564		1282		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	351	2342	0	0	0	0	0	32	0	28	0	0
Confl. Peds. (#/hr)	36								36	36		
Turn Type	Perm									D.Pm		
Protected Phases	1									2		
Permitted Phases	1									2		2
Actuated Green, G (s)	71.5	71.5						21.5		21.5		
Effective Green, g (s)	71.0	71.0						21.0		21.0		
Actuated g/C Ratio	0.71	0.71						0.21		0.21		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	997	3405						328		269		
v/s Ratio Prot								0.02				
v/s Ratio Perm	0.25	0.49								c0.02		
v/c Ratio	0.35	0.69						0.10		0.10		
Uniform Delay, d1	5.6	8.2						31.9		31.9		
Progression Factor	1.34	1.18						1.00		0.74		
Incremental Delay, d2	0.8	0.9						0.6		0.7		
Delay (s)	8.3	10.6						32.4		24.4		
Level of Service	A	B						C		C		
Approach Delay (s)		10.3			0.0			32.4				24.4
Approach LOS		B			A			C				C

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



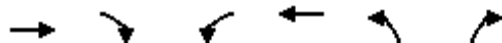
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2194	357	0	0	0	0	0	0	268	360	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.97	
Frt		0.98									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		4929									4852	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		4929									4852	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2194	357	0	0	0	0	0	0	268	360	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	2529	0	0	0	0	0	0	0	0	622	0
Confl. Peds. (#/hr)			36							36		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		61.5									31.5	
Effective Green, g (s)		61.0									31.0	
Actuated g/C Ratio		0.61									0.31	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3007									1504	
v/s Ratio Prot		0.51										
v/s Ratio Perm											0.13	
v/c Ratio		0.84									0.41	
Uniform Delay, d1		15.6									27.3	
Progression Factor		0.37									0.89	
Incremental Delay, d2		2.4									0.8	
Delay (s)		8.2									25.0	
Level of Service		A									C	
Approach Delay (s)		8.2			0.0			0.0			25.0	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	45	0	0	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	45	0	0	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		90	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		90	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1623		885	1085

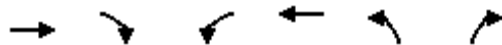
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	45	23
Volume Left	0	45	0
Volume Right	0	0	23
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.02
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
34: Riverfront Dr & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	68	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	68	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		136	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		136	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	100
cM capacity (veh/h)			1623		822	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	68	0
Volume Left	0	68	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.00	0.04	0.00
Queue Length 95th (ft)	0	3	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	0.0
Approach LOS			A

Intersection Summary			
Average Delay		7.3	
Intersection Capacity Utilization		7.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕	↗		↕	
Volume (vph)	0	0	221	90	0	0	87	623	495	0	460	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.95	0.95		1.00	1.00	1.00		1.00	
Fr _t		0.85	0.85	1.00	1.00		1.00	1.00	0.85		1.00	
Fl _t Protected		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	1681	1681		1770	1863	1583		1863	
Fl _t Permitted		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	1681	1681		1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	221	90	0	0	87	623	495	0	460	0
RTOR Reduction (vph)	0	106	105	0	0	0	0	0	83	0	0	0
Lane Group Flow (vph)	0	5	5	45	45	0	87	623	412	0	460	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		5.5	5.5	7.5	7.5		11.2	96.5	96.5		81.8	
Effective Green, g (s)		5.5	5.5	7.5	7.5		11.2	96.5	96.5		81.8	
Actuated g/C Ratio		0.05	0.05	0.06	0.06		0.09	0.80	0.80		0.68	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		69	69	105	105		165	1498	1273		1270	
v/s Ratio Prot		c0.00		c0.03	0.03		c0.05	c0.33			0.25	
v/s Ratio Perm			0.00						0.26			
v/c Ratio		0.07	0.07	0.43	0.43		0.53	0.42	0.32		0.36	
Uniform Delay, d ₁		54.8	54.8	54.2	54.2		51.9	3.5	3.1		8.1	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d ₂		0.5	0.5	2.8	2.8		3.0	0.9	0.7		0.8	
Delay (s)		55.3	55.3	57.0	57.0		54.9	4.3	3.8		8.9	
Level of Service		E	E	E	E		D	A	A		A	
Approach Delay (s)		55.3		57.0			7.7				8.9	
Approach LOS		E		E			A				A	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑↑	↑	
Volume (vph)	0	603	58	1139	411	0	0	0	0	806	3	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		0.97	1.00					0.97	1.00	
Frbp, ped/bikes		0.98		1.00	1.00					1.00	0.81	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.99		1.00	1.00					1.00	0.85	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3439		3433	1863					3433	1291	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3439		3433	1863					3433	1291	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	603	58	1139	411	0	0	0	0	806	3	244
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	177	0
Lane Group Flow (vph)	0	654	0	1139	411	0	0	0	0	806	70	0
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												
Actuated Green, G (s)		17.0		44.9	64.9					27.6	27.6	
Effective Green, g (s)		17.0		43.4	64.4					27.6	27.6	
Actuated g/C Ratio		0.17		0.43	0.64					0.28	0.28	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		585		1490	1200					948	356	
v/s Ratio Prot		c0.19		c0.33	0.22					c0.23	0.05	
v/s Ratio Perm												
v/c Ratio		1.12		0.76	0.34					0.85	0.20	
Uniform Delay, d1		41.5		24.0	8.1					34.2	27.7	
Progression Factor		1.00		0.16	0.16					1.00	1.00	
Incremental Delay, d2		73.7		1.3	0.2					8.1	0.6	
Delay (s)		115.2		5.0	1.4					42.3	28.3	
Level of Service		F		A	A					D	C	
Approach Delay (s)		115.2			4.1			0.0			39.0	
Approach LOS		F			A			A			D	

Intersection Summary

HCM Average Control Delay	37.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	131.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	355	1054	0	0	1499	1547	51	9	802	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frpb, ped/bikes	1.00	1.00			1.00	0.76		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	2109		1532	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	2109		1532	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	1054	0	0	1499	1547	51	9	802	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	644	0	229	17	0	0	0
Lane Group Flow (vph)	355	1054	0	0	1499	903	0	208	408	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	18.3	41.7			47.5	44.0		23.2	51.3			
Effective Green, g (s)	17.8	41.2			44.0	44.0		22.7	46.3			
Actuated g/C Ratio	0.18	0.41			0.44	0.44		0.23	0.46			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	315	1458			1557	928		348	696			
v/s Ratio Prot	c0.20	0.30			0.42	c0.23		c0.14	0.27			
v/s Ratio Perm						0.19						
v/c Ratio	1.13	0.72			0.96	0.97		0.60	0.59			
Uniform Delay, d1	41.1	24.6			27.2	27.4		34.6	19.8			
Progression Factor	1.04	0.12			0.79	1.64		1.00	1.00			
Incremental Delay, d2	69.5	0.7			10.8	17.3		4.1	2.0			
Delay (s)	112.1	3.6			32.3	62.4		38.7	21.7			
Level of Service	F	A			C	E		D	C			
Approach Delay (s)		30.9			47.6			30.3			0.0	
Approach LOS		C			D			C			A	

Intersection Summary

HCM Average Control Delay	40.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↗		↕	↗
Volume (vph)	196	1617	61	20	2519	36	175	15	13	40	14	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	3508		1759	5064			1781	1487		1751	1583
Flt Permitted	0.06	1.00		0.12	1.00			0.70	1.00		0.66	1.00
Satd. Flow (perm)	117	3508		229	5064			1311	1487		1197	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	196	1617	61	20	2519	36	175	15	13	40	14	259
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	11	0	0	147
Lane Group Flow (vph)	196	1676	0	20	2554	0	0	190	2	0	54	112
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8				4
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	72.8	72.8		60.0	60.0			19.1	19.1		19.1	19.1
Effective Green, g (s)	72.3	73.4		60.6	60.6			18.6	18.6		18.6	18.6
Actuated g/C Ratio	0.72	0.73		0.61	0.61			0.19	0.19		0.19	0.19
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	230	2575		139	3069			244	277		223	294
v/s Ratio Prot	c0.07	0.48			0.50							
v/s Ratio Perm	c0.54			0.09				c0.14	0.00		0.05	0.07
v/c Ratio	0.85	0.65		0.14	0.83			0.78	0.01		0.24	0.38
Uniform Delay, d1	28.9	6.8		8.5	15.7			38.7	33.2		34.7	35.7
Progression Factor	1.22	0.91		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	18.7	0.3		2.2	2.8			13.3	0.0		0.2	0.3
Delay (s)	53.8	6.5		10.7	18.5			52.0	33.2		34.9	36.0
Level of Service	D	A		B	B			D	C		C	D
Approach Delay (s)		11.4			18.4			50.8			35.8	
Approach LOS		B			B			D			D	

Intersection Summary

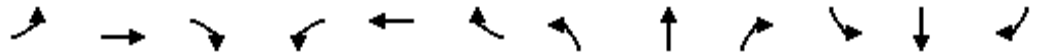
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↔		↔	↕↔		↔	↔		↔	↕↔	
Volume (vph)	403	1496	21	9	2175	87	13	1	17	107	0	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.95	1.00		0.92	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3526		1770	3509		1685	1460		1628	1437	
Flt Permitted	0.95	1.00		0.95	1.00		0.28	1.00		0.75	1.00	
Satd. Flow (perm)	3433	3526		1770	3509		496	1460		1278	1437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	403	1496	21	9	2175	87	13	1	17	107	0	182
RTOR Reduction (vph)	0	1	0	0	2	0	0	15	0	0	141	0
Lane Group Flow (vph)	403	1516	0	9	2260	0	13	3	0	107	41	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot		Prot		Perm			Perm				
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	19.0	118.1		1.6	100.7		19.5	19.5		19.5	19.5	
Effective Green, g (s)	18.0	118.4		0.6	101.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio	0.12	0.79		0.00	0.67		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	2783		7	2363		63	185		162	182	
v/s Ratio Prot	c0.12	0.43		0.01	c0.64			0.00			0.03	
v/s Ratio Perm							0.03			c0.08		
v/c Ratio	0.98	0.54		1.29	0.96		0.21	0.02		0.66	0.23	
Uniform Delay, d1	65.8	5.8		74.7	22.5		58.7	57.3		62.4	58.9	
Progression Factor	1.00	1.00		0.96	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.0	0.8		196.7	1.4		0.6	0.0		7.6	0.2	
Delay (s)	103.8	6.6		268.2	16.7		59.3	57.3		70.0	59.1	
Level of Service	F	A		F	B		E	E		E	E	
Approach Delay (s)		27.0			17.7			58.2			63.2	
Approach LOS		C			B			E			E	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	1027	326	84	1360	214	509	328	283	355	635	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	0.88
Frbp, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.94	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3334		1770	3423		1681	1750	1495	1770	1863	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3334		1770	3423		1681	1750	1495	1770	1863	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	266	1027	326	84	1360	214	509	328	283	355	635	432
RTOR Reduction (vph)	0	20	0	0	8	0	0	0	116	0	0	179
Lane Group Flow (vph)	266	1333	0	84	1566	0	412	425	167	355	635	253
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	1	6		5	2		8	8		7		7
Permitted Phases									8			7
Actuated Green, G (s)	16.0	60.9		8.1	53.0		31.5	31.5	31.5	35.5	35.5	35.5
Effective Green, g (s)	15.0	60.9		7.1	53.0		31.0	31.0	31.0	35.0	35.0	35.5
Actuated g/C Ratio	0.10	0.41		0.05	0.35		0.21	0.21	0.21	0.23	0.23	0.24
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	177	1354		84	1209		347	362	309	413	435	660
v/s Ratio Prot	c0.15	0.40		0.05	c0.46		c0.25	0.24		0.20	c0.34	
v/s Ratio Perm									0.11			0.09
v/c Ratio	1.50	0.98		1.00	1.29		1.19	1.17	0.54	0.86	1.46	0.38
Uniform Delay, d1	67.5	44.1		71.4	48.5		59.5	59.5	53.1	55.1	57.5	48.1
Progression Factor	1.11	0.88		0.93	0.88		1.00	1.00	1.00	0.88	0.90	0.86
Incremental Delay, d2	249.8	18.8		89.9	138.0		109.6	103.7	1.0	11.9	216.0	0.1
Delay (s)	324.7	57.4		156.1	180.7		169.1	163.2	54.2	60.4	267.6	41.2
Level of Service	F	E		F	F		F	F	D	E	F	D
Approach Delay (s)		101.3			179.4			137.8			147.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	141.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	128.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗		↖	↗	↖	↖	↗	↖
Volume (vph)	26	1617	31	6	1387	15	17	13	28	70	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.93	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1470	1770	3531		1717	1863	1583	1770	1863	1491
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1770	3539	1470	1770	3531		1324	1863	1583	1395	1863	1491
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1617	31	6	1387	15	17	13	28	70	37	170
RTOR Reduction (vph)	0	0	6	0	1	0	0	0	22	0	0	99
Lane Group Flow (vph)	26	1617	25	6	1401	0	17	13	6	70	37	71
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	1.6	45.5	45.5	0.8	44.7		17.2	17.2	17.2	17.2	17.2	17.2
Effective Green, g (s)	1.1	46.0	46.0	0.3	45.2		16.7	16.7	16.7	16.7	16.7	16.7
Actuated g/C Ratio	0.01	0.61	0.61	0.00	0.60		0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	26	2171	902	7	2128		295	415	352	311	415	332
v/s Ratio Prot	c0.01	c0.46		0.00	0.40			0.01			0.02	
v/s Ratio Perm			0.02				0.01		0.00	c0.05		0.05
v/c Ratio	1.00	0.74	0.03	0.86	0.66		0.06	0.03	0.02	0.23	0.09	0.21
Uniform Delay, d1	36.9	10.3	5.7	37.3	9.8		23.0	22.8	22.7	23.9	23.1	23.8
Progression Factor	1.09	0.93	1.01	0.82	1.14		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	114.1	1.0	0.0	209.2	1.3		0.0	0.0	0.0	0.1	0.0	0.1
Delay (s)	154.5	10.6	5.8	239.7	12.5		23.0	22.8	22.8	24.0	23.2	23.9
Level of Service	F	B	A	F	B		C	C	C	C	C	C
Approach Delay (s)		12.8			13.5			22.8			23.8	
Approach LOS		B			B			C			C	

Intersection Summary

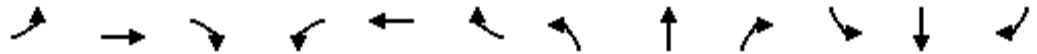
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1615	39	7	1267	4	42	13	54	24	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			0.98			0.98	
Frt	1.00	1.00		1.00	1.00			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1749	3515		1770	3536			1622			1663	
Flt Permitted	0.13	1.00		0.10	1.00			0.90			0.90	
Satd. Flow (perm)	234	3515		186	3536			1481			1524	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	1615	39	7	1267	4	42	13	54	24	13	22
RTOR Reduction (vph)	0	2	0	0	0	0	0	8	0	0	14	0
Lane Group Flow (vph)	12	1652	0	7	1271	0	0	101	0	0	45	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	39.5	39.5		39.5	39.5			27.5			27.5	
Effective Green, g (s)	40.0	40.0		40.0	40.0			27.0			27.0	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.36			0.36	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	125	1875		99	1886			533			549	
v/s Ratio Prot		c0.47			0.36							
v/s Ratio Perm	0.05			0.04				c0.07			0.03	
v/c Ratio	0.10	0.88		0.07	0.67			0.19			0.08	
Uniform Delay, d1	8.6	15.4		8.5	12.7			16.5			15.8	
Progression Factor	0.22	0.70		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	4.8		1.4	1.9			0.8			0.3	
Delay (s)	3.0	15.6		9.9	14.7			17.3			16.1	
Level of Service	A	B		A	B			B			B	
Approach Delay (s)		15.5			14.7			17.3			16.1	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1642	262	50	0	50	110	3898	20	1708	891
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1642	262	50	0	50	110	3898	20	1708	891
RTOR Reduction (vph)	0	123	0	0	0	0	0	8	0	513
Lane Group Flow (vph)	1642	139	0	100	0	110	3898	12	1708	378
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	
Permitted Phases								2		6 14
Actuated Green, G (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Effective Green, g (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Actuated g/C Ratio	0.18	0.18		0.12		0.05	0.52	0.34	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	618	285		205		89	3326	537	2717	671
v/s Ratio Prot	c0.48	0.09		c0.06		0.06	c0.61		0.27	
v/s Ratio Perm								0.01		0.24
v/c Ratio	2.66	0.49		0.49		1.24	1.17	0.02	0.63	0.56
Uniform Delay, d1	41.0	36.9		41.1		47.5	24.0	22.0	22.6	21.8
Progression Factor	1.00	1.00		1.00		1.13	0.62	0.87	1.00	1.00
Incremental Delay, d2	750.3	1.3		1.8		144.3	79.2	0.0	0.5	1.1
Delay (s)	791.3	38.2		42.9		198.0	94.1	19.1	23.1	22.9
Level of Service	F	D		D		F	F	B	C	C
Approach Delay (s)				42.9			96.6			
Approach LOS				D			F			

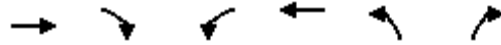
Intersection Summary

HCM Average Control Delay	204.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 11: Bercut Dr & Bannon St

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩	↩	
Volume (veh/h)	41	13	0	87	13	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	13	0	87	13	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			54		134	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		134	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1551		859	1022

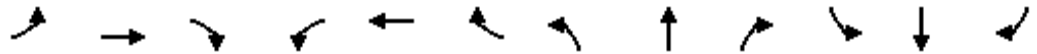
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	87	14
Volume Left	0	0	13
Volume Right	13	0	1
cSH	1700	1551	869
Volume to Capacity	0.03	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		14.6%	ICU Level of Service A
Analysis Period (min)		15	
Description: SB coded as EB			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Volume (vph)	11	21	11	63	43	307	62	597	182	293	752	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.97			1.00	0.81	1.00	0.97		1.00	1.00	
Flpb, ped/bikes		0.96			0.94	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	0.96		1.00	1.00	
Flt Protected		0.99			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1663			1708	1290	1770	1751		1770	1858	
Flt Permitted		0.92			0.83	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1549			1468	1290	1770	1751		1770	1858	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	21	11	63	43	307	62	597	182	293	752	6
RTOR Reduction (vph)	0	10	0	0	0	267	0	11	0	0	0	0
Lane Group Flow (vph)	0	33	0	0	106	40	62	768	0	293	758	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		11.6			11.6	11.6	6.7	48.1		18.3	59.7	
Effective Green, g (s)		11.6			11.6	11.6	6.7	48.1		18.3	59.7	
Actuated g/C Ratio		0.13			0.13	0.13	0.07	0.53		0.20	0.66	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		200			189	166	132	936		360	1232	
v/s Ratio Prot							0.04	c0.44		c0.17	0.41	
v/s Ratio Perm		0.02			c0.07	0.03						
v/c Ratio		0.17			0.56	0.24	0.47	0.82		0.81	0.61	
Uniform Delay, d1		34.9			36.8	35.2	39.9	17.4		34.2	8.6	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			3.8	0.7	2.6	8.0		13.2	2.3	
Delay (s)		35.3			40.6	36.0	42.6	25.4		47.4	10.9	
Level of Service		D			D	D	D	C		D	B	
Approach Delay (s)		35.3			37.2			26.6			21.1	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: North B Street & 12th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	233	314	58	305	31	55	1935	62	18	27	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.97		1.00	0.99			1.00		0.92		
Flpb, ped/bikes	1.00		0.98	1.00			1.00		1.00		
Frt	0.91		1.00	0.99			1.00		0.91		
Flt Protected	1.00		0.95	1.00			1.00		0.98		
Satd. Flow (prot)	3134		1741	1822			6370		1542		
Flt Permitted	1.00		0.25	1.00			1.00		0.98		
Satd. Flow (perm)	3134		463	1822			6370		1542		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	233	314	58	305	31	55	1935	62	18	27	4
RTOR Reduction (vph)	236	0	0	0	0	0	0	0	3	0	0
Lane Group Flow (vph)	311	0	58	336	0	0	2052	0	46	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	24.0		24.0	24.0			43.8		13.2		
Effective Green, g (s)	24.0		24.0	24.0			46.8		13.2		
Actuated g/C Ratio	0.24		0.24	0.24			0.47		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	752		111	437			2981		204		
v/s Ratio Prot	0.10			c0.18							
v/s Ratio Perm			0.13				0.32		c0.03		
v/c Ratio	0.41		0.52	0.77			0.69		0.22		
Uniform Delay, d1	32.1		33.0	35.4			20.9		38.8		
Progression Factor	1.00		1.01	1.00			1.00		1.00		
Incremental Delay, d2	0.8		8.0	9.1			1.3		1.2		
Delay (s)	32.8		41.3	44.5			22.2		40.0		
Level of Service	C		D	D			C		D		
Approach Delay (s)	32.8			44.0			22.2		40.0		
Approach LOS	C			D			C		D		

Intersection Summary

HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕		↖	↗	
Volume (vph)	34	25	23	88	0	164	0	477	23	179	636	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.96		1.00	0.85			0.99		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1756		1770	1583			1851		1770	1861	
Flt Permitted		0.98		0.95	1.00			1.00		0.38	1.00	
Satd. Flow (perm)		1756		1770	1583			1851		714	1861	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	34	25	23	88	0	164	0	477	23	179	636	3
RTOR Reduction (vph)	0	21	0	0	141	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	61	0	88	23	0	0	498	0	179	639	0
Turn Type	Split		Split		Perm			Perm				
Protected Phases	4	4	8		8	2			6			
Permitted Phases					2			6				
Actuated Green, G (s)	5.0		7.0	7.0	26.0			26.0	26.0	26.0		
Effective Green, g (s)	5.0		7.0	7.0	26.0			26.0	26.0	26.0		
Actuated g/C Ratio	0.10		0.14	0.14	0.52			0.52	0.52	0.52		
Clearance Time (s)	4.0		4.0	4.0	4.0			4.0	4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0	3.0			3.0	3.0	3.0		
Lane Grp Cap (vph)	176		248	222	963			371	968			
v/s Ratio Prot	c0.03		c0.05	0.01	0.27					c0.34		
v/s Ratio Perm								0.25				
v/c Ratio	0.35		0.35	0.10	0.52			0.48	0.66			
Uniform Delay, d1	21.0		19.5	18.8	7.9			7.7	8.8			
Progression Factor	1.00		1.00	1.00	1.00			1.00	1.00			
Incremental Delay, d2	1.2		0.9	0.2	2.0			4.4	3.5			
Delay (s)	22.2		20.3	19.0	9.9			12.1	12.3			
Level of Service	C		C	B	A			B	B			
Approach Delay (s)	22.2		19.4		9.9			12.3				
Approach LOS	C		B		A			B				

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔				↕↕
Volume (vph)	360	424	0	0	0	867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				0.95
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				3539
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	360	424	0	0	0	867
RTOR Reduction (vph)	78	246	0	0	0	0
Lane Group Flow (vph)	282	178	0	0	0	867
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				1486
v/s Ratio Prot	0.08	c0.11				c0.24
v/s Ratio Perm						
v/c Ratio	0.20	0.27				0.58
Uniform Delay, d1	9.2	9.5				11.1
Progression Factor	0.62	0.76				0.71
Incremental Delay, d2	0.3	1.0				1.7
Delay (s)	6.0	8.2				9.6
Level of Service	A	A				A
Approach Delay (s)	7.2		0.0			9.6
Approach LOS	A		A			A

Intersection Summary

HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	322	79	0	0	0	0	14	193	2	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.98						0.92			1.00	
Flpb, ped/bikes	1.00	1.00						1.00			0.99	
Frt	1.00	0.97						0.86			1.00	
Flt Protected	0.95	1.00						1.00			1.00	
Satd. Flow (prot)	1770	3379						2810			1844	
Flt Permitted	0.95	1.00						1.00			0.98	
Satd. Flow (perm)	1770	3379						2810			1820	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	322	79	0	0	0	0	14	193	2	19	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	120	0	0	0	0
Lane Group Flow (vph)	4	358	0	0	0	0	0	87	0	0	21	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Split						Perm					
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)	23.5	23.5						19.5			19.5	
Effective Green, g (s)	23.0	23.0						19.0			19.0	
Actuated g/C Ratio	0.46	0.46						0.38			0.38	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	814	1554						1068			692	
v/s Ratio Prot	0.00	c0.11						c0.03				
v/s Ratio Perm											0.01	
v/c Ratio	0.00	0.23						0.08			0.03	
Uniform Delay, d1	7.3	8.2						9.9			9.7	
Progression Factor	0.48	0.29						2.93			1.00	
Incremental Delay, d2	0.0	0.3						0.1			0.1	
Delay (s)	3.5	2.7						29.2			9.8	
Level of Service	A	A						C			A	
Approach Delay (s)		2.7			0.0			29.2			9.8	
Approach LOS		A			A			C			A	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑								↘	↙↑	
Volume (vph)	0	456	60	0	0	0	0	0	0	145	1049	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								0.91	0.91	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								0.93	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		3444								1494	3384	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		3444								1494	3384	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	456	60	0	0	0	0	0	0	145	1049	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	70	2	0
Lane Group Flow (vph)	0	496	0	0	0	0	0	0	0	60	1062	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		19.5								23.5	23.5	
Effective Green, g (s)		19.0								23.0	23.0	
Actuated g/C Ratio		0.38								0.46	0.46	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1309								687	1557	
v/s Ratio Prot		0.14										
v/s Ratio Perm										0.04	0.31	
v/c Ratio		0.38								0.09	0.68	
Uniform Delay, d1		11.2								7.6	10.6	
Progression Factor		0.59								0.31	0.61	
Incremental Delay, d2		0.8								0.2	2.2	
Delay (s)		7.4								2.6	8.7	
Level of Service		A								A	A	
Approach Delay (s)		7.4			0.0			0.0			8.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			7.8		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			48.1%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔↔		↔	↔↔			↔	↔
Volume (vph)	0	0	0	41	2265	65	292	106	0	0	13	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					1.00		1.00	1.00			0.86	0.85
Flt Protected					1.00		0.95	0.97			1.00	1.00
Satd. Flow (prot)					5049		1610	3295			1527	1504
Flt Permitted					1.00		0.95	0.97			1.00	1.00
Satd. Flow (perm)					5049		1610	3295			1527	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	41	2265	65	292	106	0	0	13	288
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	15	15
Lane Group Flow (vph)	0	0	0	0	2368	0	146	252	0	0	136	135
Confl. Peds. (#/hr)							36					
Turn Type				Perm			custom					custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					66.5		13.5	13.5			9.5	9.5
Effective Green, g (s)					66.0		13.0	13.0			9.0	9.0
Actuated g/C Ratio					0.66		0.13	0.13			0.09	0.09
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					3332		209	428			137	135
v/s Ratio Prot							c0.09	0.08			0.09	c0.09
v/s Ratio Perm					0.47							
v/c Ratio					0.71		0.70	0.59			1.00	1.00
Uniform Delay, d1					10.9		41.6	41.0			45.5	45.5
Progression Factor					0.63		0.97	0.97			1.10	1.10
Incremental Delay, d2					1.0		17.2	5.7			75.8	78.3
Delay (s)					7.9		57.5	45.3			126.0	128.6
Level of Service					A		E	D			F	F
Approach Delay (s)		0.0			7.9			49.7			127.3	
Approach LOS		A			A			D			F	

Intersection Summary

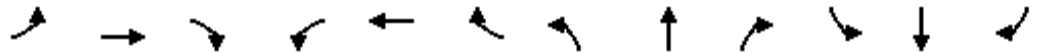
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



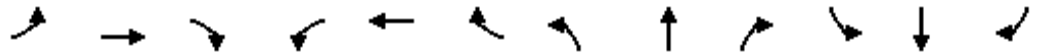
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	191	1731	0	0	0	0	0	689	651
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4800						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4800						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	191	1731	0	0	0	0	0	689	651
RTOR Reduction (vph)	0	0	0	19	1	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	153	1749	0	0	0	0	0	689	621
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				62.5	62.5						30.5	30.5
Effective Green, g (s)				62.0	62.0						30.0	30.0
Actuated g/C Ratio				0.62	0.62						0.30	0.30
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				875	2976						1062	767
v/s Ratio Prot											0.19	
v/s Ratio Perm				0.11	0.36							c0.24
v/c Ratio				0.17	0.59						0.65	0.81
Uniform Delay, d1				8.1	11.4						30.4	32.4
Progression Factor				1.00	1.00						0.74	0.72
Incremental Delay, d2				0.4	0.9						2.6	7.7
Delay (s)				8.5	12.2						25.0	31.0
Level of Service				A	B						C	C
Approach Delay (s)		0.0			11.9			0.0			27.9	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↕↗						↕		↘		
Volume (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.95		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.97		
Frt	1.00	1.00						0.91		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4801						1617		1720		
Flt Permitted	0.95	1.00						1.00		0.35		
Satd. Flow (perm)	1404	4801						1617		637		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	94	1427	0	0	0	0	0	407	0	67	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	24.5	24.5						18.5		18.5		
Effective Green, g (s)	24.0	24.0						18.0		18.0		
Actuated g/C Ratio	0.48	0.48						0.36		0.36		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	674	2304						582		229		
v/s Ratio Prot							c0.25					
v/s Ratio Perm	0.07	0.30								0.11		
v/c Ratio	0.14	0.62						0.70		0.29		
Uniform Delay, d1	7.2	9.6						13.7		11.4		
Progression Factor	0.54	0.47						1.00		0.75		
Incremental Delay, d2	0.4	1.1						6.9		2.5		
Delay (s)	4.3	5.7						20.5		11.0		
Level of Service	A							C		B		
Approach Delay (s)	5.6		0.0					20.5		11.0		
Approach LOS	A		A					C		B		

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	1515	332	0	0	0	0	0	0	225	650	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.98	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4885									4943	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4885									4943	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1515	332	0	0	0	0	0	0	225	650	0
RTOR Reduction (vph)	0	52	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	1795	0	0	0	0	0	0	0	0	865	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		24.5									18.5	
Effective Green, g (s)		24.0									18.0	
Actuated g/C Ratio		0.48									0.36	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2345									1779	
v/s Ratio Prot		0.37										
v/s Ratio Perm											0.18	
v/c Ratio		0.77									0.49	
Uniform Delay, d1		10.7									12.4	
Progression Factor		0.38									0.71	
Incremental Delay, d2		2.0									0.8	
Delay (s)		6.0									9.6	
Level of Service		A									A	
Approach Delay (s)		6.0			0.0			0.0			9.6	
Approach LOS		A			A			A			A	

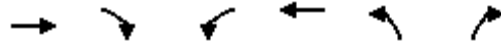
Intersection Summary

HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 33: Riverfront Dr & 5th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	34	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	34	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		68	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		68	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	94
cM capacity (veh/h)			1623		917	1085

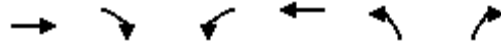
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	34	60
Volume Left	0	34	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.1	
Intersection Capacity Utilization		13.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	34	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	34	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		68	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		68	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	94
cM capacity (veh/h)			1623		917	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	34	60
Volume Left	0	34	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.1	
Intersection Capacity Utilization		13.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



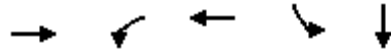
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕	↗		↕	
Volume (vph)	0	0	186	476	0	0	220	470	118	0	760	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.95	0.95		1.00	1.00	1.00		1.00	
Fr _t		0.85	0.85	1.00	1.00		1.00	1.00	0.85		1.00	
Fl _t Protected		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	1681	1681		1770	1863	1583		1863	
Fl _t Permitted		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	1681	1681		1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	186	476	0	0	220	470	118	0	760	0
RTOR Reduction (vph)	0	90	90	0	0	0	0	0	34	0	0	0
Lane Group Flow (vph)	0	3	3	238	238	0	220	470	84	0	760	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		5.5	5.5	27.8	27.8		22.8	106.2	106.2		79.9	
Effective Green, g (s)		5.5	5.5	27.8	27.8		22.8	106.2	106.2		79.9	
Actuated g/C Ratio		0.04	0.04	0.19	0.19		0.15	0.71	0.71		0.53	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		55	55	312	312		269	1319	1121		992	
v/s Ratio Prot		c0.00		c0.14	0.14		c0.12	0.25			c0.41	
v/s Ratio Perm			0.00						0.05			
v/c Ratio		0.06	0.06	0.76	0.76		0.82	0.36	0.07		0.77	
Uniform Delay, d ₁		69.8	69.8	58.0	58.0		61.6	8.6	6.8		27.7	
Progression Factor		1.00	1.00	1.00	1.00		1.23	0.32	0.01		1.00	
Incremental Delay, d ₂		0.5	0.5	10.5	10.5		1.8	0.1	0.0		5.6	
Delay (s)		70.2	70.2	68.5	68.5		77.8	2.8	0.1		33.3	
Level of Service		E	E	E	E		E	A	A		C	
Approach Delay (s)		70.2		68.5			22.8				33.3	
Approach LOS		E		E			C				C	

Intersection Summary

HCM Average Control Delay	40.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	542	498	244	1288	344
v/c Ratio	0.49	0.62	0.22	1.10	0.41
Control Delay	33.5	18.7	11.6	95.0	1.5
Queue Delay	0.0	0.0	2.1	10.5	0.0
Total Delay	33.5	18.7	13.6	105.6	1.5
Queue Length 50th (ft)	172	189	167	~582	0
Queue Length 95th (ft)	227	m245	m247	#717	0
Internal Link Dist (ft)	205		308		611
Turn Bay Length (ft)		100		300	
Base Capacity (vph)	1112	801	1102	1173	845
Starvation Cap Reductn	0	0	709	0	0
Spillback Cap Reductn	0	0	0	26	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.62	0.62	1.12	0.41

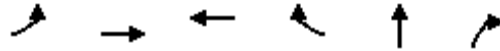
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	183	1589	698	561	762	747
v/c Ratio	0.62	1.00	0.56	0.63	1.10	1.02
Control Delay	64.0	24.8	22.6	9.0	92.2	68.9
Queue Delay	0.0	26.9	1.1	0.5	73.4	49.5
Total Delay	64.0	51.7	23.7	9.5	165.6	118.4
Queue Length 50th (ft)	131	~202	164	67	~603	~642
Queue Length 95th (ft)	m141	m192	182	91	#857	#895
Internal Link Dist (ft)		308	235		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	310	1587	1254	886	693	734
Starvation Cap Reductn	0	113	318	82	0	0
Spillback Cap Reductn	0	59	0	0	93	83
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.08	0.75	0.70	1.27	1.15

Intersection Summary

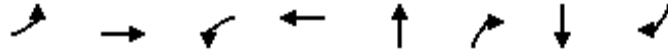
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) AM Peak (Mitigated)

3: Richard Blvd & Bercut Dr

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	206	2872	19	1074	93	7	44	110
v/c Ratio	0.52	1.03	0.30	0.30	0.49	0.03	0.22	0.35
Control Delay	4.2	33.3	23.8	6.2	54.3	24.9	44.7	10.7
Queue Delay	1.6	86.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	119.4	23.8	6.2	54.3	24.9	44.7	10.7
Queue Length 50th (ft)	41	~1345	8	176	63	1	29	0
Queue Length 95th (ft)	m40	m#1282	m22	165	116	14	63	49
Internal Link Dist (ft)		235		1336	410		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	446	2775	63	3614	267	295	285	398
Starvation Cap Reductn	116	447	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	105	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	1.23	0.30	0.31	0.35	0.02	0.15	0.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

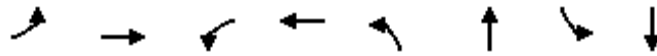
m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) AM Peak (Mitigated)

4: Richard Blvd & 5th Street

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	1940	10	1259	17	7	144	223
v/c Ratio	0.69	0.76	0.23	0.53	0.24	0.02	0.72	0.60
Control Delay	65.3	2.3	69.4	12.1	50.5	0.1	68.0	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.3	2.3	69.4	12.1	50.5	0.1	68.0	17.7
Queue Length 50th (ft)	71	10	8	265	11	0	104	29
Queue Length 95th (ft)	m66	m93	27	357	34	0	171	104
Internal Link Dist (ft)		684		1019		442		322
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	315	2561	44	2360	95	355	266	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.76	0.23	0.53	0.18	0.02	0.54	0.51

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richard Blvd & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	532	1547	171	1074	249	411	51	214	426	
v/c Ratio	1.29	1.08	1.20	1.18	0.72	1.13	0.15	0.65	1.22	0.21
Control Delay	191.8	90.5	196.0	139.1	68.3	138.3	22.7	66.7	173.3	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	45.0	0.0
Total Delay	191.8	90.5	196.0	139.1	68.3	138.3	22.7	67.3	218.3	16.0
Queue Length 50th (ft)	~660	~882	~203	~650	241	~488	14	196	~511	14
Queue Length 95th (ft)	#892	#1024	#360	#791	349	#714	53	290	#729	47
Internal Link Dist (ft)		1047		1171		1313			344	
Turn Bay Length (ft)	200		200		200		200	150		200
Base Capacity (vph)	413	1427	142	908	347	365	336	330	348	611
Starvation Cap Reductn	0	0	0	0	0	0	0	16	27	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.29	1.08	1.20	1.18	0.72	1.13	0.15	0.68	1.33	0.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

Baseline +Proj(Res) AM Peak (Mitigated)

6: Richard Blvd & 10th St

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1173	41	12	1209	14	20	11	13	11	36
v/c Ratio	0.76	0.42	0.04	0.20	0.54	0.08	0.08	0.05	0.07	0.04	0.15
Control Delay	69.9	7.0	3.3	64.6	12.9	39.0	39.0	18.5	40.2	39.1	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	7.0	3.3	64.6	12.9	39.0	39.0	18.5	40.2	39.1	13.8
Queue Length 50th (ft)	133	170	2	9	280	8	12	1	8	7	0
Queue Length 95th (ft)	199	270	15	m12	303	m25	m32	m13	26	23	29
Internal Link Dist (ft)		1201			827		1430			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	339	2798	1129	59	2250	272	382	333	284	382	333
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.42	0.04	0.20	0.54	0.05	0.05	0.03	0.05	0.03	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) AM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	1165	23	1177	81	46
v/c Ratio	0.13	0.72	0.19	0.73	0.12	0.07
Control Delay	9.0	14.6	14.5	16.5	9.0	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	14.6	14.5	16.5	9.0	9.5
Queue Length 50th (ft)	6	300	5	170	12	8
Queue Length 95th (ft)	m9	220	20	238	34	24
Internal Link Dist (ft)		827		1230	1822	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	122	1610	122	1614	652	674
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.72	0.19	0.73	0.12	0.07

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

8: Richard Blvd & 12th Street



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	940	76	40	100	1181	50	2993	1171
v/c Ratio	1.52	0.23	0.18	0.68	0.34	0.09	1.13	0.96
Control Delay	273.9	10.7	23.8	73.0	5.8	8.0	88.9	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	273.9	10.7	23.8	73.0	5.8	8.0	88.9	23.2
Queue Length 50th (ft)	~434	1	11	~77	44	2	~467	50
Queue Length 95th (ft)	#557	40	40	#182	45	m22	#537	#840
Internal Link Dist (ft)			320		814			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	331	305	148	3461	587	2638	1221
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.52	0.23	0.13	0.68	0.34	0.09	1.13	0.96

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) AM Peak (Mitigated)

15: North B Street & 7th Street

1/18/2007



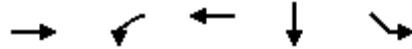
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	80	207	399	9	296	219	713
v/c Ratio	0.20	0.64	0.60	0.03	0.42	0.63	0.59
Control Delay	15.1	30.1	6.6	15.4	17.8	29.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	30.1	6.6	15.4	17.8	29.9	9.5
Queue Length 50th (ft)	17	66	0	2	80	72	132
Queue Length 95th (ft)	45	122	57	11	153	129	242
Internal Link Dist (ft)	1178	1158			2548		1287
Turn Bay Length (ft)							
Base Capacity (vph)	472	391	718	282	714	415	1204
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.53	0.56	0.03	0.41	0.53	0.59

Intersection Summary

Queues
16: North B Street & 12th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	249	35	449	2772	57
v/c Ratio	0.27	0.14	0.98	0.93	0.23
Control Delay	7.6	30.9	76.6	24.9	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	30.9	76.6	24.9	34.5
Queue Length 50th (ft)	10	19	304	~327	27
Queue Length 95th (ft)	41	47	#500	#398	63
Internal Link Dist (ft)	289		1610	1439	1822
Turn Bay Length (ft)		125			
Base Capacity (vph)	930	250	458	2995	321
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.14	0.98	0.93	0.18

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
21: F Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	48	143	238	188	672
v/c Ratio	0.19	0.42	0.50	0.29	0.48
Control Delay	19.8	9.9	18.9	14.9	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	9.9	18.9	14.9	5.2
Queue Length 50th (ft)	13	5	54	41	63
Queue Length 95th (ft)	33	40	114	87	156
Internal Link Dist (ft)		961	164		2548
Turn Bay Length (ft)					
Base Capacity (vph)	389	453	479	652	1386
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.32	0.50	0.29	0.48

Intersection Summary

Queues
23: G Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	229	274	684
v/c Ratio	0.14	0.33	0.46
Control Delay	3.8	5.3	9.9
Queue Delay	0.0	0.0	0.0
Total Delay	3.8	5.3	9.9
Queue Length 50th (ft)	0	0	50
Queue Length 95th (ft)	4	13	72
Internal Link Dist (ft)	295		93
Turn Bay Length (ft)			
Base Capacity (vph)	1585	824	1486
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.14	0.33	0.46

Intersection Summary

Queues
24: H Street & 6th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	20	433	300	25
v/c Ratio	0.03	0.28	0.24	0.04
Control Delay	2.5	3.0	1.1	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.5	3.0	1.1	9.4
Queue Length 50th (ft)	1	1	1	4
Queue Length 95th (ft)	m1	5	3	15
Internal Link Dist (ft)		321	377	99
Turn Bay Length (ft)				
Base Capacity (vph)	722	1535	1264	701
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.28	0.24	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	663	126	725
v/c Ratio	0.41	0.20	0.56
Control Delay	5.9	3.0	8.9
Queue Delay	0.0	0.0	0.0
Total Delay	5.9	3.0	8.9
Queue Length 50th (ft)	55	9	100
Queue Length 95th (ft)	63	13	106
Internal Link Dist (ft)	341		341
Turn Bay Length (ft)			
Base Capacity (vph)	1617	646	1288
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.20	0.56
Intersection Summary			

Queues
26: I Street & 6th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1136	31	242	39	36
v/c Ratio	0.71	0.06	0.24	0.16	0.15
Control Delay	14.7	17.1	18.0	8.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	17.1	18.0	8.9	5.5
Queue Length 50th (ft)	113	10	43	0	0
Queue Length 95th (ft)	154	m26	m65	13	3
Internal Link Dist (ft)	333		319	377	
Turn Bay Length (ft)					
Base Capacity (vph)	1606	483	1016	246	242
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.06	0.24	0.16	0.15

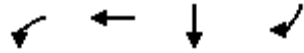
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	228	833	483	326
v/c Ratio	0.30	0.38	0.36	0.28
Control Delay	3.1	9.3	8.5	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.1	9.3	8.5	5.3
Queue Length 50th (ft)	3	56	73	32
Queue Length 95th (ft)	37	80	76	32
Internal Link Dist (ft)		1246	403	
Turn Bay Length (ft)				100
Base Capacity (vph)	761	2210	1345	1176
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.36	0.28

Intersection Summary

Queues
28: J St & 6th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	351	2342	42	28
v/c Ratio	0.35	0.69	0.12	0.10
Control Delay	8.5	10.9	25.4	24.8
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.9	10.9	25.4	24.8
Queue Length 50th (ft)	104	287	15	10
Queue Length 95th (ft)	156	311	44	m18
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	997	3404	339	269
Starvation Cap Reductn	237	35	0	0
Spillback Cap Reductn	0	83	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.71	0.12	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)
1/18/2007

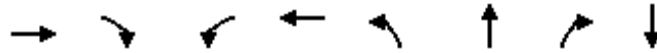


Lane Group	EBT	SBT
Lane Group Flow (vph)	2551	628
v/c Ratio	0.84	0.42
Control Delay	8.2	24.9
Queue Delay	0.0	0.0
Total Delay	8.3	24.9
Queue Length 50th (ft)	68	90
Queue Length 95th (ft)	65	123
Internal Link Dist (ft)	373	299
Turn Bay Length (ft)		
Base Capacity (vph)	3029	1509
Starvation Cap Reductn	8	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.84	0.42
Intersection Summary		

Queues
36: Signature & 7th Street

Baseline +Proj(Res) AM Peak (Mitigated)

1/18/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	111	110	45	45	87	623	495	460
v/c Ratio	0.22	0.22	0.37	0.37	0.53	0.41	0.36	0.36
Control Delay	1.0	1.0	60.9	60.9	62.6	4.7	1.4	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.5	0.8	1.9
Total Delay	1.0	1.0	60.9	60.9	62.6	6.2	2.2	11.9
Queue Length 50th (ft)	0	0	35	35	65	121	10	141
Queue Length 95th (ft)	0	0	74	74	115	197	36	244
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75		150	
Base Capacity (vph)	640	640	231	231	217	1508	1362	1280
Starvation Cap Reductn	0	0	0	0	0	662	541	642
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.19	0.19	0.40	0.74	0.60	0.72

Intersection Summary

Queues

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	661	1139	411	806	247
v/c Ratio	1.12	0.76	0.34	0.85	0.46
Control Delay	112.1	5.5	1.7	44.3	7.1
Queue Delay	0.0	2.1	1.5	0.1	0.0
Total Delay	112.1	7.6	3.2	44.4	7.1
Queue Length 50th (ft)	~254	69	14	250	1
Queue Length 95th (ft)	#371	m77	m15	#345	62
Internal Link Dist (ft)	205		310		611
Turn Bay Length (ft)		100		300	
Base Capacity (vph)	592	1490	1200	948	533
Starvation Cap Reductn	0	211	583	0	0
Spillback Cap Reductn	0	0	0	3	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.12	0.89	0.67	0.85	0.46

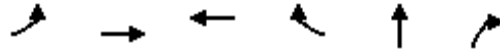
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	355	1054	1499	1547	437	425
v/c Ratio	1.12	0.72	0.89	0.98	0.76	0.55
Control Delay	109.0	3.9	24.5	29.4	21.0	18.4
Queue Delay	0.0	7.2	30.1	30.3	0.8	0.0
Total Delay	109.0	11.1	54.7	59.7	21.8	18.4
Queue Length 50th (ft)	~265	57	177	148	84	168
Queue Length 95th (ft)	m#295	m104	#403	#374	213	262
Internal Link Dist (ft)		310	238		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	316	1460	1681	1571	586	792
Starvation Cap Reductn	0	157	267	136	0	0
Spillback Cap Reductn	0	362	35	0	30	3
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.96	1.06	1.08	0.79	0.54

Intersection Summary

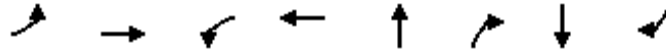
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) PM Peak (Mitigated)

3: Richard Blvd & Bercut Dr

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	1678	20	2555	190	13	54	259
v/c Ratio	0.85	0.65	0.14	0.83	0.78	0.05	0.24	0.59
Control Delay	50.4	8.2	14.6	20.6	59.2	14.7	34.8	16.9
Queue Delay	0.0	1.5	0.0	0.4	0.2	0.0	0.0	0.1
Total Delay	50.4	9.6	14.6	21.0	59.4	14.7	34.8	17.0
Queue Length 50th (ft)	58	337	6	517	109	0	28	41
Queue Length 95th (ft)	m#155	523	21	#610	184	16	62	115
Internal Link Dist (ft)		238		1267	432		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	251	2578	139	3070	312	364	285	514
Starvation Cap Reductn	0	655	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	141	7	0	0	18
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.87	0.14	0.87	0.62	0.04	0.19	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

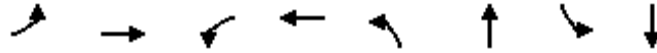
m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) PM Peak (Mitigated)

4: Richard Blvd & 5th Street

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	403	1517	9	2262	13	18	107	182
v/c Ratio	0.98	0.54	0.26	0.96	0.21	0.09	0.66	0.56
Control Delay	104.1	6.7	71.3	18.0	65.3	23.9	81.1	18.8
Queue Delay	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Total Delay	104.1	6.7	71.3	19.2	65.3	23.9	81.1	18.8
Queue Length 50th (ft)	206	228	9	557	11	1	99	18
Queue Length 95th (ft)	#317	347	m8	m394	35	26	168	97
Internal Link Dist (ft)		708		1052		442		361
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	412	2826	35	2363	72	227	186	346
Starvation Cap Reductn	0	0	0	32	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.54	0.26	0.97	0.18	0.08	0.58	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) PM Peak (Mitigated)

5: Richard Blvd & 7th Street

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	266	1353	84	1574	412	425	283	355	635	
v/c Ratio	1.50	0.99	1.00	1.29	1.19	1.17	0.67	0.86	1.46	0.51
Control Delay	296.2	56.9	153.2	172.6	159.4	154.1	34.3	64.5	253.2	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	16.9	0.0
Total Delay	296.2	56.9	153.2	172.6	159.4	154.1	34.3	68.8	270.1	20.4
Queue Length 50th (ft)	~355	325	~80	~1004	~508	~521	125	282	~864	82
Queue Length 95th (ft)	#543	#421	m#186	#1150	#734	#749	234	#498	#1077	150
Internal Link Dist (ft)		1043		1130		1403			382	
Turn Bay Length (ft)	200		200		200		200	200		200
Base Capacity (vph)	177	1376	84	1218	347	362	425	413	435	839
Starvation Cap Reductn	0	0	0	0	0	0	0	25	11	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.50	0.98	1.00	1.29	1.19	1.17	0.67	0.91	1.50	0.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) PM Peak (Mitigated)

6: Richard Blvd & 10th St

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1617	31	6	1402	17	13	28	70	37	170
v/c Ratio	0.31	0.70	0.03	0.07	0.63	0.06	0.03	0.08	0.23	0.09	0.39
Control Delay	41.9	12.0	5.5	29.5	15.3	18.2	17.5	7.6	21.8	19.1	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	12.0	5.5	29.5	15.3	18.2	17.5	7.6	21.8	19.1	9.0
Queue Length 50th (ft)	17	335	0	2	327	5	4	0	23	12	14
Queue Length 95th (ft)	m19	m#468	m5	m4	#447	19	16	16	52	31	55
Internal Link Dist (ft)		1121			996		1466			413	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	85	2302	962	83	2224	433	609	536	456	609	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.70	0.03	0.07	0.63	0.04	0.02	0.05	0.15	0.06	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

7: Richard Blvd & Dos Rios St

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	1654	7	1271	109	59
v/c Ratio	0.10	0.88	0.07	0.67	0.20	0.10
Control Delay	3.2	15.9	10.7	15.0	15.8	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	15.9	10.7	15.0	15.8	11.9
Queue Length 50th (ft)	2	480	1	210	30	11
Queue Length 95th (ft)	m0	17	8	279	65	35
Internal Link Dist (ft)		996		1190	1946	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	125	1876	99	1887	541	563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.88	0.07	0.67	0.20	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Res) PM Peak (Mitigated)

8: Richard Blvd & 12th Street

1/18/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1642	262	100	110	3898	20	1708	891
v/c Ratio	2.66	0.64	0.44	1.24	1.13	0.04	0.60	0.74
Control Delay	770.2	24.3	44.7	189.3	77.5	14.2	13.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	770.2	24.3	44.7	189.3	77.5	14.2	13.6	5.2
Queue Length 50th (ft)	~916	64	57	-86	-687	2	143	0
Queue Length 95th (ft)	#1051	151	107	m#111	#989	m3	167	42
Internal Link Dist (ft)			200		288			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	408	288	89	3443	558	2834	1197
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.66	0.64	0.35	1.24	1.13	0.04	0.60	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	106	307	62	779	293	758
v/c Ratio	0.20	0.56	0.71	0.41	0.82	0.82	0.61
Control Delay	28.9	47.4	13.9	46.6	27.2	53.9	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	47.4	13.9	46.6	27.2	53.9	12.5
Queue Length 50th (ft)	16	57	0	34	367	153	234
Queue Length 95th (ft)	45	104	76	74	#614	#307	396
Internal Link Dist (ft)	1178	1132			2462		1414
Turn Bay Length (ft)							
Base Capacity (vph)	284	261	482	166	948	367	1249
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.41	0.64	0.37	0.82	0.80	0.61

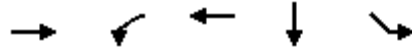
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
16: North B Street & 12th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	547	58	336	2052	49
v/c Ratio	0.55	0.52	0.77	0.66	0.21
Control Delay	16.0	51.1	48.0	12.9	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	51.1	48.0	12.9	35.1
Queue Length 50th (ft)	64	30	188	165	24
Queue Length 95th (ft)	117	m61	m274	190	57
Internal Link Dist (ft)	785		1656	1565	1946
Turn Bay Length (ft)		125			
Base Capacity (vph)	1016	116	455	3087	296
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.50	0.74	0.66	0.17

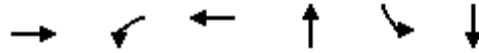
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	82	88	164	500	179	639
v/c Ratio	0.30	0.31	0.25	0.46	0.43	0.59
Control Delay	17.1	20.6	0.9	13.7	19.0	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	20.6	0.9	13.7	19.0	17.0
Queue Length 50th (ft)	16	23	0	98	35	141
Queue Length 95th (ft)	43	50	0	#269	#134	#371
Internal Link Dist (ft)	86		961	138		2462
Turn Bay Length (ft)						
Base Capacity (vph)	439	425	746	1084	418	1088
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.21	0.22	0.46	0.43	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
23: G Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	360	424	867
v/c Ratio	0.24	0.47	0.58
Control Delay	3.9	2.5	9.8
Queue Delay	0.0	0.0	0.0
Total Delay	3.9	2.5	9.8
Queue Length 50th (ft)	11	0	62
Queue Length 95th (ft)	20	0	81
Internal Link Dist (ft)	344		141
Turn Bay Length (ft)			
Base Capacity (vph)	1520	911	1486
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.47	0.58
Intersection Summary			

Queues
24: H Street & 6th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	4	401	207	21
v/c Ratio	0.00	0.25	0.17	0.03
Control Delay	3.5	2.2	5.9	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.5	2.2	5.9	10.0
Queue Length 50th (ft)	0	5	31	4
Queue Length 95th (ft)	m1	16	m50	14
Internal Link Dist (ft)		322	349	99
Turn Bay Length (ft)				
Base Capacity (vph)	814	1596	1187	692
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.00	0.25	0.17	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	516	130	1064
v/c Ratio	0.39	0.17	0.68
Control Delay	7.0	0.9	8.8
Queue Delay	0.0	0.0	0.0
Total Delay	7.0	0.9	8.8
Queue Length 50th (ft)	31	1	48
Queue Length 95th (ft)	64	0	62
Internal Link Dist (ft)	333		360
Turn Bay Length (ft)			
Base Capacity (vph)	1330	757	1558
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.17	0.68

Intersection Summary

Queues
26: I Street & 6th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2371	146	252	151	150
v/c Ratio	0.71	0.70	0.59	0.99	1.00
Control Delay	8.0	58.8	45.6	117.5	119.7
Queue Delay	0.1	0.0	0.0	0.0	0.0
Total Delay	8.1	58.8	45.6	117.5	119.7
Queue Length 50th (ft)	215	90	78	94	92
Queue Length 95th (ft)	226	m#180	m121	#230	#231
Internal Link Dist (ft)	345		362	349	
Turn Bay Length (ft)					
Base Capacity (vph)	3335	209	428	152	150
Starvation Cap Reductn	121	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.70	0.59	0.99	1.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

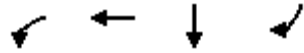
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	172	1750	689	651
v/c Ratio	0.19	0.59	0.65	0.82
Control Delay	6.3	12.4	25.3	30.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.3	12.4	25.3	30.3
Queue Length 50th (ft)	34	236	144	136
Queue Length 95th (ft)	67	282	182	#225
Internal Link Dist (ft)		1246	351	
Turn Bay Length (ft)				100
Base Capacity (vph)	894	2975	1062	797
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	24	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.59	0.65	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	94	1427	420	67
v/c Ratio	0.14	0.62	0.71	0.29
Control Delay	4.5	5.8	21.5	11.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.5	5.8	21.5	11.5
Queue Length 50th (ft)	9	49	96	11
Queue Length 95th (ft)	m18	62	#213	m19
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	674	2305	595	229
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.62	0.71	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007

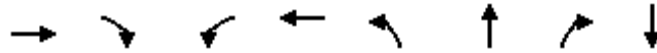


Lane Group	EBT	SBT
Lane Group Flow (vph)	1847	875
v/c Ratio	0.77	0.49
Control Delay	5.9	9.5
Queue Delay	0.0	0.0
Total Delay	5.9	9.5
Queue Length 50th (ft)	50	64
Queue Length 95th (ft)	56	105
Internal Link Dist (ft)	341	371
Turn Bay Length (ft)		
Base Capacity (vph)	2397	1789
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.77	0.49
Intersection Summary		

Queues
36: Signature & 7th Street

Baseline +Proj(Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	93	93	238	238	220	470	118	760
v/c Ratio	0.28	0.28	0.76	0.76	0.82	0.36	0.10	0.77
Control Delay	2.1	2.1	73.2	73.2	77.4	3.1	0.0	36.0
Queue Delay	0.4	0.4	22.0	22.0	0.0	2.3	0.0	110.5
Total Delay	2.5	2.5	95.2	95.2	77.4	5.3	0.0	146.5
Queue Length 50th (ft)	0	0	234	234	208	46	0	594
Queue Length 95th (ft)	0	0	318	318	m135	m17	m0	847
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75		150	
Base Capacity (vph)	424	424	330	330	284	1318	1155	992
Starvation Cap Reductn	0	0	0	0	0	690	0	379
Spillback Cap Reductn	118	118	86	86	0	0	0	159
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30	0.98	0.98	0.77	0.75	0.10	1.24

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
1: Richard Blvd & I-5 SB Off

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑↑	↑	
Volume (vph)	0	516	61	493	243	0	0	0	0	1476	0	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		0.97	1.00					0.97	1.00	
Frbp, ped/bikes		0.98		1.00	1.00					1.00	0.78	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.98		1.00	1.00					1.00	0.85	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3407		3433	1863					3433	1232	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3407		3433	1863					3433	1232	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	516	61	493	243	0	0	0	0	1476	0	344
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	221	0
Lane Group Flow (vph)	0	569	0	493	243	0	0	0	0	1476	123	0
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		
Protected Phases		2		1 9 3 12 13						4	4	
Permitted Phases												
Actuated Green, G (s)		38.0		28.5	69.5					43.0	43.0	
Effective Green, g (s)		38.0		27.0	69.0					43.0	43.0	
Actuated g/C Ratio		0.32		0.22	0.57					0.36	0.36	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		1079		772	1071					1230	441	
v/s Ratio Prot		c0.17		c0.14	0.13					c0.43	0.10	
v/s Ratio Perm												
v/c Ratio		0.53		0.64	0.23					1.20	0.28	
Uniform Delay, d1		33.6		42.1	12.5					38.5	27.5	
Progression Factor		1.00		0.42	1.03					1.00	1.00	
Incremental Delay, d2		1.2		2.0	0.2					98.1	0.7	
Delay (s)		34.8		19.5	13.0					136.6	28.2	
Level of Service		C		B	B					F	C	
Approach Delay (s)		34.8			17.4			0.0			116.1	
Approach LOS		C			B			A			F	

Intersection Summary

HCM Average Control Delay	77.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	148.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	183	1811	0	0	692	554	44	0	1644	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.55		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1521		1514	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1521		1514	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	1811	0	0	692	554	44	0	1644	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	369	0	103	3	0	0	0
Lane Group Flow (vph)	183	1811	0	0	692	185	0	747	835	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	20.5	56.3			43.5	40.0		45.0	56.7			
Effective Green, g (s)	20.0	55.8			40.0	40.0		44.5	51.7			
Actuated g/C Ratio	0.17	0.46			0.33	0.33		0.37	0.43			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	295	1646			1180	507		561	648			
v/s Ratio Prot	0.10	c0.51			0.20	0.02		c0.49	c0.56			
v/s Ratio Perm						0.10						
v/c Ratio	0.62	1.10			0.59	0.36		1.33	1.29			
Uniform Delay, d1	46.5	32.1			33.1	30.4		37.8	34.2			
Progression Factor	1.30	0.24			0.73	4.18		1.00	1.00			
Incremental Delay, d2	0.5	46.2			1.1	0.9		161.0	141.4			
Delay (s)	60.8	53.9			25.2	127.8		198.7	175.5			
Level of Service	E	D			C	F		F	F			
Approach Delay (s)		54.6			70.8			187.2			0.0	
Approach LOS		D			E			F			A	

Intersection Summary

HCM Average Control Delay	104.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	148.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	206	3109	164	19	1051	10	77	16	7	28	16	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1762	5021		1770	5070			1789	1481		1753	1583
Flt Permitted	0.23	1.00		0.05	1.00			0.73	1.00		0.80	1.00
Satd. Flow (perm)	426	5021		87	5070			1364	1481		1454	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	3109	164	19	1051	10	77	16	7	28	16	110
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	3	0	0	95
Lane Group Flow (vph)	206	3269	0	19	1060	0	0	93	4	0	44	15
Confl. Peds. (#/hr)	36		36	36		36			36	36		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	94.8	94.8		84.8	84.8			17.1	17.1		17.1	17.1
Effective Green, g (s)	94.3	95.4		85.4	85.4			16.6	16.6		16.6	16.6
Actuated g/C Ratio	0.79	0.80		0.71	0.71			0.14	0.14		0.14	0.14
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	402	3992		62	3608			189	205		201	219
v/s Ratio Prot	0.03	c0.65			0.21							
v/s Ratio Perm	0.38			0.22				c0.07	0.00		0.03	0.01
v/c Ratio	0.51	0.82		0.31	0.29			0.49	0.02		0.22	0.07
Uniform Delay, d1	3.8	7.2		6.4	6.3			47.8	44.7		45.9	45.0
Progression Factor	0.90	0.98		0.75	0.35			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1		10.0	0.2			0.7	0.0		0.2	0.0
Delay (s)	3.5	7.2		14.8	2.4			48.5	44.7		46.1	45.0
Level of Service	A	A		B	A			D	D		D	D
Approach Delay (s)		6.9			2.6			48.3			45.3	
Approach LOS		A			A			D			D	

Intersection Summary

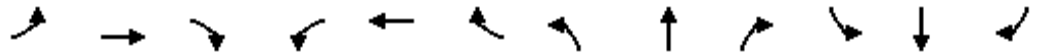
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	108.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↔		↔	↑↔		↔	↔		↔	↔	
Volume (vph)	528	1984	12	10	1181	59	17	0	7	153	1	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	0.93	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.94	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3534		1770	3504		1713	1473		1666	1475	
Flt Permitted	0.95	1.00		0.95	1.00		0.24	1.00		0.75	1.00	
Satd. Flow (perm)	3433	3534		1770	3504		429	1473		1321	1475	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	528	1984	12	10	1181	59	17	0	7	153	1	233
RTOR Reduction (vph)	0	0	0	0	3	0	0	6	0	0	197	0
Lane Group Flow (vph)	528	1996	0	10	1237	0	17	1	0	153	37	0
Confl. Peds. (#/hr)			36			36	36		36	36		36
Turn Type	Prot		Prot		Perm			Perm				
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	22.5	86.4		4.0	67.9		18.8	18.8		18.8	18.8	
Effective Green, g (s)	21.5	86.7		3.0	68.2		18.3	18.3		18.3	18.3	
Actuated g/C Ratio	0.18	0.72		0.02	0.57		0.15	0.15		0.15	0.15	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	615	2553		44	1991		65	225		201	225	
v/s Ratio Prot	c0.15	c0.56		0.01	0.35			0.00			0.02	
v/s Ratio Perm							0.04			c0.12		
v/c Ratio	0.86	0.78		0.23	0.62		0.26	0.00		0.76	0.16	
Uniform Delay, d1	47.8	10.6		57.4	17.3		44.9	43.1		48.8	44.2	
Progression Factor	1.09	0.43		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.6	1.4		1.0	1.5		0.8	0.0		14.1	0.1	
Delay (s)	58.8	5.9		58.3	18.8		45.7	43.1		62.9	44.3	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		17.0			19.1			44.9			51.7	
Approach LOS		B			B			D			D	

Intersection Summary

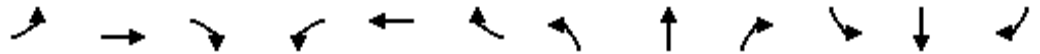
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	588	1218	338	171	913	358	437	480	51	203	410	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	0.88
Frbp, ped/bikes	1.00	0.98		1.00	0.97		1.00	1.00	0.94	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3354		1770	3300		1681	1762	1495	1770	1863	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3354		1770	3300		1681	1762	1495	1770	1863	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	588	1218	338	171	913	358	437	480	51	203	410	135
RTOR Reduction (vph)	0	17	0	0	28	0	0	0	21	0	0	87
Lane Group Flow (vph)	588	1539	0	171	1243	0	393	524	30	203	410	48
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	1	6		5	2		8	8		7		7
Permitted Phases									8			7
Actuated Green, G (s)	33.0	66.0		11.0	44.0		35.5	35.5	35.5	23.5	23.5	23.5
Effective Green, g (s)	32.0	66.0		10.0	44.0		35.0	35.0	35.0	23.0	23.0	23.5
Actuated g/C Ratio	0.21	0.44		0.07	0.29		0.23	0.23	0.23	0.15	0.15	0.16
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	378	1476		118	968		392	411	349	271	286	437
v/s Ratio Prot	c0.33	0.46		0.10	c0.38		0.23	c0.30		0.11	c0.22	
v/s Ratio Perm									0.02			0.02
v/c Ratio	1.56	1.04		1.45	1.28		1.00	1.27	0.09	0.75	1.43	0.11
Uniform Delay, d1	59.0	42.0		70.0	53.0		57.5	57.5	45.0	60.7	63.5	54.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	262.7	35.4		243.0	136.0		46.1	141.5	0.0	9.5	214.1	0.0
Delay (s)	321.7	77.4		313.0	189.0		103.6	199.0	45.0	70.2	277.6	54.3
Level of Service	F	E		F	F		F	F	D	E	F	D
Approach Delay (s)		144.4			203.7			152.1			181.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	167.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	130.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑	↗	↘	↑	↗
Volume (vph)	175	1165	41	12	1319	87	14	20	11	13	11	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1421	1770	3484		1682	1863	1583	1770	1863	1437
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1421	1770	3484		1328	1863	1583	1386	1863	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1165	41	12	1319	87	14	20	11	13	11	36
RTOR Reduction (vph)	0	0	7	0	3	0	0	0	10	0	0	31
Lane Group Flow (vph)	175	1165	34	12	1403	0	14	20	1	13	11	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	16.1	90.9	90.9	1.7	76.5		15.9	15.9	15.9	15.9	15.9	15.9
Effective Green, g (s)	15.6	91.4	91.4	1.2	77.0		15.4	15.4	15.4	15.4	15.4	15.4
Actuated g/C Ratio	0.13	0.76	0.76	0.01	0.64		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	230	2696	1082	18	2236		170	239	203	178	239	184
v/s Ratio Prot	c0.10	0.33		0.01	c0.40			c0.01			0.01	
v/s Ratio Perm			0.02			0.01		0.00	0.01			0.00
v/c Ratio	0.76	0.43	0.03	0.67	0.63	0.08	0.08	0.01	0.07	0.05	0.05	0.03
Uniform Delay, d1	50.4	5.1	3.5	59.2	12.9	46.1	46.1	45.6	46.0	45.9	45.9	45.7
Progression Factor	1.00	1.00	1.00	1.08	0.82	1.00	1.00	1.02	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.5	0.5	0.1	33.8	0.8	0.1	0.1	0.0	0.1	0.0	0.0	0.0
Delay (s)	62.9	5.6	3.5	97.9	11.4	46.0	46.1	46.3	46.1	45.9	45.8	45.8
Level of Service	E	A	A	F	B	D	D	D	D	D	D	D
Approach Delay (s)		12.8			12.1		46.2				45.9	
Approach LOS		B			B		D				D	

Intersection Summary

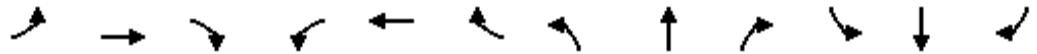
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	1107	50	23	1342	32	35	22	24	17	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			0.98			0.99	
Frt	1.00	0.99		1.00	1.00			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1756	3498		1747	3517			1694			1731	
Flt Permitted	0.15	1.00		0.15	1.00			0.90			0.93	
Satd. Flow (perm)	269	3498		267	3517			1560			1633	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	1107	50	23	1342	32	35	22	24	17	19	10
RTOR Reduction (vph)	0	5	0	0	3	0	0	14	0	0	6	0
Lane Group Flow (vph)	16	1152	0	23	1371	0	0	67	0	0	40	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	27.0	27.0		27.0	27.0			25.0			25.0	
Effective Green, g (s)	27.5	27.5		27.5	27.5			24.5			24.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.41			0.41	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	123	1603		122	1612			637			667	
v/s Ratio Prot		0.33			c0.39							
v/s Ratio Perm	0.06			0.09				c0.04			0.02	
v/c Ratio	0.13	0.72		0.19	0.85			0.10			0.06	
Uniform Delay, d1	9.4	13.1		9.6	14.4			11.0			10.8	
Progression Factor	0.69	0.93		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	2.6		3.4	5.9			0.3			0.2	
Delay (s)	8.5	14.8		13.0	20.3			11.3			10.9	
Level of Service	A	B		B	C			B			B	
Approach Delay (s)		14.7			20.2			11.3			10.9	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



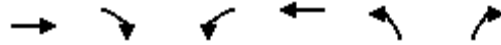
Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	932	76	20	0	20	100	1181	50	2993	1368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		5.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	932	76	20	0	20	100	1181	50	2993	1368
RTOR Reduction (vph)	0	63	0	18	0	0	0	33	0	586
Lane Group Flow (vph)	932	13	0	22	0	100	1181	17	2993	782
Confl. Peds. (#/hr)		36								36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	6 14
Permitted Phases								2		6
Actuated Green, G (s)	18.0	18.0		11.8		8.3	52.7	34.2	39.4	39.4
Effective Green, g (s)	18.0	17.0		10.8		8.3	52.7	34.2	39.4	39.4
Actuated g/C Ratio	0.18	0.17		0.11		0.08	0.53	0.34	0.39	0.39
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	618	269		183		147	3377	541	2525	624
v/s Ratio Prot	c0.27	0.01		c0.01		c0.06	0.18		0.47	c0.49
v/s Ratio Perm								0.01		
v/c Ratio	1.51	0.05		0.12		0.68	0.35	0.03	1.19	1.25
Uniform Delay, d1	41.0	34.7		40.3		44.6	13.7	21.9	30.3	30.3
Progression Factor	1.00	1.00		1.00		1.07	0.73	1.00	1.00	1.00
Incremental Delay, d2	237.0	0.0		0.1		11.6	0.1	0.1	87.7	126.8
Delay (s)	278.0	34.8		40.4		59.3	10.1	22.0	118.0	157.1
Level of Service	F	C		D		E	B	C	F	F
Approach Delay (s)				40.4			14.2			
Approach LOS				D			B			

Intersection Summary

HCM Average Control Delay	126.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis Baseline +Proj(Office) AM peak (Mitigated)
 11: Bercut Dr & Bannon St 1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	102	14	0	35	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	14	0	35	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	490					
pX, platoon unblocked						
vC, conflicting volume			116		144	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		144	109
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %						
		100		100		100
cM capacity (veh/h)			1473	849		945

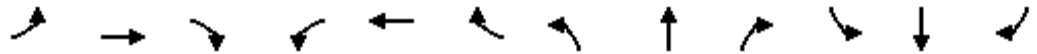
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	116	35	1
Volume Left	0	0	0
Volume Right	14	0	1
cSH	1700	1473	945
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	8.8
Lane LOS	A		
Approach Delay (s)	0.0	0.0	8.8
Approach LOS	A		

Intersection Summary			
Average Delay			0.1
Intersection Capacity Utilization	16.2%		ICU Level of Service
Analysis Period (min)	15		A
Description: SB coded as EB			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔		↔	↔	
Volume (vph)	12	47	21	171	36	527	9	412	13	214	697	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.96			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783			1789	1583	1770	1854		1770	1859	
Flt Permitted		0.94			0.78	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1698			1457	1583	1770	1854		1770	1859	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	47	21	171	36	527	9	412	13	214	697	9
RTOR Reduction (vph)	0	16	0	0	0	337	0	2	0	0	0	0
Lane Group Flow (vph)	0	64	0	0	207	190	9	423	0	214	706	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		13.2			13.2	13.2	0.8	24.4		10.4	34.0	
Effective Green, g (s)		13.2			13.2	13.2	0.8	24.4		10.4	34.0	
Actuated g/C Ratio		0.22			0.22	0.22	0.01	0.41		0.17	0.57	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		374			321	348	24	754		307	1053	
v/s Ratio Prot							0.01	0.23		c0.12	c0.38	
v/s Ratio Perm		0.04			c0.14	0.12						
v/c Ratio		0.17			0.64	0.55	0.38	0.56		0.70	0.67	
Uniform Delay, d1		19.0			21.3	20.7	29.4	13.7		23.3	9.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			4.4	1.8	9.6	3.0		6.7	3.4	
Delay (s)		19.2			25.7	22.5	38.9	16.7		30.1	12.5	
Level of Service		B			C	C	D	B		C	B	
Approach Delay (s)		19.2			23.4			17.2			16.6	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
16: North B Street & 12th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑↑		↘		
Volume (vph)	40	204	35	548	29	23	2577	172	34	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	1.00		1.00	1.00			1.00		0.97		
Flpb, ped/bikes	1.00		0.97	1.00			1.00		1.00		
Frt	0.87		1.00	0.99			0.99		0.95		
Flt Protected	1.00		0.95	1.00			1.00		0.97		
Satd. Flow (prot)	3095		1717	1840			6313		1664		
Flt Permitted	1.00		0.56	1.00			1.00		0.97		
Satd. Flow (perm)	3095		1008	1840			6313		1664		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	204	35	548	29	23	2577	172	34	16	7
RTOR Reduction (vph)	153	0	0	0	0	0	0	0	5	0	0
Lane Group Flow (vph)	91	0	35	577	0	0	2772	0	52	0	0
Confl. Peds. (#/hr)			36		36	36		36			36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	25.0		25.0	25.0			42.8		13.2		
Effective Green, g (s)	25.0		25.0	25.0			45.8		13.2		
Actuated g/C Ratio	0.25		0.25	0.25			0.46		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	774		252	460			2891		220		
v/s Ratio Prot	0.03			c0.31							
v/s Ratio Perm			0.03				0.44		c0.03		
v/c Ratio	0.12		0.14	1.25			0.96		0.24		
Uniform Delay, d1	29.0		29.1	37.5			26.2		38.9		
Progression Factor	1.00		0.99	1.03			1.00		1.00		
Incremental Delay, d2	0.1		0.5	131.1			9.6		1.2		
Delay (s)	29.1		29.3	169.5			35.8		40.0		
Level of Service	C		C	F			D		D		
Approach Delay (s)	29.1			161.5			35.8		40.0		
Approach LOS	C			F			D		D		

Intersection Summary

HCM Average Control Delay	56.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘			↕		↗	↘	
Volume (vph)	0	0	0	48	19	124	25	339	3	188	618	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor				1.00	1.00			1.00		1.00	1.00	
Fr _t				1.00	0.87			1.00		1.00	0.99	
Fl _t Protected				0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)				1770	1620			1854		1770	1843	
Fl _t Permitted				0.95	1.00			0.95		0.59	1.00	
Satd. Flow (perm)				1770	1620			1770		1099	1843	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	48	19	124	25	339	3	188	618	47
RTOR Reduction (vph)	0	0	0	0	109	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	48	34	0	0	367	0	188	663	0
Turn Type	Split		Split		Perm		Perm					
Protected Phases	4	4		8	8			2				6
Permitted Phases							2			6		
Actuated Green, G (s)				6.1	6.1			35.9		35.9	35.9	
Effective Green, g (s)				6.1	6.1			35.9		35.9	35.9	
Actuated g/C Ratio				0.12	0.12			0.72		0.72	0.72	
Clearance Time (s)				4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)				3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)				216	198			1271		789	1323	
v/s Ratio Prot				c0.03	0.02						c0.36	
v/s Ratio Perm								0.21		0.17		
v/c Ratio				0.22	0.17			0.29		0.24	0.50	
Uniform Delay, d ₁				19.8	19.7			2.5		2.4	3.1	
Progression Factor				1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d ₂				0.5	0.4			0.6		0.7	1.4	
Delay (s)				20.3	20.1			3.1		3.1	4.5	
Level of Service				C	C			A		A	A	
Approach Delay (s)		0.0			20.2			3.1			4.2	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔				↔↔
Volume (vph)	229	403	0	0	0	677
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				0.95
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				3539
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	403	0	0	0	677
RTOR Reduction (vph)	133	234	0	0	0	0
Lane Group Flow (vph)	96	169	0	0	0	677
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				1486
v/s Ratio Prot	0.03	c0.11				c0.19
v/s Ratio Perm						
v/c Ratio	0.07	0.25				0.46
Uniform Delay, d1	8.7	9.4				10.4
Progression Factor	1.00	1.00				0.84
Incremental Delay, d2	0.1	0.9				1.0
Delay (s)	8.7	10.3				9.7
Level of Service	A	B				A
Approach Delay (s)	9.8		0.0			9.7
Approach LOS	A		A			A

Intersection Summary			
HCM Average Control Delay		9.7	HCM Level of Service A
HCM Volume to Capacity ratio		0.36	
Actuated Cycle Length (s)		50.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization		42.9%	ICU Level of Service A
Analysis Period (min)		15	
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↖			↗	
Volume (vph)	20	378	55	0	0	0	0	20	280	5	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.99						0.92			1.00	
Flpb, ped/bikes	0.93	1.00						1.00			0.99	
Frt	1.00	0.98						0.86			1.00	
Flt Protected	0.95	1.00						1.00			0.99	
Satd. Flow (prot)	1642	3435						2809			1827	
Flt Permitted	0.95	1.00						1.00			0.95	
Satd. Flow (perm)	1642	3435						2809			1752	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	378	55	0	0	0	0	20	280	5	20	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	140	0	0	0	0
Lane Group Flow (vph)	20	410	0	0	0	0	0	160	0	0	25	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1								2			
Actuated Green, G (s)	22.5	22.5						20.5			20.5	
Effective Green, g (s)	22.0	22.0						20.0			20.0	
Actuated g/C Ratio	0.44	0.44						0.40			0.40	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	722	1511						1124			701	
v/s Ratio Prot		c0.12						c0.06				
v/s Ratio Perm	0.01										0.01	
v/c Ratio	0.03	0.27						0.14			0.04	
Uniform Delay, d1	7.9	8.9						9.5			9.1	
Progression Factor	0.30	0.32						0.29			1.00	
Incremental Delay, d2	0.1	0.4						0.3			0.1	
Delay (s)	2.5	3.2						3.0			9.2	
Level of Service	A	A						A			A	
Approach Delay (s)		3.2			0.0			3.0			9.2	
Approach LOS		A			A			A			A	

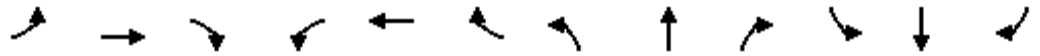
Intersection Summary

HCM Average Control Delay	3.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007

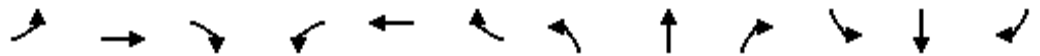


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑								↘	↙↑		
Volume (vph)	0	631	32	0	0	0	0	0	0	140	704	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								0.91	0.91		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.93	1.00		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		3500								1494	3382		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		3500								1494	3382		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	631	32	0	0	0	0	0	0	140	704	0	
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	78	2	0	
Lane Group Flow (vph)	0	656	0	0	0	0	0	0	0	48	716	0	
Confl. Peds. (#/hr)			72							72			
Turn Type										Perm			
Protected Phases		1									2		
Permitted Phases										2			
Actuated Green, G (s)		23.5								19.5	19.5		
Effective Green, g (s)		23.0								19.0	19.0		
Actuated g/C Ratio		0.46								0.38	0.38		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1610								568	1285		
v/s Ratio Prot		0.19											
v/s Ratio Perm										0.03	0.21		
v/c Ratio		0.41								0.08	0.56		
Uniform Delay, d1		9.0								9.9	12.2		
Progression Factor		0.58								0.91	0.68		
Incremental Delay, d2		0.8								0.3	1.6		
Delay (s)		6.0								9.3	9.9		
Level of Service		A								A	A		
Approach Delay (s)		6.0			0.0			0.0			9.8		
Approach LOS		A			A			A			A		
Intersection Summary													
HCM Average Control Delay			8.1		HCM Level of Service					A			
HCM Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			42.9%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←↑↑		↑	←↑			↑	↑
Volume (vph)	0	0	0	53	1007	73	34	239	0	0	20	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Frt					0.99		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4970		1610	3388			1640	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4970		1610	3388			1640	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	53	1007	73	34	239	0	0	20	55
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	16	31
Lane Group Flow (vph)	0	0	0	0	1117	0	31	242	0	0	23	5
Confl. Peds. (#/hr)				72		72						
Turn Type				Perm		custom						custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					16.5		15.5	15.5			7.5	7.5
Effective Green, g (s)					16.0		15.0	15.0			7.0	7.0
Actuated g/C Ratio					0.32		0.30	0.30			0.14	0.14
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1590		483	1016			230	211
v/s Ratio Prot							0.02	c0.07			c0.01	0.00
v/s Ratio Perm					0.22							
v/c Ratio					0.70		0.06	0.24			0.10	0.02
Uniform Delay, d1					14.9		12.5	13.2			18.7	18.6
Progression Factor					0.82		1.34	1.32			0.63	0.65
Incremental Delay, d2					2.5		0.2	0.5			0.8	0.2
Delay (s)					14.7		16.9	17.9			12.7	12.3
Level of Service					B		B	B			B	B
Approach Delay (s)		0.0			14.7			17.8			12.5	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	253	808	0	0	0	0	0	479	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4788						3539	2787
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4788						3539	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	253	808	0	0	0	0	0	479	323
RTOR Reduction (vph)	0	0	0	113	6	0	0	0	0	0	0	117
Lane Group Flow (vph)	0	0	0	115	827	0	0	0	0	0	479	206
Confl. Peds. (#/hr)				72								
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				23.5	23.5						19.5	19.5
Effective Green, g (s)				23.0	23.0						19.0	19.0
Actuated g/C Ratio				0.46	0.46						0.38	0.38
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				650	2202						1345	1059
v/s Ratio Prot											c0.14	
v/s Ratio Perm				0.08	0.17							0.07
v/c Ratio				0.18	0.38						0.36	0.19
Uniform Delay, d1				7.9	8.8						11.1	10.4
Progression Factor				1.00	1.00						0.72	1.14
Incremental Delay, d2				0.6	0.5						0.6	0.4
Delay (s)				8.5	9.3						8.7	12.2
Level of Service				A	A						A	B
Approach Delay (s)		0.0			9.1			0.0			10.1	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↔↕↕						↔		↘		
Volume (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.94		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.94		
Frt	1.00	1.00						0.89		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4796						1564		1669		
Flt Permitted	0.95	1.00						1.00		0.73		
Satd. Flow (perm)	1404	4796						1564		1282		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	390	2303	0	0	0	0	0	8	34	28	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	351	2342	0	0	0	0	0	32	0	28	0	0
Confl. Peds. (#/hr)	36								36	36		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	71.5	71.5						21.5		21.5		
Effective Green, g (s)	71.0	71.0						21.0		21.0		
Actuated g/C Ratio	0.71	0.71						0.21		0.21		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	997	3405						328		269		
v/s Ratio Prot								0.02				
v/s Ratio Perm	0.25	0.49								c0.02		
v/c Ratio	0.35	0.69						0.10		0.10		
Uniform Delay, d1	5.6	8.2						31.9		31.9		
Progression Factor	1.34	1.18						1.00		0.74		
Incremental Delay, d2	0.8	0.9						0.6		0.7		
Delay (s)	8.3	10.6						32.4		24.2		
Level of Service	A	B						C		C		
Approach Delay (s)		10.3			0.0			32.4			24.2	
Approach LOS		B			A			C			C	

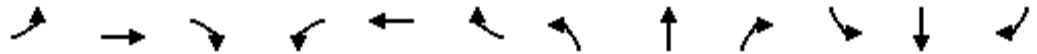
Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 29: J St & 7th Street

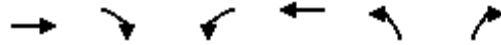
Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2194	357	0	0	0	0	0	0	265	358	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.97	
Frt		0.98									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		4929									4852	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		4929									4852	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2194	357	0	0	0	0	0	0	265	358	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	2529	0	0	0	0	0	0	0	0	617	0
Confl. Peds. (#/hr)			36							36		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		61.5									31.5	
Effective Green, g (s)		61.0									31.0	
Actuated g/C Ratio		0.61									0.31	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3007									1504	
v/s Ratio Prot		0.51										
v/s Ratio Perm											0.13	
v/c Ratio		0.84									0.41	
Uniform Delay, d1		15.6									27.3	
Progression Factor		0.37									0.89	
Incremental Delay, d2		2.4									0.8	
Delay (s)		8.2									25.0	
Level of Service		A									C	
Approach Delay (s)		8.2			0.0			0.0			25.0	
Approach LOS		A			A			A			C	
Intersection Summary												
HCM Average Control Delay			11.5									HCM Level of Service B
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			100.0								8.0	Sum of lost time (s)
Intersection Capacity Utilization			72.1%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis Baseline +Proj(Office) AM peak (Mitigated)
 33: Riverfront Dr & 5th Street 1/18/2007

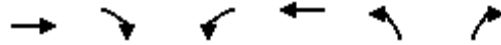


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	0	0	46	0	0	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	46	0	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0		92	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		92	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1623		882	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	46	26
Volume Left	0	46	0
Volume Right	0	0	26
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.02
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis Baseline +Proj(Office) AM peak (Mitigated)
 34: Riverfront Dr & 7th Street 1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	→
Volume (veh/h)	0	0	68	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	68	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		136	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		136	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	100
cM capacity (veh/h)			1623		822	1085

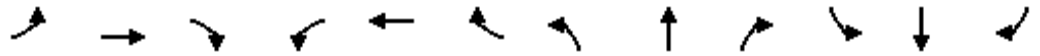
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	68	0
Volume Left	0	68	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.00	0.04	0.00
Queue Length 95th (ft)	0	3	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	0.0
Approach LOS			A

Intersection Summary			
Average Delay		7.3	
Intersection Capacity Utilization		7.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 36: Signature & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↗	↖	↗		↕	
Volume (vph)	0	0	173	90	0	0	289	642	495	0	485	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.95	0.95		1.00	1.00	1.00		1.00	
Fr _t		0.85	0.85	1.00	1.00		1.00	1.00	0.85		1.00	
Fl _t Protected		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	1681	1681		1770	1863	1583		1863	
Fl _t Permitted		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	1681	1681		1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	173	90	0	0	289	642	495	0	485	0
RTOR Reduction (vph)	0	83	82	0	0	0	0	0	80	0	0	0
Lane Group Flow (vph)	0	4	4	45	45	0	289	642	415	0	485	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		5.5	5.5	7.5	7.5		24.1	96.5	96.5		68.9	
Effective Green, g (s)		5.5	5.5	7.5	7.5		24.1	96.5	96.5		68.9	
Actuated g/C Ratio		0.05	0.05	0.06	0.06		0.20	0.80	0.80		0.57	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		69	69	105	105		355	1498	1273		1070	
v/s Ratio Prot		c0.00		c0.03	0.03		c0.16	0.34			c0.26	
v/s Ratio Perm			0.00						0.26			
v/c Ratio		0.06	0.06	0.43	0.43		0.81	0.43	0.33		0.45	
Uniform Delay, d ₁		54.8	54.8	54.2	54.2		45.8	3.5	3.1		14.7	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d ₂		0.4	0.3	2.8	2.8		13.3	0.9	0.7		1.4	
Delay (s)		55.1	55.1	57.0	57.0		59.1	4.4	3.8		16.1	
Level of Service		E	E	E	E		E	A	A		B	
Approach Delay (s)		55.1		57.0			15.3				16.1	
Approach LOS		E		E			B				B	

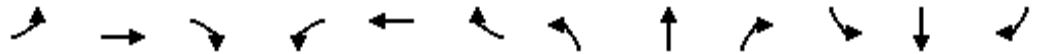
Intersection Summary

HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: Richard Blvd & I-5 SB Off

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑↑	↑	
Volume (vph)	0	603	58	1265	440	0	0	0	0	808	3	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		0.97	1.00					0.97	1.00	
Frbp, ped/bikes		0.98		1.00	1.00					1.00	0.81	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.99		1.00	1.00					1.00	0.85	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3439		3433	1863					3433	1291	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3439		3433	1863					3433	1291	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	603	58	1265	440	0	0	0	0	808	3	244
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	188	0
Lane Group Flow (vph)	0	653	0	1265	440	0	0	0	0	808	59	0
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												
Actuated Green, G (s)		16.0		50.5	69.5					23.0	23.0	
Effective Green, g (s)		16.0		49.0	69.0					23.0	23.0	
Actuated g/C Ratio		0.16		0.49	0.69					0.23	0.23	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		550		1682	1285					790	297	
v/s Ratio Prot		c0.19		c0.37	0.24					c0.24	0.05	
v/s Ratio Perm												
v/c Ratio		1.19		0.75	0.34					1.02	0.20	
Uniform Delay, d1		42.0		20.6	6.3					38.5	31.1	
Progression Factor		1.00		0.11	0.11					1.00	1.00	
Incremental Delay, d2		101.8		1.0	0.1					37.9	0.7	
Delay (s)		143.8		3.3	0.8					76.4	31.8	
Level of Service		F		A	A					E	C	
Approach Delay (s)		143.8			2.7			0.0			66.0	
Approach LOS		F			A			A			E	

Intersection Summary

HCM Average Control Delay	49.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	137.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	355	1057	0	0	1654	1707	51	9	806	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.80		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	2216		1532	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	2216		1532	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	1057	0	0	1654	1707	51	9	806	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	628	0	228	10	0	0	0
Lane Group Flow (vph)	355	1057	0	0	1654	1079	0	211	417	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					custom	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15	11	8 16	8 16	8 11 16			
Permitted Phases						6 15						
Actuated Green, G (s)	14.9	36.7			51.5	48.0		22.6	56.3			
Effective Green, g (s)	14.4	36.2			48.0	48.0		22.1	51.3			
Actuated g/C Ratio	0.14	0.36			0.48	0.48		0.22	0.51			
Clearance Time (s)						4.0						
Vehicle Extension (s)						5.0						
Lane Grp Cap (vph)	255	1281			1699	1064		339	772			
v/s Ratio Prot	c0.20	0.30			0.47	c0.30		c0.14	0.28			
v/s Ratio Perm						0.19						
v/c Ratio	1.39	0.83			0.97	1.01		0.62	0.54			
Uniform Delay, d1	42.8	29.0			25.4	26.0		35.2	16.4			
Progression Factor	1.15	0.13			0.83	0.94		1.00	1.00			
Incremental Delay, d2	178.7	0.5			10.2	23.0		5.0	1.4			
Delay (s)	227.9	4.2			31.2	47.6		40.1	17.8			
Level of Service	F	A			C	D		D	B			
Approach Delay (s)		60.5			39.5			29.1			0.0	
Approach LOS		E			D			C			A	

Intersection Summary

HCM Average Control Delay	43.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	137.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑			↖	↗		↖	↗
Volume (vph)	196	1624	61	20	2834	36	175	15	13	40	14	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.94		1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00	1.00		0.97	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5040		1756	5066			1781	1487		1751	1583
Flt Permitted	0.06	1.00		0.13	1.00			0.70	1.00		0.66	1.00
Satd. Flow (perm)	116	5040		246	5066			1311	1487		1197	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	196	1624	61	20	2834	36	175	15	13	40	14	259
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	11	0	0	129
Lane Group Flow (vph)	196	1682	0	20	2869	0	0	190	2	0	54	130
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	72.8	72.8		60.9	60.9			19.1	19.1		19.1	19.1
Effective Green, g (s)	72.3	73.4		61.5	61.5			18.6	18.6		18.6	18.6
Actuated g/C Ratio	0.72	0.73		0.62	0.62			0.19	0.19		0.19	0.19
Clearance Time (s)	3.5	4.6		4.6	4.6			3.5	3.5		3.5	3.5
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	215	3699		151	3116			244	277		223	294
v/s Ratio Prot	c0.07	0.33			0.57							
v/s Ratio Perm	c0.59			0.08				c0.14	0.00		0.05	0.08
v/c Ratio	0.91	0.45		0.13	0.92			0.78	0.01		0.24	0.44
Uniform Delay, d1	31.7	5.3		8.1	17.1			38.7	33.2		34.7	36.1
Progression Factor	1.06	0.95		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	28.2	0.0		1.8	5.8			13.3	0.0		0.2	0.4
Delay (s)	61.8	5.0		9.9	22.9			52.0	33.2		34.9	36.5
Level of Service	E	A		A	C			D	C		C	D
Approach Delay (s)		11.0			22.8			50.8			36.2	
Approach LOS		B			C			D			D	

Intersection Summary

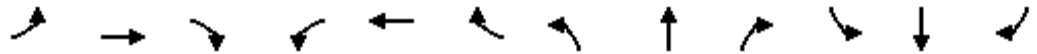
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↔		↔	↕↔		↔	↔		↔	↕↔	
Volume (vph)	407	1498	21	9	2473	91	13	1	17	120	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.5	4.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3526		1770	3511		1660	1460		1770	1437	
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3526		1770	3511		1105	1460		1770	1437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	407	1498	21	9	2473	91	13	1	17	120	0	200
RTOR Reduction (vph)	0	1	0	0	2	0	0	15	0	0	105	0
Lane Group Flow (vph)	407	1518	0	9	2562	0	13	3	0	120	95	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot		Prot		Perm				Prot			
Protected Phases	1	6		5	2			8		7	4	
Permitted Phases		6			2		8					
Actuated Green, G (s)	15.0	106.8		1.6	93.4		18.8	18.8		8.0	30.8	
Effective Green, g (s)	14.0	107.1		0.6	93.7		18.3	18.3		7.5	30.3	
Actuated g/C Ratio	0.09	0.71		0.00	0.62		0.12	0.12		0.05	0.20	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		4.0	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	320	2518		7	2193		135	178		89	290	
v/s Ratio Prot	c0.12	0.43		0.01	c0.73			0.00		c0.07	c0.07	
v/s Ratio Perm							0.01					
v/c Ratio	1.27	0.60		1.29	1.17		0.10	0.02		1.35	0.33	
Uniform Delay, d1	68.0	10.8		74.7	28.2		58.5	57.9		71.2	51.2	
Progression Factor	1.00	1.00		0.96	0.87		1.00	1.00		1.00	1.00	
Incremental Delay, d2	144.6	1.1		196.7	76.3		0.1	0.0		214.1	0.2	
Delay (s)	212.6	11.9		268.1	100.8		58.6	58.0		285.3	51.4	
Level of Service	F	B		F	F		E	E		F	D	
Approach Delay (s)		54.3			101.4			58.2			139.1	
Approach LOS		D			F			E			F	

Intersection Summary

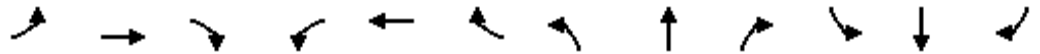
HCM Average Control Delay	84.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	268	1033	333	84	1364	213	512	327	283	516	873	437
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	0.88
Frbp, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.94	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3332		1770	3424		1681	1749	1495	1770	1863	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3332		1770	3424		1681	1749	1495	1770	1863	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	268	1033	333	84	1364	213	512	327	283	516	873	437
RTOR Reduction (vph)	0	20	0	0	8	0	0	0	85	0	0	132
Lane Group Flow (vph)	268	1346	0	84	1569	0	410	429	198	516	873	305
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	1	6		5	2		8	8		7		7
Permitted Phases									8			7
Actuated Green, G (s)	14.0	57.0		6.0	49.0		30.5	30.5	30.5	42.5	42.5	42.5
Effective Green, g (s)	13.0	57.0		5.0	49.0		30.0	30.0	30.0	42.0	42.0	42.5
Actuated g/C Ratio	0.09	0.38		0.03	0.33		0.20	0.20	0.20	0.28	0.28	0.28
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	153	1266		59	1119		336	350	299	496	522	790
v/s Ratio Prot	c0.15	0.40		0.05	c0.46		0.24	c0.25		0.29	c0.47	
v/s Ratio Perm									0.13			0.11
v/c Ratio	1.75	1.06		1.42	1.40		1.22	1.23	0.66	1.04	1.67	0.39
Uniform Delay, d1	68.5	46.5		72.5	50.5		60.0	60.0	55.3	54.0	54.0	43.3
Progression Factor	1.14	0.81		0.89	0.88		1.00	1.00	1.00	0.89	0.90	0.82
Incremental Delay, d2	357.9	40.9		254.8	185.5		123.0	124.4	4.2	43.3	308.0	0.1
Delay (s)	436.3	78.5		319.7	229.8		183.0	184.4	59.6	91.5	356.5	35.4
Level of Service	F	E		F	F		F	F	E	F	F	D
Approach Delay (s)		137.2			234.3			152.4			204.8	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	185.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	141.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

Baseline+Proj(Office) PM Peak (Mitigated)
1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	26	1785	31	6	1390	15	17	13	28	70	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.93	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1470	1770	3531		1717	1863	1583	1770	1863	1491
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1770	3539	1470	1770	3531		1324	1863	1583	1395	1863	1491
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1785	31	6	1390	15	17	13	28	70	37	170
RTOR Reduction (vph)	0	0	6	0	1	0	0	0	22	0	0	99
Lane Group Flow (vph)	26	1785	25	6	1404	0	17	13	6	70	37	71
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	1.6	45.5	45.5	0.8	44.7		17.2	17.2	17.2	17.2	17.2	17.2
Effective Green, g (s)	1.1	46.0	46.0	0.3	45.2		16.7	16.7	16.7	16.7	16.7	16.7
Actuated g/C Ratio	0.01	0.61	0.61	0.00	0.60		0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	26	2171	902	7	2128		295	415	352	311	415	332
v/s Ratio Prot	c0.01	c0.50		0.00	0.40			0.01			0.02	
v/s Ratio Perm			0.02				0.01		0.00	c0.05		0.05
v/c Ratio	1.00	0.82	0.03	0.86	0.66		0.06	0.03	0.02	0.23	0.09	0.21
Uniform Delay, d1	36.9	11.3	5.7	37.3	9.8		23.0	22.8	22.7	23.9	23.1	23.8
Progression Factor	0.89	1.47	1.35	0.83	1.17		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.0	0.3	0.0	209.0	1.3		0.0	0.0	0.0	0.1	0.0	0.1
Delay (s)	85.9	16.9	7.7	240.0	12.8		23.0	22.8	22.8	24.0	23.2	23.9
Level of Service	F	B	A	F	B		C	C	C	C	C	C
Approach Delay (s)		17.8			13.8			22.8			23.8	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1783	39	7	1270	4	42	13	54	24	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			0.98			0.98	
Frt	1.00	1.00		1.00	1.00			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1749	3517		1770	3536			1622			1663	
Flt Permitted	0.13	1.00		0.10	1.00			0.90			0.90	
Satd. Flow (perm)	233	3517		186	3536			1481			1524	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	1783	39	7	1270	4	42	13	54	24	13	22
RTOR Reduction (vph)	0	2	0	0	0	0	0	5	0	0	14	0
Lane Group Flow (vph)	12	1820	0	7	1274	0	0	104	0	0	45	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	39.5	39.5		39.5	39.5			27.5			27.5	
Effective Green, g (s)	40.0	40.0		40.0	40.0			27.0			27.0	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.36			0.36	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	124	1876		99	1886			533			549	
v/s Ratio Prot		c0.52			0.36							
v/s Ratio Perm	0.05			0.04				c0.07			0.03	
v/c Ratio	0.10	0.97		0.07	0.68			0.19			0.08	
Uniform Delay, d1	8.6	16.9		8.5	12.8			16.5			15.8	
Progression Factor	0.17	0.81		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	11.1		1.4	2.0			0.8			0.3	
Delay (s)	2.5	24.9		9.9	14.7			17.3			16.1	
Level of Service	A	C		A	B			B			B	
Approach Delay (s)		24.7			14.7			17.3			16.1	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007

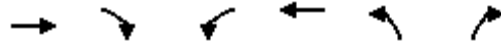


Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1810	262	50	0	50	110	3898	20	1708	894
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.5	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583		1695		1770	6408	1583	6408	1583
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583		1695		1770	6408	1583	6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1810	262	50	0	50	110	3898	20	1708	894
RTOR Reduction (vph)	0	112	0	0	0	0	0	8	0	515
Lane Group Flow (vph)	1810	150	0	100	0	110	3898	12	1708	379
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4	4	3	3		5	2 10		6 14	
Permitted Phases								2		6 14
Actuated Green, G (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Effective Green, g (s)	18.0	18.0		12.1		5.0	51.9	33.9	42.4	42.4
Actuated g/C Ratio	0.18	0.18		0.12		0.05	0.52	0.34	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0		4.5		5.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	618	285		205		89	3326	537	2717	671
v/s Ratio Prot	c0.53	0.10		c0.06		0.06	c0.61		0.27	
v/s Ratio Perm								0.01		0.24
v/c Ratio	2.93	0.53		0.49		1.24	1.17	0.02	0.63	0.56
Uniform Delay, d1	41.0	37.2		41.1		47.5	24.0	22.0	22.6	21.8
Progression Factor	1.00	1.00		1.00		1.13	0.62	0.87	1.00	1.00
Incremental Delay, d2	872.4	1.8		1.8		144.3	79.2	0.0	0.5	1.1
Delay (s)	913.4	38.9		42.9		198.2	94.2	19.1	23.1	22.9
Level of Service	F	D		D		F	F	B	C	C
Approach Delay (s)				42.9			96.6			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	240.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	122.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis Baseline+Proj(Office) PM Peak (Mitigated)
 11: Bercut Dr & Bannon St 1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	→
Volume (veh/h)	41	13	0	87	13	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	13	0	87	13	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			54		134	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		134	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1551		859	1022

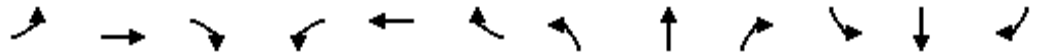
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	87	14
Volume Left	0	0	13
Volume Right	13	0	1
cSH	1700	1551	869
Volume to Capacity	0.03	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		14.6%	ICU Level of Service A
Analysis Period (min)		15	
Description: SB coded as EB			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Volume (vph)	11	21	11	63	43	309	62	597	182	402	888	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.97			1.00	0.81	1.00	0.97		1.00	1.00	
Flpb, ped/bikes		0.96			0.94	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	0.96		1.00	1.00	
Flt Protected		0.99			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1663			1708	1290	1770	1751		1770	1859	
Flt Permitted		0.92			0.83	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1549			1468	1290	1770	1751		1770	1859	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	21	11	63	43	309	62	597	182	402	888	6
RTOR Reduction (vph)	0	10	0	0	0	269	0	12	0	0	0	0
Lane Group Flow (vph)	0	33	0	0	106	40	62	767	0	402	894	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		11.6			11.6	11.6	5.7	42.5		23.9	60.7	
Effective Green, g (s)		11.6			11.6	11.6	5.7	42.5		23.9	60.7	
Actuated g/C Ratio		0.13			0.13	0.13	0.06	0.47		0.27	0.67	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		200			189	166	112	827		470	1254	
v/s Ratio Prot							0.04	c0.44		c0.23	0.48	
v/s Ratio Perm		0.02			c0.07	0.03						
v/c Ratio		0.17			0.56	0.24	0.55	0.93		0.86	0.71	
Uniform Delay, d1		34.9			36.8	35.2	40.9	22.3		31.4	9.2	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			3.8	0.8	5.8	18.0		14.1	3.5	
Delay (s)		35.3			40.6	36.0	46.7	40.3		45.5	12.7	
Level of Service		D			D	D	D	D		D	B	
Approach Delay (s)		35.3			37.2			40.8			22.9	
Approach LOS		D			D			D			C	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: North B Street & 12th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	233	423	58	307	31	55	1935	62	18	27	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.96		1.00	0.99			1.00		0.92		
Flpb, ped/bikes	1.00		0.99	1.00			1.00		1.00		
Frt	0.90		1.00	0.99			1.00		0.91		
Flt Protected	1.00		0.95	1.00			1.00		0.98		
Satd. Flow (prot)	3085		1747	1822			6370		1542		
Flt Permitted	1.00		0.17	1.00			1.00		0.98		
Satd. Flow (perm)	3085		307	1822			6370		1542		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	233	423	58	307	31	55	1935	62	18	27	4
RTOR Reduction (vph)	236	0	0	0	0	0	0	0	3	0	0
Lane Group Flow (vph)	420	0	58	338	0	0	2052	0	46	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	24.0		24.0	24.0			43.8		13.2		
Effective Green, g (s)	24.0		24.0	24.0			46.8		13.2		
Actuated g/C Ratio	0.24		0.24	0.24			0.47		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	740		74	437			2981		204		
v/s Ratio Prot	0.14			0.19							
v/s Ratio Perm			c0.19				0.32		c0.03		
v/c Ratio	0.57		0.78	0.77			0.69		0.22		
Uniform Delay, d1	33.4		35.6	35.5			20.9		38.8		
Progression Factor	1.00		1.02	1.02			1.00		1.00		
Incremental Delay, d2	1.6		44.7	9.4			1.3		1.2		
Delay (s)	35.1		80.8	45.6			22.2		40.0		
Level of Service	D		F	D			C		D		
Approach Delay (s)	35.1			50.8			22.2		40.0		
Approach LOS	D			D			C		D		

Intersection Summary

HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕		↖	↗	
Volume (vph)	34	25	23	88	0	164	0	477	23	179	772	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.96		1.00	0.85			0.99		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1756		1770	1583			1851		1770	1862	
Flt Permitted		0.98		0.95	1.00			1.00		0.43	1.00	
Satd. Flow (perm)		1756		1770	1583			1851		796	1862	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	34	25	23	88	0	164	0	477	23	179	772	3
RTOR Reduction (vph)	0	16	0	0	147	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	66	0	88	17	0	0	499	0	179	775	0
Turn Type	Split		Split		Perm			Perm				
Protected Phases	4	4	8		8	2			6			
Permitted Phases					2			6				
Actuated Green, G (s)	8.1		10.3		10.3	69.6			69.6		69.6	
Effective Green, g (s)	8.1		10.3		10.3	69.6			69.6		69.6	
Actuated g/C Ratio	0.08		0.10		0.10	0.70			0.70		0.70	
Clearance Time (s)	4.0		4.0		4.0	4.0			4.0		4.0	
Vehicle Extension (s)	3.0		3.0		3.0	3.0			3.0		3.0	
Lane Grp Cap (vph)	142		182		163	1288			554		1296	
v/s Ratio Prot	c0.04		c0.05		0.01	0.27					c0.42	
v/s Ratio Perm									0.22			
v/c Ratio	0.47		0.48		0.10	0.39			0.32		0.60	
Uniform Delay, d1	43.9		42.3		40.7	6.3			6.0		7.9	
Progression Factor	1.00		1.00		1.00	1.00			1.00		1.00	
Incremental Delay, d2	2.4		2.0		0.3	0.9			1.5		2.0	
Delay (s)	46.3		44.4		40.9	7.2			7.5		10.0	
Level of Service	D		D		D	A			A		A	
Approach Delay (s)	46.3				42.1	7.2					9.5	
Approach LOS	D				D	A					A	

Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶↶	↶				↷↷
Volume (vph)	360	424	0	0	0	1003
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0
Lane Util. Factor	0.97	1.00				0.95
Frbp, ped/bikes	1.00	1.00				1.00
Flpb, ped/bikes	1.00	1.00				1.00
Frt	1.00	0.85				1.00
Flt Protected	0.95	1.00				1.00
Satd. Flow (prot)	3433	1583				3539
Flt Permitted	0.95	1.00				1.00
Satd. Flow (perm)	3433	1583				3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	360	424	0	0	0	1003
RTOR Reduction (vph)	49	246	0	0	0	0
Lane Group Flow (vph)	311	178	0	0	0	1003
Confl. Peds. (#/hr)		72				
Turn Type		Prot				
Protected Phases	1	1				2
Permitted Phases						
Actuated Green, G (s)	21.5	21.5				21.5
Effective Green, g (s)	21.0	21.0				21.0
Actuated g/C Ratio	0.42	0.42				0.42
Clearance Time (s)	3.5	3.5				3.5
Lane Grp Cap (vph)	1442	665				1486
v/s Ratio Prot	0.09	c0.11				c0.28
v/s Ratio Perm						
v/c Ratio	0.22	0.27				0.67
Uniform Delay, d1	9.2	9.5				11.7
Progression Factor	0.65	1.56				0.98
Incremental Delay, d2	0.3	1.0				2.4
Delay (s)	6.4	15.8				13.9
Level of Service	A	B				B
Approach Delay (s)	11.5		0.0			13.9
Approach LOS	B		A			B
Intersection Summary						
HCM Average Control Delay			12.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			51.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	322	79	0	0	0	0	14	193	2	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0			4.0	
Lane Util. Factor	1.00	0.95						0.95			1.00	
Frbp, ped/bikes	1.00	0.98						0.92			1.00	
Flpb, ped/bikes	1.00	1.00						1.00			0.99	
Frt	1.00	0.97						0.86			1.00	
Flt Protected	0.95	1.00						1.00			1.00	
Satd. Flow (prot)	1770	3379						2810			1844	
Flt Permitted	0.95	1.00						1.00			0.98	
Satd. Flow (perm)	1770	3379						2810			1820	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	322	79	0	0	0	0	14	193	2	19	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	120	0	0	0	0
Lane Group Flow (vph)	4	358	0	0	0	0	0	87	0	0	21	0
Confl. Peds. (#/hr)	72		72						72	72		
Turn Type	Split						Perm					
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)	23.5	23.5						19.5			19.5	
Effective Green, g (s)	23.0	23.0						19.0			19.0	
Actuated g/C Ratio	0.46	0.46						0.38			0.38	
Clearance Time (s)	3.5	3.5						3.5			3.5	
Lane Grp Cap (vph)	814	1554						1068			692	
v/s Ratio Prot	0.00	c0.11						c0.03				
v/s Ratio Perm											0.01	
v/c Ratio	0.00	0.23						0.08			0.03	
Uniform Delay, d1	7.3	8.2						9.9			9.7	
Progression Factor	1.27	1.89						0.40			1.00	
Incremental Delay, d2	0.0	0.3						0.1			0.1	
Delay (s)	9.3	15.7						4.0			9.8	
Level of Service	A	B						A			A	
Approach Delay (s)		15.6			0.0			4.0			9.8	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)
1/18/2007

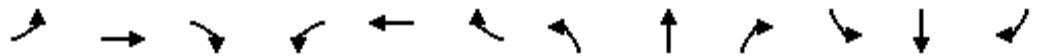


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑								↘	↙↑	
Volume (vph)	0	456	60	0	0	0	0	0	0	145	1185	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								0.91	0.91	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								0.93	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		3444								1494	3385	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		3444								1494	3385	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	456	60	0	0	0	0	0	0	145	1185	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	70	2	0
Lane Group Flow (vph)	0	496	0	0	0	0	0	0	0	60	1198	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		19.5								23.5	23.5	
Effective Green, g (s)		19.0								23.0	23.0	
Actuated g/C Ratio		0.38								0.46	0.46	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1309								687	1557	
v/s Ratio Prot		0.14										
v/s Ratio Perm										0.04	0.35	
v/c Ratio		0.38								0.09	0.77	
Uniform Delay, d1		11.2								7.6	11.3	
Progression Factor		0.43								0.41	0.47	
Incremental Delay, d2		0.8								0.2	3.1	
Delay (s)		5.7								3.4	8.4	
Level of Service		A								A	A	
Approach Delay (s)		5.7			0.0			0.0			7.9	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			7.3								HCM Level of Service	A
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			50.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			51.9%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←↑↑		↑	←↑			↑	↑
Volume (vph)	0	0	0	41	2308	65	292	106	0	0	13	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			0.95	0.95
Frbp, ped/bikes					1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					1.00		1.00	1.00			0.86	0.85
Flt Protected					1.00		0.95	0.97			1.00	1.00
Satd. Flow (prot)					5049		1610	3295			1527	1504
Flt Permitted					1.00		0.95	0.97			1.00	1.00
Satd. Flow (perm)					5049		1610	3295			1527	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	41	2308	65	292	106	0	0	13	288
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	14	14
Lane Group Flow (vph)	0	0	0	0	2411	0	146	252	0	0	137	136
Confl. Peds. (#/hr)							36					
Turn Type				Perm			custom					custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					66.5		13.5	13.5			9.5	9.5
Effective Green, g (s)					66.0		13.0	13.0			9.0	9.0
Actuated g/C Ratio					0.66		0.13	0.13			0.09	0.09
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					3332		209	428			137	135
v/s Ratio Prot							c0.09	0.08			0.09	c0.09
v/s Ratio Perm					0.48							
v/c Ratio					0.72		0.70	0.59			1.00	1.01
Uniform Delay, d1					11.1		41.6	41.0			45.5	45.5
Progression Factor					0.62		0.98	0.97			1.04	1.04
Incremental Delay, d2					1.0		17.2	5.7			77.5	80.1
Delay (s)					7.9		57.9	45.6			125.0	127.5
Level of Service					A		E	D			F	F
Approach Delay (s)		0.0			7.9			50.1			126.3	
Approach LOS		A			A			D			F	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007

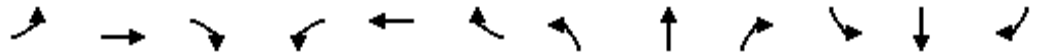


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	191	1731	0	0	0	0	0	782	694
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4800						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4800						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	191	1731	0	0	0	0	0	782	694
RTOR Reduction (vph)	0	0	0	12	1	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	160	1749	0	0	0	0	0	782	664
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				62.5	62.5						30.5	30.5
Effective Green, g (s)				62.0	62.0						30.0	30.0
Actuated g/C Ratio				0.62	0.62						0.30	0.30
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				875	2976						1062	767
v/s Ratio Prot											0.22	
v/s Ratio Perm				0.11	0.36							c0.26
v/c Ratio				0.18	0.59						0.74	0.87
Uniform Delay, d1				8.1	11.4						31.4	33.1
Progression Factor				1.00	1.00						0.82	0.80
Incremental Delay, d2				0.5	0.9						3.5	10.0
Delay (s)				8.6	12.2						29.4	36.6
Level of Service				A	B						C	D
Approach Delay (s)		0.0			11.9			0.0			32.8	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM Average Control Delay			21.0		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			65.4%		ICU Level of Service						C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



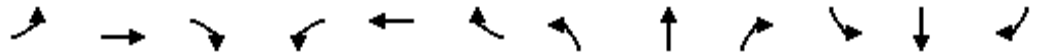
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔↔						↔		↔		
Volume (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.95		1.00		
Flpb, ped/bikes	0.92	1.00						1.00		0.97		
Frt	1.00	1.00						0.91		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1404	4801						1617		1720		
Flt Permitted	0.95	1.00						1.00		0.35		
Satd. Flow (perm)	1404	4801						1617		637		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	1416	0	0	0	0	0	142	278	67	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	94	1427	0	0	0	0	0	407	0	67	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						D.Pm					
Protected Phases	1						2					
Permitted Phases	1						2					
Actuated Green, G (s)	24.5	24.5						18.5		18.5		
Effective Green, g (s)	24.0	24.0						18.0		18.0		
Actuated g/C Ratio	0.48	0.48						0.36		0.36		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	674	2304						582		229		
v/s Ratio Prot							c0.25					
v/s Ratio Perm	0.07	0.30								0.11		
v/c Ratio	0.14	0.62						0.70		0.29		
Uniform Delay, d1	7.2	9.6						13.7		11.4		
Progression Factor	0.61	0.54						1.00		0.79		
Incremental Delay, d2	0.4	1.1						6.9		2.5		
Delay (s)	4.8	6.3						20.5		11.5		
Level of Service	A	A						C		B		
Approach Delay (s)	6.2		0.0				20.5		11.5			
Approach LOS	A		A				C		B			

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 29: J St & 7th Street

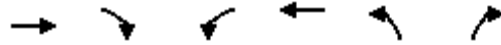
Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	1515	332	0	0	0	0	0	0	284	684	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.98	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4885									4924	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4885									4924	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1515	332	0	0	0	0	0	0	284	684	0
RTOR Reduction (vph)	0	45	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	1802	0	0	0	0	0	0	0	0	958	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		24.5									18.5	
Effective Green, g (s)		24.0									18.0	
Actuated g/C Ratio		0.48									0.36	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2345									1773	
v/s Ratio Prot		0.37										
v/s Ratio Perm											0.19	
v/c Ratio		0.77									0.54	
Uniform Delay, d1		10.7									12.7	
Progression Factor		0.39									0.80	
Incremental Delay, d2		2.0									0.9	
Delay (s)		6.2									11.1	
Level of Service		A									B	
Approach Delay (s)		6.2			0.0			0.0			11.1	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM Average Control Delay			7.9		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			63.2%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis Baseline+Proj(Office) PM Peak (Mitigated)
 33: Riverfront Dr & 5th Street 1/18/2007

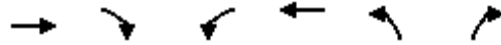


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	37	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	37	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		74	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		74	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	94
cM capacity (veh/h)			1623		908	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	37	60
Volume Left	0	37	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		13.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis Baseline+Proj(Office) PM Peak (Mitigated)
 34: Riverfront Dr & 7th Street 1/18/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	→
Volume (veh/h)	0	0	37	0	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	37	0	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		74	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		74	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	94
cM capacity (veh/h)			1623		908	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	37	60
Volume Left	0	37	0
Volume Right	0	0	60
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	7.3	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.5
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization	13.7%		ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕	↗		↕	
Volume (vph)	0	0	563	476	0	0	213	477	118	0	787	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.95	0.95		1.00	1.00	1.00		1.00	
Fr _t		0.85	0.85	1.00	1.00		1.00	1.00	0.85		1.00	
Fl _t Protected		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	1681	1681		1770	1863	1583		1863	
Fl _t Permitted		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	1681	1681		1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	563	476	0	0	213	477	118	0	787	0
RTOR Reduction (vph)	0	258	258	0	0	0	0	0	35	0	0	0
Lane Group Flow (vph)	0	24	23	238	238	0	213	477	83	0	787	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		10.5	10.5	25.9	25.9		21.1	103.1	103.1		78.5	
Effective Green, g (s)		10.5	10.5	25.9	25.9		21.1	103.1	103.1		78.5	
Actuated g/C Ratio		0.07	0.07	0.17	0.17		0.14	0.69	0.69		0.52	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		105	105	290	290		249	1281	1088		975	
v/s Ratio Prot		c0.02		c0.14	0.14		c0.12	0.26			c0.42	
v/s Ratio Perm			0.02						0.05			
v/c Ratio		0.23	0.22	0.82	0.82		0.86	0.37	0.08		0.81	
Uniform Delay, d ₁		65.9	65.9	59.8	59.8		63.0	9.9	7.7		29.5	
Progression Factor		1.00	1.00	1.00	1.00		1.32	0.37	0.03		1.00	
Incremental Delay, d ₂		1.1	1.1	16.7	16.7		2.8	0.1	0.0		7.1	
Delay (s)		67.1	67.0	76.6	76.6		86.0	3.7	0.3		36.6	
Level of Service		E	E	E	E		F	A	A		D	
Approach Delay (s)		67.0		76.6			24.9				36.6	
Approach LOS		E		E			C				D	

Intersection Summary

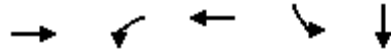
HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Baseline +Proj(Office) AM peak (Mitigated)

1: Richard Blvd & I-5 SB Off

1/18/2007



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	577	493	243	1476	344
v/c Ratio	0.53	0.64	0.23	1.20	0.41
Control Delay	35.2	21.0	13.5	133.1	1.4
Queue Delay	0.5	0.0	2.3	8.3	0.0
Total Delay	35.6	21.0	15.8	141.4	1.4
Queue Length 50th (ft)	188	198	177	~715	0
Queue Length 95th (ft)	246	m251	m253	#851	0
Internal Link Dist (ft)	205		308		611
Turn Bay Length (ft)		100		300	
Base Capacity (vph)	1086	772	1071	1230	849
Starvation Cap Reductn	0	0	690	0	0
Spillback Cap Reductn	183	0	0	19	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.64	0.64	0.64	1.22	0.41

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

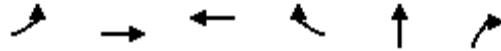
m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

2: Richard Blvd & I-5 NB Off

1/18/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	183	1811	692	554	850	838
v/c Ratio	0.62	1.10	0.54	0.63	1.28	1.19
Control Delay	61.5	58.2	24.0	14.6	164.2	127.8
Queue Delay	0.0	34.7	1.0	0.4	224.0	183.0
Total Delay	61.5	92.9	25.0	15.0	388.2	310.8
Queue Length 50th (ft)	132	-813	248	95	-793	-823
Queue Length 95th (ft)	m133	m194	303	130	#1055	#1084
Internal Link Dist (ft)		308	235		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	310	1646	1283	874	665	707
Starvation Cap Reductn	0	111	336	72	0	0
Spillback Cap Reductn	0	46	0	0	187	182
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.18	0.73	0.69	1.78	1.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

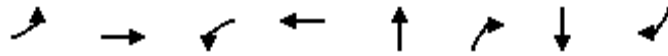
m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

3: Richard Blvd & Bercut Dr

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	206	3273	19	1061	93	7	44	110
v/c Ratio	0.51	0.82	0.30	0.29	0.49	0.03	0.22	0.35
Control Delay	3.9	9.3	20.4	2.8	54.3	32.1	44.7	10.7
Queue Delay	1.0	62.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	71.4	20.4	2.8	54.3	32.1	44.7	10.8
Queue Length 50th (ft)	28	446	1	16	63	3	29	0
Queue Length 95th (ft)	m37	m430	m16	106	116	16	63	49
Internal Link Dist (ft)		235		1336	410		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	492	3994	63	3610	273	299	291	405
Starvation Cap Reductn	121	1113	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	249	0	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	1.14	0.30	0.32	0.34	0.02	0.15	0.28

Intersection Summary

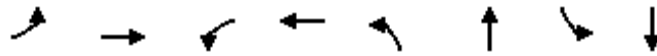
m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

4: Richard Blvd & 5th Street

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	528	1996	10	1240	17	7	153	234
v/c Ratio	0.86	0.78	0.23	0.62	0.26	0.02	0.76	0.55
Control Delay	60.6	6.5	69.4	20.5	52.5	0.1	71.1	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	6.5	69.4	20.5	52.5	0.1	71.1	10.7
Queue Length 50th (ft)	191	532	8	343	11	0	111	1
Queue Length 95th (ft)	m237	98	27	476	35	0	181	70
Internal Link Dist (ft)		684		1019		442		321
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	744	2554	44	1995	86	351	264	481
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.78	0.23	0.62	0.20	0.02	0.58	0.49

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

5: Richard Blvd & 7th Street

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	588	1556	171	1271	393	524	51	203	410	
v/c Ratio	1.56	1.04	1.45	1.28	1.00	1.27	0.14	0.75	1.43	0.26
Control Delay	300.9	75.3	288.9	173.5	102.6	186.9	26.0	78.4	257.6	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	300.9	75.3	288.9	173.5	102.6	186.9	26.0	78.4	257.6	17.6
Queue Length 50th (ft)	~810	~856	~227	~814	~410	~680	19	193	~542	15
Queue Length 95th (ft)	#1047	#998	#383	#955	#644	#921	56	#305	#757	51
Internal Link Dist (ft)		1047		1171		1313			344	
Turn Bay Length (ft)	200		200		200		200	150		200
Base Capacity (vph)	378	1492	118	996	392	411	370	271	286	523
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.56	1.04	1.45	1.28	1.00	1.27	0.14	0.75	1.43	0.26

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

6: Richard Blvd & 10th St

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1165	41	12	1406	14	20	11	13	11	36
v/c Ratio	0.76	0.42	0.04	0.21	0.62	0.08	0.08	0.05	0.07	0.04	0.15
Control Delay	70.7	6.9	3.1	66.8	14.0	40.2	40.5	19.6	40.2	39.1	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	6.9	3.1	66.8	14.0	40.2	40.5	19.6	40.2	39.1	13.8
Queue Length 50th (ft)	133	168	2	9	342	8	12	1	8	7	0
Queue Length 95th (ft)	201	265	15	m10	348	m26	m32	m15	26	23	29
Internal Link Dist (ft)		1201			827		1430			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	316	2800	1131	56	2259	272	382	333	284	382	333
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.42	0.04	0.21	0.62	0.05	0.05	0.03	0.05	0.03	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	1157	23	1374	81	46
v/c Ratio	0.13	0.72	0.19	0.85	0.12	0.07
Control Delay	9.0	14.9	14.5	21.2	9.0	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	14.9	14.5	21.2	9.0	9.5
Queue Length 50th (ft)	6	316	5	217	12	8
Queue Length 95th (ft)	m8	199	20	#323	34	24
Internal Link Dist (ft)		827		1230	1822	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	123	1610	122	1616	652	674
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.72	0.19	0.85	0.12	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

8: Richard Blvd & 12th Street

1/18/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	932	76	40	100	1181	50	2993	1368
v/c Ratio	1.51	0.23	0.18	0.68	0.34	0.09	1.13	1.12
Control Delay	268.4	10.4	23.8	72.7	5.9	8.3	88.9	75.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	268.4	10.4	23.8	72.7	5.9	8.3	88.9	75.7
Queue Length 50th (ft)	~428	0	11	~77	44	2	~467	~854
Queue Length 95th (ft)	#551	39	40	#182	45	m23	#537	#1115
Internal Link Dist (ft)			320		814			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	332	305	148	3461	587	2638	1221
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.51	0.23	0.13	0.68	0.34	0.09	1.13	1.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline +Proj(Office) AM peak (Mitigated)

15: North B Street & 7th Street

1/18/2007



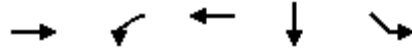
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	80	207	527	9	425	214	706
v/c Ratio	0.21	0.65	0.77	0.06	0.56	0.69	0.61
Control Delay	15.3	30.6	13.2	27.1	18.3	37.8	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	30.6	13.2	27.1	18.3	37.8	12.5
Queue Length 50th (ft)	17	66	28	3	127	69	131
Queue Length 95th (ft)	45	122	118	15	205	#165	#396
Internal Link Dist (ft)	1178	1158			2548		1287
Turn Bay Length (ft)							
Base Capacity (vph)	468	389	739	146	764	319	1154
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.53	0.71	0.06	0.56	0.67	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues
16: North B Street & 12th Street

Baseline +Proj(Office) AM peak (Mitigated)
1/18/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	244	35	577	2772	57
v/c Ratio	0.26	0.14	1.25	0.93	0.23
Control Delay	7.6	30.7	165.4	24.9	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	30.7	165.4	24.9	34.5
Queue Length 50th (ft)	10	18	~475	~327	27
Queue Length 95th (ft)	41	46	#689	#398	63
Internal Link Dist (ft)	289		1610	1439	1822
Turn Bay Length (ft)		125			
Base Capacity (vph)	927	252	460	2995	321
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.14	1.25	0.93	0.18

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
21: F Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Lane Group	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	48	143	367	188	665
v/c Ratio	0.19	0.42	0.28	0.23	0.48
Control Delay	19.7	9.8	3.8	4.0	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	9.8	3.8	4.0	5.2
Queue Length 50th (ft)	13	5	28	14	62
Queue Length 95th (ft)	33	40	71	42	155
Internal Link Dist (ft)		961	164		2548
Turn Bay Length (ft)					
Base Capacity (vph)	425	483	1328	824	1383
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.30	0.28	0.23	0.48

Intersection Summary

Queues
23: G Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	229	403	677
v/c Ratio	0.14	0.45	0.46
Control Delay	1.6	3.1	9.9
Queue Delay	0.0	0.0	0.0
Total Delay	1.6	3.1	9.9
Queue Length 50th (ft)	0	0	50
Queue Length 95th (ft)	12	39	71
Internal Link Dist (ft)	295		93
Turn Bay Length (ft)			
Base Capacity (vph)	1588	899	1486
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.14	0.45	0.46

Intersection Summary

Queues
24: H Street & 6th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	20	433	300	25
v/c Ratio	0.03	0.28	0.24	0.04
Control Delay	2.5	3.0	1.1	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.5	3.0	1.1	9.4
Queue Length 50th (ft)	1	1	1	4
Queue Length 95th (ft)	m1	5	3	15
Internal Link Dist (ft)		321	377	99
Turn Bay Length (ft)				
Base Capacity (vph)	722	1535	1264	701
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.28	0.24	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	663	126	718
v/c Ratio	0.41	0.20	0.56
Control Delay	5.9	3.2	10.0
Queue Delay	0.0	0.0	0.0
Total Delay	5.9	3.2	10.0
Queue Length 50th (ft)	55	4	104
Queue Length 95th (ft)	63	19	134
Internal Link Dist (ft)	341		341
Turn Bay Length (ft)			
Base Capacity (vph)	1617	646	1288
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.20	0.56
Intersection Summary			

Queues
26: I Street & 6th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1133	31	242	39	36
v/c Ratio	0.71	0.06	0.24	0.16	0.15
Control Delay	14.7	17.1	18.0	8.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	17.1	18.0	8.9	5.5
Queue Length 50th (ft)	112	10	43	0	0
Queue Length 95th (ft)	153	m26	m65	13	3
Internal Link Dist (ft)	333		319	377	
Turn Bay Length (ft)					
Base Capacity (vph)	1606	483	1016	246	242
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.06	0.24	0.16	0.15

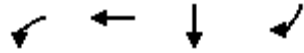
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	228	833	479	323
v/c Ratio	0.30	0.38	0.36	0.27
Control Delay	3.1	9.3	8.7	5.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.1	9.3	8.7	5.5
Queue Length 50th (ft)	3	56	76	32
Queue Length 95th (ft)	36	80	76	32
Internal Link Dist (ft)		1246	403	
Turn Bay Length (ft)				100
Base Capacity (vph)	763	2210	1345	1176
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.36	0.27

Intersection Summary

Queues
28: J St & 6th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	351	2342	42	28
v/c Ratio	0.35	0.69	0.12	0.10
Control Delay	8.5	10.9	25.4	24.6
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.9	10.9	25.4	24.6
Queue Length 50th (ft)	104	287	15	10
Queue Length 95th (ft)	156	311	44	m18
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	997	3404	339	269
Starvation Cap Reductn	237	35	0	0
Spillback Cap Reductn	0	83	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.71	0.12	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)
1/18/2007

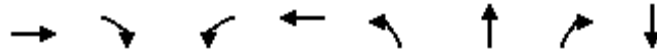


Lane Group	EBT	SBT
Lane Group Flow (vph)	2551	623
v/c Ratio	0.84	0.41
Control Delay	8.2	24.8
Queue Delay	0.0	0.0
Total Delay	8.3	24.8
Queue Length 50th (ft)	68	90
Queue Length 95th (ft)	65	122
Internal Link Dist (ft)	373	299
Turn Bay Length (ft)		
Base Capacity (vph)	3029	1509
Starvation Cap Reductn	8	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.84	0.41
Intersection Summary		

Queues
36: Signature & 7th Street

Baseline +Proj(Office) AM peak (Mitigated)

1/18/2007



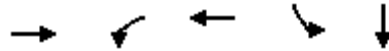
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	87	86	45	45	289	642	495	485
v/c Ratio	0.15	0.15	0.37	0.37	0.81	0.43	0.36	0.45
Control Delay	0.6	0.6	60.9	60.9	63.5	4.8	1.5	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.1	1.6	0.8	3.2
Total Delay	0.6	0.6	60.9	60.9	63.6	6.4	2.2	21.2
Queue Length 50th (ft)	0	0	35	35	214	127	12	213
Queue Length 95th (ft)	0	0	74	74	301	206	38	351
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75		150	
Base Capacity (vph)	693	693	231	231	413	1508	1360	1080
Starvation Cap Reductn	0	0	0	0	4	651	541	479
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.12	0.19	0.19	0.71	0.75	0.60	0.81

Intersection Summary

Queues

1: Richard Blvd & I-5 SB Off

1/18/2007



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	661	1265	440	808	247
v/c Ratio	1.18	0.75	0.34	1.02	0.51
Control Delay	137.8	3.7	1.0	76.9	8.6
Queue Delay	0.0	1.8	1.3	11.3	0.0
Total Delay	137.8	5.5	2.4	88.2	8.6
Queue Length 50th (ft)	~266	8	2	~284	2
Queue Length 95th (ft)	#383	m13	m2	#402	67
Internal Link Dist (ft)	205		310		611
Turn Bay Length (ft)		100		300	
Base Capacity (vph)	558	1682	1285	790	485
Starvation Cap Reductn	0	250	619	0	0
Spillback Cap Reductn	0	0	0	25	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.18	0.88	0.66	1.06	0.51

Intersection Summary

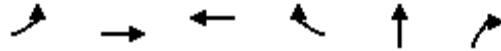
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline+Proj(Office) PM Peak (Mitigated)

2: Richard Blvd & I-5 NB Off

1/18/2007



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	355	1057	1654	1707	439	427
v/c Ratio	1.39	0.82	0.91	1.01	0.77	0.50
Control Delay	214.5	4.8	23.4	28.5	22.6	15.3
Queue Delay	0.0	4.0	41.8	9.1	0.4	0.0
Total Delay	214.5	8.9	65.3	37.6	22.9	15.3
Queue Length 50th (ft)	~319	63	281	~165	89	155
Queue Length 95th (ft)	m#281	m45	m314	m#416	#232	242
Internal Link Dist (ft)		310	238		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	256	1283	1823	1691	572	854
Starvation Cap Reductn	0	111	306	46	0	0
Spillback Cap Reductn	0	156	22	0	12	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.39	0.94	1.09	1.04	0.78	0.50

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

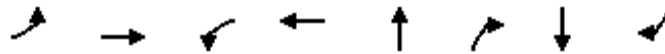
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

3: Richard Blvd & Bercut Dr



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	1685	20	2870	190	13	54	259
v/c Ratio	0.91	0.45	0.13	0.92	0.78	0.05	0.24	0.61
Control Delay	56.6	6.0	13.4	25.3	59.2	14.7	34.8	20.1
Queue Delay	0.0	0.9	0.0	0.7	57.8	0.0	0.0	5.7
Total Delay	56.6	6.9	13.4	26.0	117.0	14.7	34.8	25.8
Queue Length 50th (ft)	66	197	6	~672	109	0	28	52
Queue Length 95th (ft)	m#140	258	20	#810	184	16	62	130
Internal Link Dist (ft)		238		1267	432		634	
Turn Bay Length (ft)	150		150			100		100
Base Capacity (vph)	230	3705	151	3117	312	364	285	498
Starvation Cap Reductn	0	1602	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	72	136	0	0	180
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.80	0.13	0.94	1.08	0.04	0.19	0.81

Intersection Summary

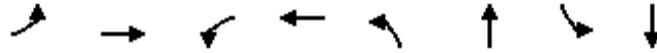
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline+Proj(Office) PM Peak (Mitigated)

4: Richard Blvd & 5th Street

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	407	1519	9	2564	13	18	120	200
v/c Ratio	1.27	0.59	0.26	1.17	0.10	0.09	1.35	0.51
Control Delay	196.5	12.1	71.3	101.4	57.8	24.1	264.1	22.7
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Total Delay	196.5	12.1	71.3	102.4	57.8	24.1	264.1	22.7
Queue Length 50th (ft)	~258	345	9	~1581	11	1	~154	56
Queue Length 95th (ft)	#369	481	m0	m663	34	26	#290	138
Internal Link Dist (ft)		708		1052		442		361
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	320	2561	35	2195	158	224	89	423
Starvation Cap Reductn	0	0	0	4	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	0.59	0.26	1.17	0.08	0.08	1.35	0.47

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

5: Richard Blvd & 7th Street

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	268	1366	84	1577	410	429	283	516	873	
v/c Ratio	1.75	1.06	1.42	1.40	1.22	1.23	0.74	1.04	1.67	0.47
Control Delay	398.2	76.4	299.1	218.8	171.9	173.1	47.2	90.0	339.8	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.5	11.7	0.0
Total Delay	398.2	76.4	299.1	218.8	171.9	173.1	47.2	138.5	351.5	21.6
Queue Length 50th (ft)	~383	~762	~112	~1102	~516	~543	168	~553	~1263	98
Queue Length 95th (ft)	m#546	m#394	m#210	#1201	#743	#771	281	#761	#1484	m161
Internal Link Dist (ft)		1043		1130		1403			382	
Turn Bay Length (ft)	200		200		200		200	200		200
Base Capacity (vph)	153	1286	59	1127	336	350	384	496	522	922
Starvation Cap Reductn	0	0	0	0	0	0	0	53	8	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.75	1.06	1.42	1.40	1.22	1.23	0.74	1.16	1.70	0.47

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline+Proj(Office) PM Peak (Mitigated)

6: Richard Blvd & 10th St

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1785	31	6	1405	17	13	28	70	37	170
v/c Ratio	0.31	0.78	0.03	0.07	0.63	0.06	0.03	0.08	0.23	0.09	0.39
Control Delay	31.9	18.3	7.6	30.0	15.7	18.2	17.5	7.6	21.8	19.1	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	18.3	7.6	30.0	15.7	18.2	17.5	7.6	21.8	19.1	9.0
Queue Length 50th (ft)	13	495	6	2	360	5	4	0	23	12	14
Queue Length 95th (ft)	m14	m#638	m7	m4	#449	19	16	16	52	31	55
Internal Link Dist (ft)		1121			996		1466			413	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	85	2302	961	83	2224	433	609	536	456	609	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.78	0.03	0.07	0.63	0.04	0.02	0.05	0.15	0.06	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Baseline+Proj(Office) PM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	1822	7	1274	109	59
v/c Ratio	0.10	0.97	0.07	0.68	0.20	0.10
Control Delay	2.6	25.9	10.7	15.0	16.6	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.6	25.9	10.7	15.0	16.6	11.9
Queue Length 50th (ft)	1	544	1	211	32	11
Queue Length 95th (ft)	m0	#582	8	280	66	35
Internal Link Dist (ft)		996		1190	1946	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	124	1878	99	1887	538	563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.97	0.07	0.68	0.20	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

8: Richard Blvd & 12th Street

1/18/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1810	262	100	110	3898	20	1708	894
v/c Ratio	2.93	0.66	0.44	1.24	1.13	0.04	0.60	0.75
Control Delay	890.6	27.0	44.7	189.4	77.5	14.1	13.6	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	890.6	27.0	44.7	189.4	77.5	14.1	13.6	5.3
Queue Length 50th (ft)	~1031	73	57	-87	-686	2	143	0
Queue Length 95th (ft)	#1167	162	107	m#111	#989	m3	167	42
Internal Link Dist (ft)			200		288			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	618	396	288	89	3443	558	2834	1199
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.93	0.66	0.35	1.24	1.13	0.04	0.60	0.75

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



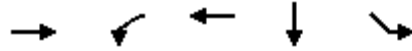
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	106	309	62	779	402	894
v/c Ratio	0.20	0.56	0.71	0.46	0.93	0.86	0.70
Control Delay	28.9	47.4	14.0	52.8	42.0	51.4	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	47.4	14.0	52.8	42.0	51.4	14.1
Queue Length 50th (ft)	16	57	0	34	406	213	318
Queue Length 95th (ft)	45	104	77	#97	#663	#411	489
Internal Link Dist (ft)	1178	1132			2452		1414
Turn Bay Length (ft)							
Base Capacity (vph)	284	261	483	135	839	470	1270
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.41	0.64	0.46	0.93	0.86	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
16: North B Street & 12th Street

Baseline+Proj(Office) PM Peak (Mitigated)
1/18/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	656	58	338	2052	49
v/c Ratio	0.67	0.78	0.78	0.67	0.21
Control Delay	21.2	95.5	49.0	12.9	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	95.5	49.0	12.9	35.1
Queue Length 50th (ft)	102	33	190	165	24
Queue Length 95th (ft)	165	m#87	m276	190	57
Internal Link Dist (ft)	785		1656	1565	1946
Turn Bay Length (ft)		125			
Base Capacity (vph)	1004	77	455	3085	296
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.75	0.74	0.67	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

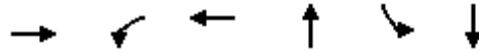
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	82	88	164	500	179	775
v/c Ratio	0.47	0.48	0.28	0.38	0.32	0.59
Control Delay	42.4	50.6	1.2	8.4	9.4	11.6
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0
Total Delay	42.4	50.6	1.2	9.2	9.4	11.6
Queue Length 50th (ft)	40	54	0	120	41	235
Queue Length 95th (ft)	84	100	0	229	100	443
Internal Link Dist (ft)	86		961	138		2452
Turn Bay Length (ft)						
Base Capacity (vph)	295	283	646	1307	560	1312
Starvation Cap Reductn	0	0	0	505	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.31	0.25	0.62	0.32	0.59

Intersection Summary

Queues
23: G Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBR	SBT
Lane Group Flow (vph)	360	424	1003
v/c Ratio	0.24	0.47	0.67
Control Delay	5.0	3.3	14.1
Queue Delay	0.0	0.0	0.0
Total Delay	5.0	3.3	14.1
Queue Length 50th (ft)	21	0	110
Queue Length 95th (ft)	34	0	181
Internal Link Dist (ft)	344		141
Turn Bay Length (ft)			
Base Capacity (vph)	1491	911	1486
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.47	0.67

Intersection Summary

Queues
24: H Street & 6th Street

Baseline+Proj(Office) PM Peak (Mitigated)
1/18/2007



Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	4	401	207	21
v/c Ratio	0.00	0.25	0.17	0.03
Control Delay	9.2	12.7	1.0	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.2	12.7	1.0	10.0
Queue Length 50th (ft)	2	111	0	4
Queue Length 95th (ft)	m5	160	m7	14
Internal Link Dist (ft)		322	349	99
Turn Bay Length (ft)				
Base Capacity (vph)	814	1596	1187	692
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.00	0.25	0.17	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	516	130	1200
v/c Ratio	0.39	0.17	0.77
Control Delay	5.4	1.0	8.5
Queue Delay	0.0	0.0	0.0
Total Delay	5.4	1.0	8.5
Queue Length 50th (ft)	18	0	57
Queue Length 95th (ft)	63	m0	86
Internal Link Dist (ft)	333		360
Turn Bay Length (ft)			
Base Capacity (vph)	1330	757	1558
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.17	0.77

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2414	146	252	151	150
v/c Ratio	0.72	0.70	0.59	1.00	1.01
Control Delay	8.0	59.1	46.0	117.9	119.7
Queue Delay	0.1	0.0	0.0	0.0	0.0
Total Delay	8.0	59.1	46.0	117.9	119.7
Queue Length 50th (ft)	225	93	80	-95	-94
Queue Length 95th (ft)	239	m#180	m123	#231	#233
Internal Link Dist (ft)	345		362	349	
Turn Bay Length (ft)					
Base Capacity (vph)	3335	209	428	151	149
Starvation Cap Reductn	122	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	0.70	0.59	1.00	1.01

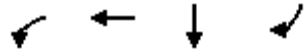
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	172	1750	782	694
v/c Ratio	0.19	0.59	0.74	0.87
Control Delay	7.2	12.4	29.7	36.0
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	7.2	12.4	29.9	36.0
Queue Length 50th (ft)	40	236	177	159
Queue Length 95th (ft)	74	282	240	#325
Internal Link Dist (ft)		1246	351	
Turn Bay Length (ft)				100
Base Capacity (vph)	888	2975	1062	797
Starvation Cap Reductn	0	0	24	0
Spillback Cap Reductn	0	12	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.59	0.75	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
28: J St & 6th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	94	1427	420	67
v/c Ratio	0.14	0.62	0.71	0.29
Control Delay	4.9	6.4	21.5	12.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.9	6.4	21.5	12.0
Queue Length 50th (ft)	10	58	96	12
Queue Length 95th (ft)	m20	73	#213	m19
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	674	2305	595	229
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.62	0.71	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)
1/18/2007

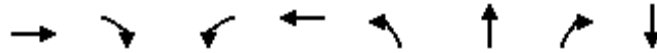


Lane Group	EBT	SBT
Lane Group Flow (vph)	1847	968
v/c Ratio	0.77	0.54
Control Delay	6.0	11.0
Queue Delay	0.0	0.0
Total Delay	6.0	11.0
Queue Length 50th (ft)	47	81
Queue Length 95th (ft)	53	124
Internal Link Dist (ft)	341	371
Turn Bay Length (ft)		
Base Capacity (vph)	2390	1783
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.77	0.54
Intersection Summary		

Queues
36: Signature & 7th Street

Baseline+Proj(Office) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	282	281	238	238	213	477	118	787
v/c Ratio	0.78	0.77	0.82	0.82	0.86	0.37	0.11	0.81
Control Delay	22.3	22.0	81.2	81.2	85.3	4.2	0.1	39.4
Queue Delay	7.0	6.8	18.1	18.1	0.0	2.6	0.0	125.6
Total Delay	29.2	28.8	99.3	99.3	85.3	6.8	0.1	165.0
Queue Length 50th (ft)	5	4	233	233	204	39	0	647
Queue Length 95th (ft)	102	100	#403	#403	m130	m28	m0	#975
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75		150	
Base Capacity (vph)	445	445	301	301	261	1280	1123	974
Starvation Cap Reductn	0	0	0	0	0	663	0	357
Spillback Cap Reductn	118	118	55	55	0	0	0	259
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.86	0.97	0.97	0.82	0.77	0.11	1.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

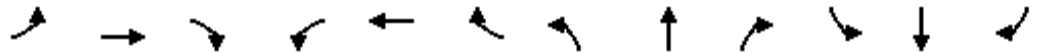
m Volume for 95th percentile queue is metered by upstream signal.

Year 2013 Near Term + Project
(Mitigated)

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	273	172	360	193	0	0	0	0	1666	0	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.92		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.94		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3069		3433	1863					1681	1681	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3069		3433	1863					1681	1681	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	273	172	360	193	0	0	0	0	1666	0	686
RTOR Reduction (vph)	0	83	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	362	0	360	193	0	0	0	0	833	833	686
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		33.0		27.5	63.5					49.0	49.0	120.0
Effective Green, g (s)		33.0		26.0	63.0					49.0	49.0	120.0
Actuated g/C Ratio		0.28		0.22	0.52					0.41	0.41	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		844		744	978					686	686	1539
v/s Ratio Prot		0.12		c0.10	0.10					c0.50	0.50	
v/s Ratio Perm												c0.45
v/c Ratio		0.43		0.48	0.20					1.21	1.21	0.45
Uniform Delay, d1		35.7		41.1	15.1					35.5	35.5	0.0
Progression Factor		1.00		0.83	1.75					1.00	1.00	1.00
Incremental Delay, d2		1.0		0.9	0.2					109.5	109.5	0.9
Delay (s)		36.7		35.1	26.6					145.0	145.0	0.9
Level of Service		D		D	C					F	F	A
Approach Delay (s)		36.7			32.1			0.0			103.0	
Approach LOS		D			C			A			F	

Intersection Summary

HCM Average Control Delay	82.5	HCM Level of Service	F
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	147	1792	0	0	488	896	65	0	1356	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1521	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1521	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	1792	0	0	488	896	65	0	1356	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	91	6	0	0	0
Lane Group Flow (vph)	147	1792	0	0	488	896	0	625	699	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	18.0	62.3			43.5	120.0		40.0	50.7			
Effective Green, g (s)	17.0	61.8			40.0	120.0		39.5	45.7			
Actuated g/C Ratio	0.14	0.52			0.33	1.00		0.33	0.38			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	251	1823			1180	2708		501	573			
v/s Ratio Prot	0.08	c0.51			0.14			c0.41	c0.46			
v/s Ratio Perm						0.33						
v/c Ratio	0.59	0.98			0.41	0.33		1.25	1.22			
Uniform Delay, d1	48.2	28.6			30.9	0.0		40.2	37.2			
Progression Factor	0.57	0.27			0.94	1.00		1.00	1.00			
Incremental Delay, d2	0.5	3.5			0.4	0.3		127.0	114.4			
Delay (s)	27.9	11.2			29.5	0.3		167.3	151.5			
Level of Service	C	B			C	A		F	F			
Approach Delay (s)		12.5			10.6			159.5			0.0	
Approach LOS		B			B			F			A	

Intersection Summary

HCM Average Control Delay	56.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗↗		↖↖	↖			↗	↖
Volume (vph)	205	2180	763	26	800	45	505	65	14	21	81	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2	4.6	5.2	5.2		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1755	3539	1408	1770	4997		3433	1790			1844	1583
Flt Permitted	0.28	1.00	1.00	0.06	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	516	3539	1408	109	4997		3433	1790			1844	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	2180	763	26	800	45	505	65	14	21	81	79
RTOR Reduction (vph)	0	0	129	0	5	0	0	7	0	0	0	74
Lane Group Flow (vph)	205	2180	634	26	840	0	505	72	0	0	102	5
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	79.6	79.6	79.6	68.8	68.8		21.0	21.0			7.8	7.8
Effective Green, g (s)	79.1	79.0	79.6	68.2	68.2		20.5	20.5			7.3	7.3
Actuated g/C Ratio	0.66	0.66	0.66	0.57	0.57		0.17	0.17			0.06	0.06
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	410	2330	934	62	2840		586	306			112	96
v/s Ratio Prot	0.03	c0.62			0.17		c0.15	0.04			c0.06	
v/s Ratio Perm	0.30		0.45	0.24								0.00
v/c Ratio	0.50	0.94	0.68	0.42	0.30		0.86	0.24			0.91	0.05
Uniform Delay, d1	8.5	18.2	12.4	14.7	13.4		48.4	43.0			56.0	53.1
Progression Factor	0.78	0.79	0.64	0.59	0.55		0.88	0.84			1.00	1.00
Incremental Delay, d2	0.0	1.0	0.4	17.1	0.2		11.7	0.1			56.9	0.1
Delay (s)	6.7	15.3	8.3	25.7	7.7		54.1	36.3			112.9	53.2
Level of Service	A	B	A	C	A		D	D			F	D
Approach Delay (s)		13.1			8.2			51.7			86.8	
Approach LOS		B			A			D			F	

Intersection Summary

HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	104	1782	12	83	1031	47	17	96	7	119	154	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.95	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3533		1770	3500		1719	1834		1674	1668	
Flt Permitted	0.95	1.00		0.95	1.00		0.18	1.00		0.63	1.00	
Satd. Flow (perm)	1770	3533		1770	3500		332	1834		1108	1668	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	1782	12	83	1031	47	17	96	7	119	154	138
RTOR Reduction (vph)	0	0	0	0	2	0	0	2	0	0	29	0
Lane Group Flow (vph)	104	1794	0	83	1076	0	17	101	0	119	263	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	11.0	76.8		10.0	75.8		22.4	22.4		22.4	22.4	
Effective Green, g (s)	10.0	76.5		9.0	75.5		21.9	21.9		21.9	21.9	
Actuated g/C Ratio	0.08	0.64		0.08	0.63		0.18	0.18		0.18	0.18	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	148	2252		133	2202		61	335		202	304	
v/s Ratio Prot	0.06	c0.51		c0.05	0.31			0.05			c0.16	
v/s Ratio Perm							0.05			0.11		
v/c Ratio	0.70	0.80		0.62	0.49		0.28	0.30		0.59	0.87	
Uniform Delay, d1	53.6	16.0		53.9	11.9		42.2	42.4		44.9	47.6	
Progression Factor	1.20	0.26		0.66	0.36		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.2		5.3	0.6		0.9	0.2		2.8	21.2	
Delay (s)	69.0	5.3		40.8	4.9		43.2	42.6		47.7	68.9	
Level of Service	E	A		D	A		D	D		D	E	
Approach Delay (s)		8.8			7.4			42.7			62.7	
Approach LOS		A			A			D			E	

Intersection Summary

HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑		↔↔	↑	↔↔	↗	↑↑	↗
Volume (vph)	492	1209	300	604	692	288	259	431	525	214	429	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	3.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	1.00	0.88	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1508	3433	3336		3433	1863	2660	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1508	3433	3336		3433	1863	2660	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	1209	300	604	692	288	259	431	525	214	429	105
RTOR Reduction (vph)	0	0	89	0	36	0	0	0	119	0	0	92
Lane Group Flow (vph)	492	1209	211	604	944	0	259	431	406	214	429	13
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases			6						8			4
Actuated Green, G (s)	23.5	48.0	48.0	19.0	43.5		24.0	25.5	44.5	13.5	15.0	15.0
Effective Green, g (s)	22.5	48.0	48.0	18.0	43.5		23.5	25.0	43.5	13.0	14.5	15.0
Actuated g/C Ratio	0.19	0.40	0.40	0.15	0.36		0.20	0.21	0.36	0.11	0.12	0.12
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0		3.5	3.5	3.0	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	644	1416	603	515	1209		672	388	964	192	428	198
v/s Ratio Prot	0.14	c0.34		c0.18	0.28		0.08	c0.23	0.06	c0.12	0.12	
v/s Ratio Perm			0.14						0.09			0.01
v/c Ratio	0.76	0.85	0.35	1.17	0.78		0.39	1.11	0.42	1.11	1.00	0.07
Uniform Delay, d1	46.2	32.8	25.1	51.0	34.0		42.0	47.5	28.8	53.5	52.8	46.3
Progression Factor	0.69	0.57	0.34	0.88	0.70		1.00	1.00	1.00	1.08	0.92	1.12
Incremental Delay, d2	3.2	3.4	0.1	95.5	4.6		0.1	79.2	0.1	98.2	43.5	0.1
Delay (s)	35.0	22.0	8.7	140.4	28.3		42.1	126.7	28.9	156.3	91.9	52.1
Level of Service	D	C	A	F	C		D	F	C	F	F	D
Approach Delay (s)		23.2			71.1			66.4			104.7	
Approach LOS		C			E			E			F	

Intersection Summary

HCM Average Control Delay	57.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2013+Proj (Res) AM Peak (Mitigated)

6: Richard Blvd & 10th St

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	175	1478	195	206	1182	84	55	38	63	21	28	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3480		1684	1863	1583	1770	1863	1440
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.74	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3480		1310	1863	1583	1364	1863	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1478	195	206	1182	84	55	38	63	21	28	36
RTOR Reduction (vph)	0	0	30	0	3	0	0	0	55	0	0	31
Lane Group Flow (vph)	175	1478	165	206	1263	0	55	38	8	21	28	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	15.9	73.9	73.9	18.4	76.4		16.2	16.2	16.2	16.2	16.2	16.2
Effective Green, g (s)	15.4	73.4	73.4	17.9	75.9		15.7	15.7	15.7	15.7	15.7	15.7
Actuated g/C Ratio	0.13	0.61	0.61	0.15	0.63		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	227	2165	909	264	2201		171	244	207	178	244	188
v/s Ratio Prot	c0.10	c0.42		c0.12	0.36			0.02				0.02
v/s Ratio Perm			0.11				c0.04		0.01	0.02		0.00
v/c Ratio	0.77	0.68	0.18	0.78	0.57		0.32	0.16	0.04	0.12	0.11	0.03
Uniform Delay, d1	50.6	15.5	10.2	49.2	12.7		47.3	46.3	45.6	46.0	46.0	45.5
Progression Factor	1.03	0.65	0.40	0.82	0.66		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	1.1	0.3	11.0	0.9		0.4	0.1	0.0	0.1	0.1	0.0
Delay (s)	60.7	11.1	4.3	51.4	9.3		47.7	46.4	45.6	46.1	46.1	45.5
Level of Service	E	B	A	D	A		D	D	D	D	D	D
Approach Delay (s)		15.1			15.2			46.5			45.9	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1453	50	24	1338	32	35	22	24	17	45	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.97			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Frt	1.00	1.00		1.00	1.00			0.96			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	3496		1770	3509			1657			1624	
Flt Permitted	0.14	1.00		0.11	1.00			0.85			0.96	
Satd. Flow (perm)	264	3496		211	3509			1447			1577	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	1453	50	24	1338	32	35	22	24	17	45	66
RTOR Reduction (vph)	0	2	0	0	1	0	0	12	0	0	32	0
Lane Group Flow (vph)	43	1501	0	24	1369	0	0	69	0	0	96	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	79.5	79.5		79.5	79.5			32.5			32.5	
Effective Green, g (s)	79.0	79.0		79.0	79.0			32.0			32.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.27			0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	174	2302		139	2310			386			421	
v/s Ratio Prot		c0.43			0.39							
v/s Ratio Perm	0.16			0.11				0.05			c0.06	
v/c Ratio	0.25	0.65		0.17	0.59			0.18			0.23	
Uniform Delay, d1	8.4	12.3		7.9	11.5			33.9			34.3	
Progression Factor	0.17	0.35		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.6	1.1		2.7	1.1			1.0			1.3	
Delay (s)	4.0	5.4		10.6	12.6			34.9			35.6	
Level of Service	A	A		B	B			C			D	
Approach Delay (s)		5.4			12.6			34.9			35.6	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1314	76	20	0	20	106	1395	50	3860	1338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.90		1.00		1.00	1.00	0.83	1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1425		1695		1770	6408	1319	6408	1425
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1425		1695		1770	6408	1319	6408	1425
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1314	76	20	0	20	106	1395	50	3860	1338
RTOR Reduction (vph)	0	30	0	12	0	0	0	30	0	357
Lane Group Flow (vph)	1314	46	0	28	0	106	1395	20	3860	981
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	39.0	39.0		14.4		7.0	78.6	60.6	67.6	67.6
Effective Green, g (s)	39.0	39.0		14.4		7.0	78.6	60.6	67.6	67.6
Actuated g/C Ratio	0.26	0.26		0.10		0.05	0.52	0.40	0.45	0.45
Clearance Time (s)	4.0	4.0		4.0		4.0		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	893	371		163		83	3358	533	2888	642
v/s Ratio Prot	c0.38			c0.02		c0.06	0.22		0.60	
v/s Ratio Perm		0.03						0.02		c0.69
v/c Ratio	1.47	0.13		0.17		1.28	0.42	0.04	1.34	1.53
Uniform Delay, d1	55.5	42.5		62.3		71.5	21.7	27.1	41.2	41.2
Progression Factor	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	218.3	0.1		0.2		190.2	0.1	0.1	153.9	245.8
Delay (s)	273.8	42.5		62.5		261.7	21.8	27.2	195.1	287.0
Level of Service	F	D		E		F	C	C	F	F
Approach Delay (s)				62.5			38.4			
Approach LOS				E			D			

Intersection Summary

HCM Average Control Delay	191.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		L	R
Volume (vph)	0	167	367	1	212	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	167	367	1	212	601
RTOR Reduction (vph)	155	0	0	0	0	0
Lane Group Flow (vph)	12	0	368	0	212	601
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	4.4		31.4		12.2	47.6
Effective Green, g (s)	4.4		31.4		12.2	47.6
Actuated g/C Ratio	0.07		0.52		0.20	0.79
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	118		974		360	1478
v/s Ratio Prot	c0.01		0.20		c0.12	c0.32
v/s Ratio Perm						
v/c Ratio	0.10		0.38		0.59	0.41
Uniform Delay, d1	26.0		8.5		21.6	1.9
Progression Factor	1.00		1.00		1.03	0.79
Incremental Delay, d2	0.4		1.1		1.7	0.6
Delay (s)	26.3		9.6		23.9	2.1
Level of Service	C		A		C	A
Approach Delay (s)	26.3		9.6			7.8
Approach LOS	C		A			A

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th St

2013+Proj (Res) AM Peak (Mitigated)
 1/10/2007



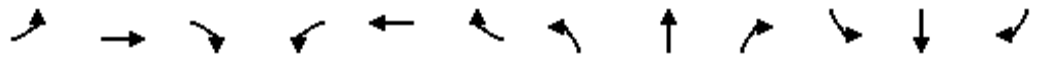
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Volume (vph)	110	163	182	212	134	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1591
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1591
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	163	182	212	134	177
RTOR Reduction (vph)	0	69	0	0	0	126
Lane Group Flow (vph)	110	94	182	212	134	51
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	57.6	57.6	15.6	77.7	13.3	28.9
Effective Green, g (s)	57.6	57.6	15.6	77.7	13.3	28.9
Actuated g/C Ratio	0.58	0.58	0.16	0.78	0.13	0.29
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1073	837	276	1448	235	531
v/s Ratio Prot	0.06		c0.10	c0.11	c0.08	0.02
v/s Ratio Perm		0.06				0.02
v/c Ratio	0.10	0.11	0.66	0.15	0.57	0.10
Uniform Delay, d1	9.6	9.6	39.7	2.8	40.7	26.0
Progression Factor	1.00	1.00	1.17	0.91	0.83	1.18
Incremental Delay, d2	0.0	0.1	5.1	0.2	3.3	0.1
Delay (s)	9.6	9.7	51.5	2.7	36.9	30.7
Level of Service	A	A	D	A	D	C
Approach Delay (s)	9.6			25.2	33.4	
Approach LOS	A			C	C	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↗		↘↗	↕	↗	↘	↕↗	↗	↘	↕↗	
Volume (vph)	106	121	13	988	206	405	4	784	328	220	997	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3457		3433	1863	1437	1770	3539	1499	1770	3410	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3457		3433	1863	1437	1770	3539	1499	1770	3410	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	106	121	13	988	206	405	4	784	328	220	997	102
RTOR Reduction (vph)	0	8	0	0	0	325	0	0	146	0	6	0
Lane Group Flow (vph)	106	126	0	988	206	80	4	784	182	220	1093	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	22.7	18.9		23.5	19.7	19.7	1.0	32.1	55.6	7.5	38.6	
Effective Green, g (s)	22.7	18.9		23.5	19.7	19.7	1.0	32.1	55.6	7.5	38.6	
Actuated g/C Ratio	0.23	0.19		0.24	0.20	0.20	0.01	0.32	0.56	0.08	0.39	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	402	653		807	367	283	18	1136	901	133	1316	
v/s Ratio Prot	c0.06	0.04		c0.29	0.11		0.00	0.22	0.05	c0.12	c0.32	
v/s Ratio Perm						0.06			0.07			
v/c Ratio	0.26	0.19		1.22	0.56	0.28	0.22	0.69	0.20	1.65	0.83	
Uniform Delay, d1	31.8	34.1		38.2	36.2	34.1	49.1	29.6	11.1	46.2	27.7	
Progression Factor	0.80	0.79		0.78	0.80	0.70	1.49	0.34	1.23	1.00	1.00	
Incremental Delay, d2	0.3	0.1		110.0	1.6	0.4	6.0	3.3	0.1	325.3	6.2	
Delay (s)	25.8	27.2		139.8	30.6	24.4	79.3	13.5	13.7	371.6	33.9	
Level of Service	C	C		F	C	C	E	B	B	F	C	
Approach Delay (s)		26.6			96.5			13.8			90.3	
Approach LOS		C			F			B			F	

Intersection Summary

HCM Average Control Delay	69.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: North B Street & 12th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↵	↑			↑↑↑↑		↵		
Volume (vph)	425	255	20	436	29	22	2736	1140	34	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.97		1.00	0.99			1.00		0.89		
Flpb, ped/bikes	1.00		1.00	1.00			1.00		1.00		
Frt	0.94		1.00	0.99			0.96		0.92		
Flt Protected	1.00		0.95	1.00			1.00		0.98		
Satd. Flow (prot)	3246		1770	1831			6125		1500		
Flt Permitted	1.00		0.12	1.00			1.00		0.98		
Satd. Flow (perm)	3246		226	1831			6125		1500		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	255	20	436	29	22	2736	1140	34	43	7
RTOR Reduction (vph)	59	0	0	0	0	0	0	0	2	0	0
Lane Group Flow (vph)	621	0	20	465	0	0	3898	0	82	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	33.0		33.0	33.0			80.8		17.2		
Effective Green, g (s)	33.0		33.0	33.0			83.8		17.2		
Actuated g/C Ratio	0.22		0.22	0.22			0.56		0.11		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	714		50	403			3422		172		
v/s Ratio Prot	0.19			c0.25							
v/s Ratio Perm			0.09				0.64		c0.05		
v/c Ratio	0.87		0.40	1.15			1.27dr		0.48		
Uniform Delay, d1	56.4		50.0	58.5			33.1		62.2		
Progression Factor	1.00		1.00	1.00			1.00		1.00		
Incremental Delay, d2	11.9		10.6	93.9			66.6		4.3		
Delay (s)	68.3		60.7	152.4			99.7		66.5		
Level of Service	E		E	F			F		E		
Approach Delay (s)	68.3			148.6			99.7		66.5		
Approach LOS	E			F			F		E		

Intersection Summary

HCM Average Control Delay	99.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th St

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	46	210	199	362	531	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3452	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3452	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	210	199	362	531	40
RTOR Reduction (vph)	0	171	0	0	5	0
Lane Group Flow (vph)	46	39	199	362	566	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.7	18.7	26.5	72.3	41.3	
Effective Green, g (s)	18.7	18.7	26.5	72.3	41.3	
Actuated g/C Ratio	0.19	0.19	0.26	0.72	0.41	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	331	269	469	2559	1426	
v/s Ratio Prot	0.03		c0.11	0.10	c0.16	
v/s Ratio Perm		c0.03				
v/c Ratio	0.14	0.15	0.42	0.14	0.40	
Uniform Delay, d1	33.9	34.0	30.4	4.3	20.6	
Progression Factor	1.00	1.00	0.73	0.15	0.71	
Incremental Delay, d2	0.2	0.3	0.6	0.1	0.8	
Delay (s)	34.1	34.2	22.8	0.8	15.4	
Level of Service	C	C	C	A	B	
Approach Delay (s)	34.2			8.6	15.4	
Approach LOS	C			A	B	

Intersection Summary

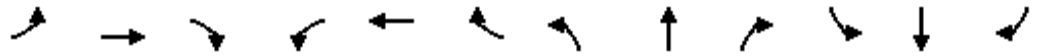
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	129	389	434	234	245	32	388	377	221	8	561	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	129	389	434	234	245	32	388	377	221	8	561	74
RTOR Reduction (vph)	0	0	233	0	0	23	0	0	127	0	0	51
Lane Group Flow (vph)	129	389	201	234	245	9	388	377	94	8	561	23
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.2	25.0	25.0	13.6	28.4	28.4	11.7	42.4	42.4	1.0	31.7	31.7
Effective Green, g (s)	10.2	25.0	25.0	13.6	28.4	28.4	11.7	42.4	42.4	1.0	31.7	31.7
Actuated g/C Ratio	0.10	0.25	0.25	0.14	0.28	0.28	0.12	0.42	0.42	0.01	0.32	0.32
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	885	366	241	1005	416	402	1501	616	34	1122	464
v/s Ratio Prot	c0.07	0.11		c0.13	0.07		c0.11	0.11		0.00	c0.16	
v/s Ratio Perm			c0.14			0.01			0.06			0.02
v/c Ratio	0.71	0.44	0.55	0.97	0.24	0.02	0.97	0.25	0.15	0.24	0.50	0.05
Uniform Delay, d1	43.5	31.6	32.6	43.0	27.5	25.8	43.9	18.6	17.7	49.1	27.7	23.7
Progression Factor	1.00	1.00	1.00	0.78	0.69	0.47	1.00	1.00	1.00	0.57	0.40	0.06
Incremental Delay, d2	12.5	0.4	1.7	38.0	0.1	0.0	35.5	0.4	0.5	3.3	1.5	0.2
Delay (s)	55.9	31.9	34.3	71.5	19.2	12.1	79.5	19.0	18.3	31.3	12.6	1.6
Level of Service	E	C	C	E	B	B	E	B	B	C	B	A
Approach Delay (s)		36.3			42.7			42.6			11.5	
Approach LOS		D			D			D			B	

Intersection Summary

HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	404	219	80	660	1060	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.92	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3305	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3305	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	404	219	80	660	1060	451
RTOR Reduction (vph)	0	139	0	0	42	0
Lane Group Flow (vph)	404	80	80	660	1469	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.9	24.9	6.2	66.1	55.4	
Effective Green, g (s)	24.9	24.9	6.2	66.1	55.4	
Actuated g/C Ratio	0.25	0.25	0.06	0.66	0.55	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	855	365	110	2339	1831	
v/s Ratio Prot	c0.12		c0.05	0.19	c0.44	
v/s Ratio Perm		0.05				
v/c Ratio	0.47	0.22	0.73	0.28	0.80	
Uniform Delay, d1	32.0	29.8	46.1	7.1	17.9	
Progression Factor	0.86	1.16	0.25	0.12	0.49	
Incremental Delay, d2	0.4	0.3	2.2	0.0	1.0	
Delay (s)	27.7	34.9	13.8	0.9	9.7	
Level of Service	C	C	B	A	A	
Approach Delay (s)	30.3			2.3	9.7	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	40	0	55	137	34	25	866	39	321	1161	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1770			3486			3343	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1770			3486			3343	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	40	0	55	137	34	25	866	39	321	1161	228
RTOR Reduction (vph)	0	0	0	0	9	0	0	3	0	0	12	0
Lane Group Flow (vph)	56	40	0	55	162	0	0	927	0	0	1698	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	4.0	18.0		5.0	19.0			19.0			41.0	
Effective Green, g (s)	4.0	18.0		5.0	19.0			19.0			41.0	
Actuated g/C Ratio	0.04	0.18		0.05	0.19			0.19			0.41	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	71	335		89	336			662			1371	
v/s Ratio Prot	c0.03	0.02		0.03	c0.09			c0.27			c0.51	
v/s Ratio Perm												
v/c Ratio	0.79	0.12		0.62	0.48			1.40			1.24	
Uniform Delay, d1	47.6	34.4		46.6	36.1			40.5			29.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.94	
Incremental Delay, d2	58.6	0.7		28.1	4.9			189.0			112.7	
Delay (s)	106.1	35.1		74.7	41.0			229.5			140.3	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		76.5			49.2			229.5			140.3	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	159.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	108.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↖	↗	↖	↕		↖	↕	
Volume (vph)	37	199	52	118	264	621	67	735	104	127	1411	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.87	1.00	1.00	0.87	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		0.99	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1378	1770	1863	1378	1770	3380		1770	3472	
Flt Permitted		0.91	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1676	1378	1770	1863	1378	1770	3380		1770	3472	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	199	52	118	264	621	67	735	104	127	1411	77
RTOR Reduction (vph)	0	0	44	0	0	330	0	11	0	0	4	0
Lane Group Flow (vph)	0	236	8	118	264	291	67	828	0	127	1484	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		15.0	15.0	22.0	22.0	22.0	4.0	38.0		11.0	46.0	
Effective Green, g (s)		15.0	15.0	22.0	22.0	22.0	4.0	38.0		11.0	46.0	
Actuated g/C Ratio		0.15	0.15	0.22	0.22	0.22	0.04	0.38		0.11	0.46	
Clearance Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		251	207	389	410	303	71	1284		195	1597	
v/s Ratio Prot				0.07	0.14		c0.04	0.24		0.07	c0.43	
v/s Ratio Perm		c0.14	0.01			c0.21						
v/c Ratio		0.94	0.04	0.30	0.64	0.96	0.94	0.64		0.65	0.93	
Uniform Delay, d1		42.1	36.3	32.6	35.4	38.6	47.9	25.5		42.7	25.5	
Progression Factor		1.00	1.00	0.96	0.95	1.37	0.82	0.70		1.00	1.00	
Incremental Delay, d2		43.3	0.3	1.7	6.4	38.5	20.9	0.2		15.7	11.0	
Delay (s)		85.3	36.7	32.9	40.2	91.2	60.4	18.0		58.3	36.5	
Level of Service		F	D	C	D	F	E	B		E	D	
Approach Delay (s)		76.5			71.0			21.1			38.2	
Approach LOS		E			E			C			D	

Intersection Summary

HCM Average Control Delay	45.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	63	0	22	224	540	358	237	622	0	0	1019	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	0	22	224	540	358	237	622	0	0	1019	197
RTOR Reduction (vph)	0	0	18	0	0	181	0	0	0	0	0	92
Lane Group Flow (vph)	63	0	4	224	540	177	237	622	0	0	1019	105
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0		18.0	16.0	28.0	28.0	16.0	54.5			34.5	34.5
Effective Green, g (s)	6.0		18.0	15.5	28.0	27.5	16.0	54.5			34.0	34.5
Actuated g/C Ratio	0.06		0.18	0.16	0.28	0.28	0.16	0.55			0.34	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	106		285	274	991	379	283	1015			1203	546
v/s Ratio Prot	0.04			c0.13	c0.15		c0.13	0.33			c0.29	
v/s Ratio Perm			0.00			0.13						0.07
v/c Ratio	0.59		0.01	0.82	0.54	0.47	0.84	0.61			0.85	0.19
Uniform Delay, d1	45.8		33.7	40.9	30.6	30.1	40.7	15.5			30.6	23.0
Progression Factor	0.81		1.26	1.01	0.84	0.84	1.14	0.89			0.93	0.74
Incremental Delay, d2	13.8		0.1	21.5	2.0	3.8	21.8	2.4			7.1	0.7
Delay (s)	50.8		42.4	62.6	27.7	29.1	68.2	16.2			35.5	17.7
Level of Service	D		D	E	C	C	E	B			D	B
Approach Delay (s)		48.6			35.1			30.5			32.6	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	256	232	55	0	0	0	0	565	531	1057	626	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3207						3039		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3207						3039		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	256	232	55	0	0	0	0	565	531	1057	626	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	36	0	0	0	0
Lane Group Flow (vph)	179	350	0	0	0	0	0	1060	0	1057	626	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.0	16.0						26.5		46.5	76.5	
Effective Green, g (s)	16.0	15.5						26.0		46.0	76.0	
Actuated g/C Ratio	0.16	0.16						0.26		0.46	0.76	
Clearance Time (s)	4.0	4.0						3.5		3.5	3.5	
Lane Grp Cap (vph)	258	497						790		814	2690	
v/s Ratio Prot	c0.11	0.11						c0.35		c0.60	0.18	
v/s Ratio Perm												
v/c Ratio	0.69	0.71						1.34		1.30	0.23	
Uniform Delay, d1	39.7	40.1						37.0		27.0	3.5	
Progression Factor	0.97	0.97						0.69		0.33	0.10	
Incremental Delay, d2	8.7	4.9						158.3		139.5	0.1	
Delay (s)	47.1	43.7						183.8		148.6	0.5	
Level of Service	D	D						F		F	A	
Approach Delay (s)		44.9			0.0			183.8			93.5	
Approach LOS		D			A			F			F	

Intersection Summary

HCM Average Control Delay	115.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	117.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↕	↕↕		
Volume (vph)	512	892	209	0	0	0	0	0	0	166	850	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3380								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3380								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	512	892	209	0	0	0	0	0	0	166	850	0	
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1602	0	0	0	0	0	0	0	166	850	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		27.5								15.5	15.5		
Effective Green, g (s)		27.0								15.0	15.0		
Actuated g/C Ratio		0.54								0.30	0.30		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1825								531	1062		
v/s Ratio Prot		c0.47								0.09	c0.24		
v/s Ratio Perm													
v/c Ratio		0.88								0.31	0.80		
Uniform Delay, d1		10.1								13.5	16.1		
Progression Factor		0.92								0.46	0.88		
Incremental Delay, d2		0.6								0.8	3.5		
Delay (s)		9.9								7.1	17.6		
Level of Service		A								A	B		
Approach Delay (s)		9.9			0.0			0.0			15.9		
Approach LOS		A			A			A			B		
Intersection Summary													
HCM Average Control Delay			12.2									HCM Level of Service	B
HCM Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			50.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.0%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					← ↑ ↑ →		←	↑↑			↑	↑
Volume (vph)	0	0	0	57	1100	302	40	784	0	0	271	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			0.96	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6136		1770	3539			1703	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6136		1770	3539			1703	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	57	1100	302	40	784	0	0	271	410
RTOR Reduction (vph)	0	0	0	0	94	0	0	0	0	0	24	251
Lane Group Flow (vph)	0	0	0	0	1365	0	40	784	0	0	337	69
Confl. Peds. (#/hr)							36					
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					15.5		12.7	12.7			11.3	11.3
Effective Green, g (s)					15.0		12.2	12.2			10.8	10.8
Actuated g/C Ratio					0.30		0.24	0.24			0.22	0.22
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1841		432	864			368	325
v/s Ratio Prot							0.02	c0.22			c0.20	0.05
v/s Ratio Perm					0.22							
v/c Ratio					0.74		0.09	0.91			0.92	0.21
Uniform Delay, d1					15.8		14.6	18.4			19.2	16.1
Progression Factor					0.57		0.98	1.07			1.11	3.04
Incremental Delay, d2					2.4		0.0	1.8			29.5	1.5
Delay (s)					11.4		14.4	21.3			50.8	50.4
Level of Service					B		B	C			D	D
Approach Delay (s)		0.0			11.4			21.0			50.6	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗	↗↗
Volume (vph)	0	0	0	272	1087	0	0	0	0	0	709	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.95
Flpb, ped/bikes				0.96	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1467	4796						3539	2655
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1467	4796						3539	2655
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	272	1087	0	0	0	0	0	709	415
RTOR Reduction (vph)	0	0	0	58	5	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	0	0	187	1109	0	0	0	0	0	709	374
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				22.5	22.5						20.5	20.5
Effective Green, g (s)				22.0	22.0						20.0	20.0
Actuated g/C Ratio				0.44	0.44						0.40	0.40
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				645	2110						1416	1062
v/s Ratio Prot											c0.20	
v/s Ratio Perm				0.13	0.23							0.14
v/c Ratio				0.29	0.53						0.50	0.35
Uniform Delay, d1				9.0	10.2						11.3	10.5
Progression Factor				1.00	1.00						0.36	0.26
Incremental Delay, d2				1.1	0.9						0.8	0.6
Delay (s)				10.1	11.1						4.8	3.3
Level of Service				B	B						A	A
Approach Delay (s)		0.0			11.0			0.0			4.2	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013+Proj (Res) AM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↕↘						↕		↘		
Volume (vph)	859	2454	0	0	0	0	0	48	8	214	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.99		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.94		
Frt	1.00	1.00						0.98		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4788						1808		1671		
Flt Permitted	0.95	1.00						1.00		0.72		
Satd. Flow (perm)	1431	4788						1808		1268		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	859	2454	0	0	0	0	0	48	8	214	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	773	2540	0	0	0	0	0	55	0	214	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	25.0	25.0						18.0		18.0		
Effective Green, g (s)	24.5	24.5						17.5		17.5		
Actuated g/C Ratio	0.49	0.49						0.35		0.35		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	701	2346						633		444		
v/s Ratio Prot								0.03				
v/s Ratio Perm	c0.54	0.53								c0.17		
v/c Ratio	1.10	1.08						0.09		0.48		
Uniform Delay, d1	12.8	12.8						10.9		12.7		
Progression Factor	1.04	1.04						1.00		1.18		
Incremental Delay, d2	57.9	41.9						0.3		1.6		
Delay (s)	71.1	55.2						11.2		16.6		
Level of Service	E	E						B		B		
Approach Delay (s)		58.9			0.0			11.2			16.6	
Approach LOS		E			A			B			B	

Intersection Summary

HCM Average Control Delay	55.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



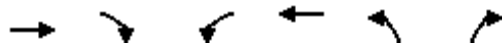
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2471	404	0	0	0	0	0	0	224	614	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									0.97	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4887									4857	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4887									4857	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2471	404	0	0	0	0	0	0	224	614	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	2868	0	0	0	0	0	0	0	0	832	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		70.5									22.5	
Effective Green, g (s)		70.0									22.0	
Actuated g/C Ratio		0.70									0.22	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3421									1069	
v/s Ratio Prot		0.59										
v/s Ratio Perm											0.17	
v/c Ratio		0.84									0.78	
Uniform Delay, d1		10.9									36.7	
Progression Factor		1.08									0.90	
Incremental Delay, d2		0.8									5.1	
Delay (s)		12.6									38.1	
Level of Service		B									D	
Approach Delay (s)		12.6			0.0			0.0			38.1	
Approach LOS		B			A			A			D	

Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 33: Riverfront Dr & 5th Street

2013+Proj (Res) AM Peak (Mitigated)
 1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Volume (veh/h)	0	0	64	0	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	64	0	0	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0	128	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	128	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			96	100	98	
cM capacity (veh/h)			1623	832	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	64	27
Volume Left	0	64	0
Volume Right	0	0	27
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.02
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization	13.5%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
34: Riverfront Dr & 7th Street

2013+Proj (Res) AM Peak (Mitigated)
1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	0	0	64	0	27	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	64	0	27	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0	128	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	128	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			96	97	100	
cM capacity (veh/h)			1623	832	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	64	27
Volume Left	0	64	27
Volume Right	0	0	0
cSH	1700	1623	832
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	3
Control Delay (s)	0.0	7.3	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.5
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		13.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↗	↖	↗		↕	
Volume (vph)	0	0	203	100	0	0	90	623	499	0	446	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.95	0.95		1.00	1.00	1.00		1.00	
Frt		0.85	0.85	1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	1681	1681		1770	1863	1583		1863	
Flt Permitted		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	1681	1681		1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	203	100	0	0	90	623	499	0	446	0
RTOR Reduction (vph)	0	97	96	0	0	0	0	0	99	0	0	0
Lane Group Flow (vph)	0	5	5	50	50	0	90	623	400	0	446	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		5.5	5.5	7.8	7.8		11.4	96.2	96.2		81.3	
Effective Green, g (s)		5.5	5.5	7.8	7.8		11.4	96.2	96.2		81.3	
Actuated g/C Ratio		0.05	0.05	0.06	0.06		0.10	0.80	0.80		0.68	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		69	69	109	109		168	1494	1269		1262	
v/s Ratio Prot		c0.00		c0.03	0.03		c0.05	c0.33			0.24	
v/s Ratio Perm			0.00						0.25			
v/c Ratio		0.07	0.07	0.46	0.46		0.54	0.42	0.32		0.35	
Uniform Delay, d1		54.8	54.8	54.1	54.1		51.8	3.5	3.2		8.2	
Progression Factor		1.00	1.00	1.00	1.00		0.76	0.33	0.52		1.00	
Incremental Delay, d2		0.4	0.4	3.0	3.0		1.4	0.4	0.3		0.8	
Delay (s)		55.2	55.2	57.1	57.1		40.6	1.5	1.9		9.0	
Level of Service		E	E	E	E		D	A	A		A	
Approach Delay (s)		55.2		57.1			4.6				9.0	
Approach LOS		E		E			A				A	

Intersection Summary

HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	407	652	1032	329	0	0	0	0	1484	3	556
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.87		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.91		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		2805		3433	1863					1681	1686	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		2805		3433	1863					1681	1686	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	407	652	1032	329	0	0	0	0	1484	3	556
RTOR Reduction (vph)	0	242	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	818	0	1032	329	0	0	0	0	742	745	556
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		28.0		36.1	67.1					45.4	45.4	120.0
Effective Green, g (s)		28.0		34.6	66.6					45.4	45.4	120.0
Actuated g/C Ratio		0.23		0.29	0.55					0.38	0.38	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		655		990	1034					636	638	1539
v/s Ratio Prot		c0.29		c0.30	0.18					0.44	c0.44	
v/s Ratio Perm												0.36
v/c Ratio		1.25		1.04	0.32					1.17	1.17	0.36
Uniform Delay, d1		46.0		42.7	14.4					37.3	37.3	0.0
Progression Factor		1.00		0.59	1.12					1.00	1.00	1.00
Incremental Delay, d2		124.1		22.5	0.0					91.3	91.6	0.7
Delay (s)		170.1		47.8	16.1					128.6	128.9	0.7
Level of Service		F		D	B					F	F	A
Approach Delay (s)		170.1			40.1			0.0			93.9	
Approach LOS		F			D			A			F	

Intersection Summary

HCM Average Control Delay	95.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	146.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	425	1466	0	0	1263	2638	98	9	863	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1546	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1546	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	1466	0	0	1263	2638	98	9	863	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	110	11	0	0	0
Lane Group Flow (vph)	425	1466	0	0	1263	2638	0	385	464	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	25.7	59.4			41.5	120.0		34.3	53.6			
Effective Green, g (s)	24.7	58.9			38.0	120.0		33.8	48.6			
Actuated g/C Ratio	0.21	0.49			0.32	1.00		0.28	0.40			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	364	1737			1121	2708		435	609			
v/s Ratio Prot	c0.24	0.41			0.36			0.25	0.31			
v/s Ratio Perm						c0.97						
v/c Ratio	1.17	0.84			1.13	0.97		0.89	0.76			
Uniform Delay, d1	47.6	26.6			41.0	0.0		41.2	30.7			
Progression Factor	0.55	0.14			0.99	1.00		1.00	1.00			
Incremental Delay, d2	78.4	0.4			58.3	1.9		20.1	6.6			
Delay (s)	104.5	4.2			98.7	1.9		61.4	37.3			
Level of Service	F	A			F	A		E	D			
Approach Delay (s)		26.7			33.3			49.6			0.0	
Approach LOS		C			C			D			A	

Intersection Summary

HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	146.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Richard Blvd & Bercut Dr

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	164	1479	686	29	2537	35	1181	61	26	54	137	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.6	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	1.00		1.00	0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1770	3539	1408	1770	5063		3433	1742			1837	1583
Flt Permitted	0.07	1.00	1.00	0.08	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	135	3539	1408	146	5063		3433	1742			1837	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	1479	686	29	2537	35	1181	61	26	54	137	183
RTOR Reduction (vph)	0	0	185	0	1	0	0	13	0	0	0	60
Lane Group Flow (vph)	164	1479	501	29	2571	0	1181	74	0	0	191	123
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	61.5	60.4	60.4	50.4	50.4		36.5	36.5			11.5	11.5
Effective Green, g (s)	61.0	61.0	60.4	51.0	51.0		36.0	36.0			11.0	11.0
Actuated g/C Ratio	0.51	0.51	0.50	0.42	0.42		0.30	0.30			0.09	0.09
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	150	1799	709	62	2152		1030	523			168	145
v/s Ratio Prot	0.05	c0.42			c0.51		c0.34	0.04			c0.10	
v/s Ratio Perm	0.50		0.36	0.20								0.08
v/c Ratio	1.09	0.82	0.71	0.47	1.19		1.15	0.14			1.14	0.85
Uniform Delay, d1	53.9	24.9	23.0	24.8	34.5		42.0	30.7			54.5	53.7
Progression Factor	0.79	0.68	0.45	0.73	0.72		0.90	0.91			1.00	1.00
Incremental Delay, d2	81.3	2.4	3.2	16.2	90.9		74.7	0.0			111.0	33.3
Delay (s)	123.9	19.5	13.4	34.2	115.7		112.5	27.9			165.5	87.0
Level of Service	F	B	B	C	F		F	C			F	F
Approach Delay (s)		25.1			114.8			106.7			127.1	
Approach LOS		C			F			F			F	

Intersection Summary

HCM Average Control Delay	82.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	1122	21	67	2039	70	13	247	17	89	113	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3509		1697	1836		1713	1692	
Flt Permitted	0.95	1.00		0.95	1.00		0.41	1.00		0.24	1.00	
Satd. Flow (perm)	1770	3523		1770	3509		725	1836		432	1692	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	1122	21	67	2039	70	13	247	17	89	113	80
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	21	0
Lane Group Flow (vph)	230	1142	0	67	2107	0	13	262	0	89	172	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	7.0	83.1		4.0	80.1		22.1	22.1		22.1	22.1	
Effective Green, g (s)	6.0	83.4		3.0	80.4		21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.05	0.70		0.02	0.67		0.18	0.18		0.18	0.18	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	89	2448		44	2351		131	330		78	305	
v/s Ratio Prot	c0.13	c0.32		0.04	c0.60			0.14			0.10	
v/s Ratio Perm							0.02			c0.21		
v/c Ratio	2.58	0.47		1.52	0.90		0.10	0.79		1.14	0.56	
Uniform Delay, d1	57.0	8.3		58.5	16.4		41.1	47.1		49.2	44.9	
Progression Factor	1.43	0.15		0.99	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	730.3	0.3		245.5	0.6		0.1	11.5		145.1	1.4	
Delay (s)	811.9	1.6		303.6	11.7		41.2	58.6		194.3	46.3	
Level of Service	F	A		F	B		D	E		F	D	
Approach Delay (s)		137.3			20.7			57.7			93.0	
Approach LOS		F			C			E			F	

Intersection Summary

HCM Average Control Delay	67.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Volume (vph)	130	807	311	332	1344	213	461	491	800	353	662	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3347		1770	3429		1681	1762	1544	1770	3336	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3347		1770	3429		1681	1762	1544	1770	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	130	807	311	332	1344	213	461	491	800	353	662	410
RTOR Reduction (vph)	0	31	0	0	9	0	0	0	64	0	80	0
Lane Group Flow (vph)	130	1087	0	332	1548	0	415	537	736	353	992	0
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot			Prot			Split		pm+ov	Split		
Protected Phases	1	6		5	2		8	8	5	7	7	
Permitted Phases									8			
Actuated Green, G (s)	6.0	41.5		22.0	57.5		24.0	24.0	46.0	18.5	18.5	
Effective Green, g (s)	5.0	41.5		21.0	57.5		23.5	23.5	45.0	18.0	18.0	
Actuated g/C Ratio	0.04	0.35		0.18	0.48		0.20	0.20	0.38	0.15	0.15	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.5	3.5	3.0	3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	74	1158		310	1643		329	345	579	266	500	
v/s Ratio Prot	c0.07	0.32		0.19	c0.45		0.25	c0.30	c0.23	0.20	c0.30	
v/s Ratio Perm									0.25			
v/c Ratio	1.76	0.94		1.07	0.94		1.26	1.56	1.27	1.33	1.98	
Uniform Delay, d1	57.5	38.0		49.5	29.7		48.2	48.2	37.5	51.0	51.0	
Progression Factor	1.15	0.64		1.13	0.76		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	384.1	12.5		67.4	10.8		139.8	264.3	134.9	170.8	450.0	
Delay (s)	450.3	36.7		123.5	33.4		188.1	312.5	172.4	221.8	501.0	
Level of Service	F	D		F	C		F	F	F	F	F	
Approach Delay (s)		79.8			49.2			219.1			431.9	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	188.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	126.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	26	1859	99	90	1501	26	115	30	176	71	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3524		1685	1863	1583	1770	1863	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3524		1300	1863	1583	1374	1863	1459
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1859	99	90	1501	26	115	30	176	71	37	170
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	121	0	0	107
Lane Group Flow (vph)	26	1859	87	90	1526	0	115	30	55	71	37	63
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	3.8	79.4	79.4	10.1	85.7		19.0	19.0	19.0	19.0	19.0	19.0
Effective Green, g (s)	3.3	79.9	79.9	9.6	86.2		18.5	18.5	18.5	18.5	18.5	18.5
Actuated g/C Ratio	0.03	0.67	0.67	0.08	0.72		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	49	2356	989	142	2531		200	287	244	212	287	225
v/s Ratio Prot	0.01	c0.53		c0.05	0.43			0.02			0.02	
v/s Ratio Perm			0.06				c0.09		0.03	0.05		0.04
v/c Ratio	0.53	0.79	0.09	0.63	0.60		0.57	0.10	0.23	0.33	0.13	0.28
Uniform Delay, d1	57.6	14.1	7.1	53.5	8.4		47.1	43.6	44.5	45.3	43.8	44.8
Progression Factor	0.99	1.18	1.27	1.01	0.72		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	0.0	5.5	0.9		2.5	0.1	0.2	0.3	0.1	0.2
Delay (s)	57.3	16.8	9.0	59.3	6.9		49.6	43.7	44.6	45.6	43.9	45.1
Level of Service	E	B	A	E	A		D	D	D	D	D	D
Approach Delay (s)		17.0			9.8			46.3			45.1	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	1861	39	7	1446	5	42	38	144	24	25	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.94			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Frt	1.00	1.00		1.00	1.00			0.91			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3513		1770	3535			1565			1613	
Flt Permitted	0.12	1.00		0.05	1.00			0.93			0.91	
Satd. Flow (perm)	227	3513		94	3535			1469			1483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	58	1861	39	7	1446	5	42	38	144	24	25	52
RTOR Reduction (vph)	0	1	0	0	0	0	0	13	0	0	32	0
Lane Group Flow (vph)	58	1899	0	7	1451	0	0	211	0	0	69	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	78.5	78.5		78.5	78.5			33.5			33.5	
Effective Green, g (s)	79.0	79.0		79.0	79.0			33.0			33.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.28			0.28	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	149	2313		62	2327			404			408	
v/s Ratio Prot		c0.54			0.41							
v/s Ratio Perm	0.26			0.07				c0.14			0.05	
v/c Ratio	0.39	0.82		0.11	0.62			0.52			0.17	
Uniform Delay, d1	9.4	15.2		7.6	11.9			36.8			33.1	
Progression Factor	0.69	0.74		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.9	2.3		3.7	1.3			4.8			0.9	
Delay (s)	11.4	13.6		11.2	13.2			41.6			34.0	
Level of Service	B	B		B	B			D			C	
Approach Delay (s)		13.5			13.1			41.6			34.0	
Approach LOS		B			B			D			C	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1941	262	50	0	50	110	5113	20	2953	1098
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		3.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.93		1.00		1.00	1.00	0.88	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1466		1695		1770	6408	1396	6408	1471
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1466		1695		1770	6408	1396	6408	1471
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1941	262	50	0	50	110	5113	20	2953	1098
RTOR Reduction (vph)	0	104	0	0	0	0	0	6	0	548
Lane Group Flow (vph)	1941	158	0	100	0	110	5113	14	2953	550
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Effective Green, g (s)	20.0	20.0		12.1		5.0	51.9	33.9	43.4	43.4
Actuated g/C Ratio	0.20	0.20		0.12		0.05	0.52	0.34	0.43	0.43
Clearance Time (s)	4.0	4.0		4.0		3.5		4.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	687	293		205		89	3326	473	2781	638
v/s Ratio Prot	c0.57			c0.06		0.06	c0.80		0.46	
v/s Ratio Perm		0.11						0.01		0.37
v/c Ratio	2.83	0.54		0.49		1.24	1.54	0.03	1.06	0.86
Uniform Delay, d1	40.0	35.9		41.1		47.5	24.0	22.1	28.3	25.6
Progression Factor	1.00	1.00		1.00		0.92	1.31	0.64	1.00	1.00
Incremental Delay, d2	825.4	1.9		1.8		115.0	241.9	0.0	36.3	11.6
Delay (s)	865.4	37.8		42.9		158.7	273.4	14.2	64.6	37.1
Level of Service	F	D		D		F	F	B	E	D
Approach Delay (s)				42.9			270.0			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	288.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	142.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	557	606	1	181	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	557	606	1	181	662
RTOR Reduction (vph)	323	0	0	0	0	0
Lane Group Flow (vph)	234	0	607	0	181	662
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.1		27.0		8.9	39.9
Effective Green, g (s)	12.1		27.0		8.9	39.9
Actuated g/C Ratio	0.20		0.45		0.15	0.66
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	325		838		263	1239
v/s Ratio Prot	c0.15		c0.33		c0.10	0.36
v/s Ratio Perm						
v/c Ratio	0.72		0.72		0.69	0.53
Uniform Delay, d1	22.4		13.5		24.2	5.2
Progression Factor	1.00		1.00		1.22	1.33
Incremental Delay, d2	7.7		5.4		4.1	0.9
Delay (s)	30.1		18.9		33.6	7.9
Level of Service	C		B		C	A
Approach Delay (s)	30.1		18.9			13.4
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th Street

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	232	192	499	190	514	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.88
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1575
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1575
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	232	192	499	190	514	519
RTOR Reduction (vph)	0	140	0	0	0	78
Lane Group Flow (vph)	232	52	499	190	514	441
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	27.1	27.1	29.9	61.5	29.5	59.4
Effective Green, g (s)	27.1	27.1	29.9	61.5	29.5	59.4
Actuated g/C Ratio	0.27	0.27	0.30	0.62	0.30	0.59
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	505	394	529	1146	522	1006
v/s Ratio Prot	c0.12		c0.28	0.10	c0.29	0.13
v/s Ratio Perm		0.04				0.15
v/c Ratio	0.46	0.13	0.94	0.17	0.98	0.44
Uniform Delay, d1	30.4	27.6	34.2	8.3	35.0	11.1
Progression Factor	1.00	1.00	0.58	0.42	0.71	0.21
Incremental Delay, d2	0.7	0.2	17.8	0.2	33.6	0.3
Delay (s)	31.0	27.7	37.6	3.6	58.5	2.7
Level of Service	C	C	D	A	E	A
Approach Delay (s)	29.5			28.2	30.4	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	330	0	1041	474	306	54	1360	1036	275	830	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539		3433	1863	1437	1770	3539	1497	1770	3417	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539		3433	1863	1437	1770	3539	1497	1770	3417	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	330	0	1041	474	306	54	1360	1036	275	830	80
RTOR Reduction (vph)	0	0	0	0	0	162	0	0	86	0	7	0
Lane Group Flow (vph)	173	330	0	1041	474	144	54	1360	950	275	903	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.0	7.0		27.5	25.5	25.5	7.3	39.6	67.1	8.4	40.7	
Effective Green, g (s)	9.0	7.0		27.5	25.5	25.5	7.3	39.6	67.1	8.4	40.7	
Actuated g/C Ratio	0.09	0.07		0.28	0.26	0.26	0.07	0.40	0.67	0.08	0.41	
Clearance Time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	159	248		944	475	366	129	1401	1072	149	1391	
v/s Ratio Prot	0.10	c0.09		c0.30	0.25		0.03	c0.38	0.24	c0.16	0.26	
v/s Ratio Perm						0.10			0.39			
v/c Ratio	1.09	1.33		1.10	1.00	0.39	0.42	0.97	0.89	1.85	0.65	
Uniform Delay, d1	45.5	46.5		36.2	37.2	30.8	44.3	29.6	13.4	45.8	23.9	
Progression Factor	0.97	0.99		0.83	0.82	0.83	0.87	0.64	0.65	1.00	1.00	
Incremental Delay, d2	92.5	171.2		58.5	35.2	0.5	2.1	17.3	8.5	405.3	2.4	
Delay (s)	136.6	217.1		88.4	65.8	26.2	40.8	36.3	17.2	451.1	26.3	
Level of Service	F	F		F	E	C	D	D	B	F	C	
Approach Delay (s)		189.4			72.1			28.3			124.9	
Approach LOS		F			E			C			F	

Intersection Summary

HCM Average Control Delay	74.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑		↘		
Volume (vph)	1341	372	38	348	38	54	2201	1425	18	40	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0			4.0		4.0		
Lane Util. Factor	0.95		1.00	1.00			0.86		1.00		
Frbp, ped/bikes	0.99		1.00	0.99			1.00		0.91		
Flpb, ped/bikes	1.00		1.00	1.00			1.00		1.00		
Frt	0.97		1.00	0.99			0.94		0.90		
Flt Protected	1.00		0.95	1.00			1.00		0.99		
Satd. Flow (prot)	3384		1770	1819			6031		1515		
Flt Permitted	1.00		0.15	1.00			1.00		0.99		
Satd. Flow (perm)	3384		287	1819			6031		1515		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1341	372	38	348	38	54	2201	1425	18	40	4
RTOR Reduction (vph)	25	0	0	0	0	0	0	0	3	0	0
Lane Group Flow (vph)	1688	0	38	386	0	0	3680	0	59	0	0
Confl. Peds. (#/hr)		36	36		36					36	36
Turn Type			Perm			Perm					
Protected Phases	4			4			2 3				
Permitted Phases			4			2 3			1		
Actuated Green, G (s)	26.0		26.0	26.0			41.7		13.3		
Effective Green, g (s)	26.0		26.0	26.0			44.7		13.3		
Actuated g/C Ratio	0.26		0.26	0.26			0.45		0.13		
Clearance Time (s)	4.0		4.0	4.0					4.0		
Vehicle Extension (s)	5.0		5.0	5.0					5.0		
Lane Grp Cap (vph)	880		75	473			2696		201		
v/s Ratio Prot	c0.50			0.21							
v/s Ratio Perm			0.13				0.61		c0.04		
v/c Ratio	1.92		0.51	0.82			1.91dr		0.30		
Uniform Delay, d1	37.0		31.5	34.8			27.6		39.1		
Progression Factor	0.91		1.14	1.14			0.86		1.00		
Incremental Delay, d2	413.5		10.1	11.0			166.3		1.7		
Delay (s)	447.2		46.2	50.7			190.2		40.8		
Level of Service	F		D	D			F		D		
Approach Delay (s)	447.2			50.3			190.2		40.8		
Approach LOS	F			D			F		D		

Intersection Summary

HCM Average Control Delay	253.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	130.3%	ICU Level of Service	H
Analysis Period (min)	15		
dr Defacto Right Lane. Recode with 1 though lane as a right lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
17: Canal St &

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	153	415	264	1126	670	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3265	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3265	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	415	264	1126	670	193
RTOR Reduction (vph)	0	335	0	0	21	0
Lane Group Flow (vph)	153	80	264	1126	842	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	19.3	19.8	71.7	47.4	
Effective Green, g (s)	19.3	19.3	19.8	71.7	47.4	
Actuated g/C Ratio	0.19	0.19	0.20	0.72	0.47	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	277	350	2537	1548	
v/s Ratio Prot	c0.09		c0.15	0.32	c0.26	
v/s Ratio Perm		0.06				
v/c Ratio	0.45	0.29	0.75	0.44	0.54	
Uniform Delay, d1	35.6	34.5	37.8	5.9	18.6	
Progression Factor	0.85	1.23	0.78	0.51	0.77	
Incremental Delay, d2	0.9	0.6	5.3	0.3	1.1	
Delay (s)	31.3	42.9	34.8	3.3	15.5	
Level of Service	C	D	C	A	B	
Approach Delay (s)	39.8			9.3	15.5	
Approach LOS	D			A	B	

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	365	530	497	314	515	102	472	822	390	134	848	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	365	530	497	314	515	102	472	822	390	134	848	142
RTOR Reduction (vph)	0	0	143	0	0	76	0	0	218	0	0	78
Lane Group Flow (vph)	365	530	354	314	515	26	472	822	172	134	848	64
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.5	27.7	27.7	12.5	25.7	25.7	10.5	33.8	33.8	8.0	31.3	31.3
Effective Green, g (s)	14.5	27.7	27.7	12.5	25.7	25.7	10.5	33.8	33.8	8.0	31.3	31.3
Actuated g/C Ratio	0.14	0.28	0.28	0.12	0.26	0.26	0.10	0.34	0.34	0.08	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	257	980	406	221	910	377	360	1196	491	275	1108	459
v/s Ratio Prot	c0.21	0.15		0.18	0.15		c0.14	0.23		0.04	c0.24	
v/s Ratio Perm			c0.24			0.02			0.12			0.04
v/c Ratio	1.42	0.54	0.87	1.42	0.57	0.07	1.31	0.69	0.35	0.49	0.77	0.14
Uniform Delay, d1	42.7	30.7	34.5	43.8	32.3	28.1	44.8	28.5	24.8	44.0	31.0	24.7
Progression Factor	1.00	1.00	1.00	1.01	0.62	1.00	1.00	1.00	1.00	0.73	1.12	1.67
Incremental Delay, d2	210.4	0.6	18.1	191.8	0.1	0.0	158.6	3.2	2.0	1.2	4.3	0.5
Delay (s)	253.1	31.4	52.6	236.0	20.2	28.1	203.4	31.8	26.8	33.3	39.1	41.8
Level of Service	F	C	D	F	C	C	F	C	C	C	D	D
Approach Delay (s)		97.1			93.8			78.7			38.8	
Approach LOS		F			F			E			D	

Intersection Summary

HCM Average Control Delay	77.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 20: Big Four Blvd & 7th Street

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↖	↖	↑↑	↑↑	
Volume (vph)	600	478	374	1127	1243	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	0.92	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3288	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3288	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	478	374	1127	1243	586
RTOR Reduction (vph)	0	235	0	0	54	0
Lane Group Flow (vph)	600	243	374	1127	1775	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	16.5	65.0	44.0	
Effective Green, g (s)	26.0	26.0	16.5	65.0	44.0	
Actuated g/C Ratio	0.26	0.26	0.16	0.65	0.44	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	893	381	292	2300	1447	
v/s Ratio Prot	c0.17		c0.21	0.32	c0.54	
v/s Ratio Perm		0.17				
v/c Ratio	0.67	0.64	1.28	0.49	1.23	
Uniform Delay, d1	33.2	32.8	41.8	9.0	28.0	
Progression Factor	0.72	0.53	0.47	1.16	0.48	
Incremental Delay, d2	1.8	3.1	128.9	0.1	104.8	
Delay (s)	25.6	20.6	148.3	10.5	118.3	
Level of Service	C	C	F	B	F	
Approach Delay (s)	23.4			44.8	118.3	
Approach LOS	C			D	F	

Intersection Summary

HCM Average Control Delay	70.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	109.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	152	0	93	46	363	0	1503	118	464	1259	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.91			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.87			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1465			3463			3446	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1465			3463			3446	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	152	0	93	46	363	0	1503	118	464	1259	70
RTOR Reduction (vph)	0	0	0	0	284	0	0	6	0	0	3	0
Lane Group Flow (vph)	190	152	0	93	125	0	0	1615	0	0	1790	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	7.0	18.0		8.0	19.0			23.0			34.0	
Effective Green, g (s)	7.0	18.0		8.0	19.0			23.0			34.0	
Actuated g/C Ratio	0.07	0.18		0.08	0.19			0.23			0.34	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	124	335		142	278			796			1172	
v/s Ratio Prot	c0.11	0.08		0.05	c0.09			c0.47			c0.52	
v/s Ratio Perm												
v/c Ratio	1.53	0.45		0.65	0.45			2.03			1.53	
Uniform Delay, d1	46.5	36.6		44.7	35.9			38.5			33.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.88	
Incremental Delay, d2	275.8	4.4		21.2	5.2			467.3			237.8	
Delay (s)	322.3	41.0		65.8	41.0			505.8			266.8	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		197.3			45.6			505.8			266.8	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	326.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	149.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗		↖ ↗	↖ ↗	
Volume (vph)	108	216	212	436	564	1002	42	811	39	95	1779	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.90	1.00	1.00	0.89	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.98	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801	1425	1770	1863	1413	1770	3484		1770	3511	
Flt Permitted		0.67	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1235	1425	1770	1863	1413	1770	3484		1770	3511	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	216	212	436	564	1002	42	811	39	95	1779	58
RTOR Reduction (vph)	0	0	81	0	0	352	0	3	0	0	3	0
Lane Group Flow (vph)	0	324	131	436	564	650	42	847	0	95	1834	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		22.5	22.5	18.5	45.5	18.5	5.0	30.5		11.0	36.5	
Effective Green, g (s)		22.5	22.5	18.5	45.5	18.5	5.0	30.5		11.0	36.5	
Actuated g/C Ratio		0.22	0.22	0.18	0.46	0.18	0.05	0.30		0.11	0.36	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Grp Cap (vph)		278	321	327	848	261	89	1063		195	1282	
v/s Ratio Prot				0.25	0.30		0.02	c0.24		0.05	c0.52	
v/s Ratio Perm		c0.26	0.09			c0.46						
v/c Ratio		1.17	0.41	1.33	0.67	2.49	0.47	0.80		0.49	1.43	
Uniform Delay, d1		38.8	33.1	40.8	21.3	40.8	46.2	31.9		41.8	31.7	
Progression Factor		1.11	1.25	1.44	0.76	2.53	1.32	1.45		1.00	1.00	
Incremental Delay, d2		92.2	1.9	161.1	2.2	676.7	1.6	0.6		8.5	198.5	
Delay (s)		135.3	43.0	219.7	18.4	779.8	62.6	46.9		50.3	230.2	
Level of Service		F	D	F	B	F	E	D		D	F	
Approach Delay (s)		98.8			443.4			47.6			221.4	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	263.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	119.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	278	0	96	98	997	486	310	893	0	0	817	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	278	0	96	98	997	486	310	893	0	0	817	465
RTOR Reduction (vph)	0	0	67	0	0	58	0	0	0	0	0	235
Lane Group Flow (vph)	278	0	29	98	997	428	310	893	0	0	817	230
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		30.5	15.0	29.0	29.0	18.0	43.5			21.5	21.5
Effective Green, g (s)	16.0		30.5	14.5	29.0	28.5	18.0	43.5			21.0	21.5
Actuated g/C Ratio	0.16		0.30	0.14	0.29	0.28	0.18	0.44			0.21	0.22
Clearance Time (s)	4.0		4.0	3.5	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		483	257	1026	393	319	810			743	340
v/s Ratio Prot	c0.16			0.06	0.28		0.18	c0.48			0.23	
v/s Ratio Perm			0.02			c0.31						0.15
v/c Ratio	0.98		0.06	0.38	0.97	1.09	0.97	1.10			1.10	0.68
Uniform Delay, d1	41.9		24.6	38.7	35.1	35.8	40.7	28.2			39.5	36.1
Progression Factor	1.08		3.45	1.03	0.85	0.81	1.12	0.84			0.92	0.85
Incremental Delay, d2	31.8		0.1	4.0	21.2	70.1	26.8	54.8			62.3	9.5
Delay (s)	76.8		84.9	43.9	51.0	99.2	72.5	78.5			98.6	40.0
Level of Service	E		F	D	D	F	E	E			F	D
Approach Delay (s)		78.9			65.4			77.0			77.3	
Approach LOS		E			E			E			E	

Intersection Summary

HCM Average Control Delay	73.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↔						↕↔		↖	↕↔	
Volume (vph)	370	325	79	0	0	0	0	641	500	1223	1712	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3200						3085		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3200						3085		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	370	325	79	0	0	0	0	641	500	1223	1712	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	255	505	0	0	0	0	0	1116	0	1223	1712	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.0	15.0						24.5		50.0	78.0	
Effective Green, g (s)	15.0	14.5						24.0		49.5	77.5	
Actuated g/C Ratio	0.15	0.14						0.24		0.50	0.78	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	242	464						740		876	2743	
v/s Ratio Prot	c0.16	0.16						c0.36		c0.69	0.48	
v/s Ratio Perm												
v/c Ratio	1.05	1.09						1.51		1.40	0.62	
Uniform Delay, d1	42.5	42.7						38.0		25.2	4.9	
Progression Factor	0.97	0.96						0.59		0.44	0.34	
Incremental Delay, d2	53.3	55.2						229.2		178.9	0.1	
Delay (s)	94.5	96.2						251.7		189.9	1.8	
Level of Service	F	F						F		F	A	
Approach Delay (s)		95.7			0.0			251.7			80.2	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	123.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 25: H Street & 7th Street

2013+ Proj(Res) PM Peak
 12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↙	↕↕		
Volume (vph)	881	1026	357	0	0	0	0	0	0	121	691	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3345								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3345								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	881	1026	357	0	0	0	0	0	0	121	691	0	
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	2244	0	0	0	0	0	0	0	121	691	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		28.0								15.0	15.0		
Effective Green, g (s)		27.5								14.5	14.5		
Actuated g/C Ratio		0.55								0.29	0.29		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1840								513	1026		
v/s Ratio Prot		c0.67								0.07	c0.20		
v/s Ratio Perm													
v/c Ratio		1.22								0.24	0.67		
Uniform Delay, d1		11.2								13.5	15.7		
Progression Factor		0.95								0.62	1.26		
Incremental Delay, d2		99.3								0.4	1.2		
Delay (s)		110.0								8.8	21.0		
Level of Service		F								A	C		
Approach Delay (s)		110.0			0.0			0.0			19.2		
Approach LOS		F			A			A			B		
Intersection Summary													
HCM Average Control Delay			86.0		HCM Level of Service						F		
HCM Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			91.9%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↖	↑↑			↗	↗
Volume (vph)	0	0	0	42	2047	365	275	778	0	0	569	1425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6183		1770	3539			1650	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6183		1770	3539			1650	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	42	2047	365	275	778	0	0	569	1425
RTOR Reduction (vph)	0	0	0	0	31	0	0	0	0	0	23	23
Lane Group Flow (vph)	0	0	0	0	2423	0	275	778	0	0	1016	932
Confl. Peds. (#/hr)							36					
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)						32.5	16.5	16.5			40.5	40.5
Effective Green, g (s)						32.0	16.0	16.0			40.0	40.0
Actuated g/C Ratio						0.32	0.16	0.16			0.40	0.40
Clearance Time (s)						3.5	3.5	3.5			3.5	3.5
Vehicle Extension (s)						3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)						1979	283	566			660	602
v/s Ratio Prot							0.16	c0.22			0.62	c0.62
v/s Ratio Perm						0.39						
v/c Ratio						1.22	0.97	1.37			1.54	1.55
Uniform Delay, d1						34.0	41.8	42.0			30.0	30.0
Progression Factor						0.74	0.96	0.95			1.36	1.36
Incremental Delay, d2						104.4	38.4	176.4			249.1	253.6
Delay (s)						129.4	78.5	216.5			289.9	294.4
Level of Service						F	E	F			F	F
Approach Delay (s)		0.0				129.4		180.5			292.1	
Approach LOS		A				F		F			F	

Intersection Summary

HCM Average Control Delay	198.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	154.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 27: I Street & 7th Street

2013+ Proj(Res) PM Peak

12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	240	1999	0	0	0	0	0	829	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4799						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4799						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	240	1999	0	0	0	0	0	829	452
RTOR Reduction (vph)	0	0	0	15	1	0	0	0	0	0	0	12
Lane Group Flow (vph)	0	0	0	201	2022	0	0	0	0	0	829	440
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				59.5	59.5						33.5	33.5
Effective Green, g (s)				59.0	59.0						33.0	33.0
Actuated g/C Ratio				0.59	0.59						0.33	0.33
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				833	2831						1168	844
v/s Ratio Prot											c0.23	
v/s Ratio Perm				0.14	0.42							0.17
v/c Ratio				0.24	0.71						0.71	0.52
Uniform Delay, d1				9.8	14.5						29.3	27.1
Progression Factor				1.00	1.00						1.10	1.08
Incremental Delay, d2				0.7	1.6						2.6	1.6
Delay (s)				10.5	16.1						34.8	30.9
Level of Service				B	B						C	C
Approach Delay (s)		0.0			15.6			0.0			33.4	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔↔						↑		↔		
Volume (vph)	617	1605	0	0	0	0	0	228	214	554	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.97		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.97		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4781						1681		1720		
Flt Permitted	0.95	1.00						1.00		0.40		
Satd. Flow (perm)	1431	4781						1681		726		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	617	1605	0	0	0	0	0	228	214	554	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	537	1685	0	0	0	0	0	440	0	554	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm									custom		
Protected Phases		2						4				
Permitted Phases	2									8		
Actuated Green, G (s)	19.5	19.5						23.5		23.5		
Effective Green, g (s)	19.0	19.0						23.0		23.0		
Actuated g/C Ratio	0.38	0.38						0.46		0.46		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	544	1817						773		334		
v/s Ratio Prot								0.26				
v/s Ratio Perm	c0.38	0.35								c0.76		
v/c Ratio	0.99	0.93						0.57		1.66		
Uniform Delay, d1	15.4	14.8						9.9		13.5		
Progression Factor	0.67	0.66						1.00		1.51		
Incremental Delay, d2	25.5	5.8						3.0		297.6		
Delay (s)	35.8	15.6						12.9		318.0		
Level of Service	D	B						B		F		
Approach Delay (s)		20.5			0.0			12.9			318.0	
Approach LOS		C			A			B			F	

Intersection Summary

HCM Average Control Delay	70.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	154.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013+ Proj(Res) PM Peak
12/22/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2039	442	0	0	0	0	0	0	196	921	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4887									4988	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4887									4988	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2039	442	0	0	0	0	0	0	196	921	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2465	0	0	0	0	0	0	0	0	1115	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		24.9									18.1	
Effective Green, g (s)		24.4									17.6	
Actuated g/C Ratio		0.49									0.35	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2385									1756	
v/s Ratio Prot		0.50										
v/s Ratio Perm											0.22	
v/c Ratio		1.03									0.63	
Uniform Delay, d1		12.8									13.5	
Progression Factor		0.50									0.61	
Incremental Delay, d2		16.9									1.4	
Delay (s)		23.3									9.7	
Level of Service		C									A	
Approach Delay (s)		23.3			0.0			0.0			9.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2013+ Proj(Res) PM Peak
12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	48	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	48	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0	96		0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	96		0
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			97	100		93
cM capacity (veh/h)			1623	877		1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	48	71
Volume Left	0	48	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay			8.0
Intersection Capacity Utilization	14.4%		ICU Level of Service
Analysis Period (min)	15		A

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2013+ Proj(Res) PM Peak
 12/27/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	52	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		104	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		104	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	93
cM capacity (veh/h)			1623		865	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

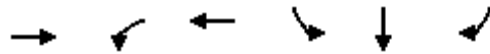
Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		14.4%	ICU Level of Service A
Analysis Period (min)		15	

Queues

2013+Proj (Res) AM Peak (Mitigated)

1: Richard Blvd & I-5 SB Off

1/10/2007



Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	445	360	193	833	833	686
v/c Ratio	0.48	0.48	0.20	1.21	1.21	0.45
Control Delay	28.5	36.5	27.2	142.3	142.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	36.5	27.2	142.3	142.3	0.9
Queue Length 50th (ft)	111	110	100	-831	-831	0
Queue Length 95th (ft)	163	m147	m149	#1087	#1087	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	927	744	978	686	686	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.48	0.20	1.21	1.21	0.45

Intersection Summary

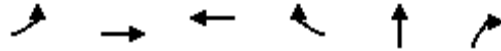
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	147	1792	488	896	716	705
v/c Ratio	0.59	0.98	0.38	0.33	1.21	1.11
Control Delay	26.6	13.1	16.0	0.5	139.2	104.0
Queue Delay	0.0	26.2	0.2	0.0	387.7	290.4
Total Delay	26.6	39.3	16.2	0.5	526.9	394.4
Queue Length 50th (ft)	75	152	85	5	-635	-655
Queue Length 95th (ft)	m68	m84	111	6	#886	#905
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	251	1823	1283	2708	592	634
Starvation Cap Reductn	0	143	218	0	0	0
Spillback Cap Reductn	0	142	0	0	247	235
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.07	0.46	0.33	2.08	1.77

Intersection Summary

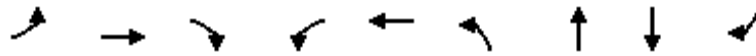
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj (Res) AM Peak (Mitigated)

3: Richard Blvd & Bercut Dr

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	205	2180	763	26	845	505	79	102	79
v/c Ratio	0.50	0.94	0.72	0.41	0.30	0.86	0.25	0.91	0.46
Control Delay	6.8	16.9	4.6	31.2	8.0	57.0	33.5	119.9	21.0
Queue Delay	2.6	82.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	98.9	9.9	31.2	8.0	57.0	33.5	119.9	21.0
Queue Length 50th (ft)	52	704	141	9	91	191	37	80	0
Queue Length 95th (ft)	m49	m612	m114	m18	107	197	75	#186	49
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	422	2331	1063	63	2846	672	357	117	174
Starvation Cap Reductn	122	491	236	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	1.18	0.92	0.41	0.30	0.75	0.22	0.87	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

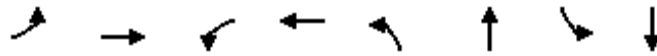
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Richard Blvd & 5th Street

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	1794	83	1078	17	103	119	292
v/c Ratio	0.71	0.80	0.62	0.49	0.28	0.30	0.59	0.88
Control Delay	74.3	5.6	53.4	5.3	52.6	42.2	56.0	67.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.3	5.6	53.4	5.3	52.6	42.2	56.0	67.4
Queue Length 50th (ft)	75	3	60	55	11	67	84	195
Queue Length 95th (ft)	m78	m4	m91	117	35	115	143	289
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	192	2252	133	2204	74	415	249	402
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.80	0.62	0.49	0.23	0.25	0.48	0.73

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

5: Richard Blvd & 7th Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT		
Lane Group Flow (vph)	492	1209	604	980	259	431	525	214	429		
v/c Ratio	0.76	0.85	0.43	1.17	0.79	0.39	1.11	0.48	1.11	1.00	0.36
Control Delay	39.5	23.6	5.7	135.9	26.8	43.9	123.2	12.7	150.3	92.5	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	23.6	5.7	135.9	26.8	43.9	123.2	12.7	150.3	92.5	13.7
Queue Length 50th (ft)	178	367	53	~281	357	90	~382	76	~195	~178	13
Queue Length 95th (ft)	m#295	455	m62	#396	282	131	#583	115	#350	#291	58
Internal Link Dist (ft)		1060		1154		615				370	
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	644	1416	693	515	1263	672	388	1093	192	428	290
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.85	0.43	1.17	0.78	0.39	1.11	0.48	1.11	1.00	0.36

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj (Res) AM Peak (Mitigated)

6: Richard Blvd & 10th St

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1478	195	206	1266	55	38	63	21	28	36
v/c Ratio	0.77	0.68	0.21	0.78	0.57	0.31	0.15	0.23	0.11	0.11	0.15
Control Delay	65.4	12.9	3.7	57.7	11.1	47.1	42.2	11.8	41.5	41.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	12.9	3.7	57.7	11.1	47.1	42.2	11.8	41.5	41.3	13.7
Queue Length 50th (ft)	125	222	8	157	175	36	24	0	13	18	0
Queue Length 95th (ft)	m142	m611	m23	238	347	75	55	38	36	44	29
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	305	2186	948	310	2225	267	380	373	278	380	332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.68	0.21	0.66	0.57	0.21	0.10	0.17	0.08	0.07	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj (Res) AM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	1503	24	1370	81	128
v/c Ratio	0.25	0.65	0.17	0.59	0.20	0.28
Control Delay	4.2	5.5	11.5	12.8	28.4	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	5.5	11.5	12.8	28.4	24.5
Queue Length 50th (ft)	1	15	7	286	38	51
Queue Length 95th (ft)	m2	24	21	347	81	105
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	174	2304	138	2310	398	453
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.65	0.17	0.59	0.20	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj (Res) AM Peak (Mitigated)

8: Richard Blvd & 12th Street

1/10/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1314	76	40	106	1395	50	3860	1338
v/c Ratio	1.47	0.19	0.22	1.28	0.41	0.09	1.30	1.33
Control Delay	257.0	23.6	46.9	243.4	12.8	7.7	165.1	170.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	257.0	23.6	46.9	243.4	12.8	7.7	165.1	170.9
Queue Length 50th (ft)	~907	27	24	~131	151	0	~1228	~1608
Queue Length 95th (ft)	#1044	71	63	#261	170	29	#1266	#1880
Internal Link Dist (ft)			487		826			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	893	400	215	83	3435	569	2965	1008
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.47	0.19	0.19	1.28	0.41	0.09	1.30	1.33

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

11: Bannon St & Bercut Dr



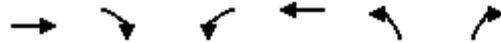
Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	368	212	601
v/c Ratio	0.25	0.37	0.59	0.39
Control Delay	0.9	11.2	26.3	2.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.9	11.2	26.3	2.1
Queue Length 50th (ft)	0	76	87	51
Queue Length 95th (ft)	0	153	m123	m88
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	859	999	412	1528
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.37	0.51	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th St

2013+Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	110	182	212	134	177
v/c Ratio	0.10	0.18	0.66	0.15	0.30
Control Delay	11.9	2.8	56.1	3.1	42.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.8	56.1	3.1	42.6
Queue Length 50th (ft)	29	0	113	27	57
Queue Length 95th (ft)	70	34	m177	m55	87
Internal Link Dist (ft)	182		1020	470	
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	1073	906	504	1447	416
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.36	0.15	0.32

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



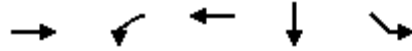
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	134	988	206	405	4	784	328	220	1099
v/c Ratio	0.26	0.20	1.22	0.56	0.67	0.04	0.69	0.33	1.65	0.76
Control Delay	27.4	24.6	139.1	33.3	7.2	68.8	14.0	2.4	356.7	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	24.6	139.1	33.3	7.2	68.8	14.0	2.4	356.7	30.6
Queue Length 50th (ft)	36	16	~405	97	29	2	129	12	~205	311
Queue Length 95th (ft)	82	42	#531	166	35	m8	261	20	#350	#521
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	405	768	807	438	648	89	1136	980	133	1445
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.17	1.22	0.47	0.63	0.04	0.69	0.33	1.65	0.76

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013+Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	680	20	465	3898	84
v/c Ratio	0.88	0.40	1.15	1.27dr	0.48
Control Delay	63.8	76.5	144.5	91.1	69.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	76.5	144.5	91.1	69.7
Queue Length 50th (ft)	307	17	~535	~1075	75
Queue Length 95th (ft)	#410	#50	#758	#1112	134
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	773	50	403	3424	192
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.88	0.40	1.15	1.14	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th St

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	46	210	199	362	571
v/c Ratio	0.14	0.48	0.42	0.14	0.40
Control Delay	32.6	8.6	25.3	0.9	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	8.6	25.3	0.9	16.1
Queue Length 50th (ft)	24	0	94	5	87
Queue Length 95th (ft)	54	58	m158	8	126
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	487	547	469	2559	1430
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.38	0.42	0.14	0.40

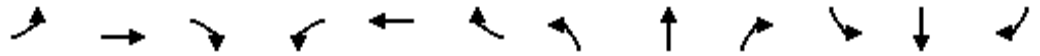
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

19: Big Four Blvd & 6th Street

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	389	434	234	245	32	388	377	221	8	561	74
v/c Ratio	0.72	0.44	0.72	0.97	0.24	0.07	0.97	0.23	0.28	0.05	0.50	0.14
Control Delay	66.0	32.5	17.0	75.7	19.0	4.3	82.1	18.4	3.9	26.4	13.1	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	32.5	17.0	75.7	19.0	4.3	82.1	18.4	3.9	26.4	13.1	0.9
Queue Length 50th (ft)	80	105	62	144	47	3	128	75	0	2	51	0
Queue Length 95th (ft)	#163	148	179	m#244	m57	m4	#222	128	48	m6	72	1
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	189	991	634	241	1094	475	402	1628	788	172	1122	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.39	0.68	0.97	0.22	0.07	0.97	0.23	0.28	0.05	0.50	0.14

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

20: Big Four Blvd & 7th Street



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	404	219	80	660	1511
v/c Ratio	0.47	0.43	0.61	0.28	0.79
Control Delay	28.6	10.5	14.9	1.0	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	10.5	14.9	1.0	10.4
Queue Length 50th (ft)	123	74	33	1	274
Queue Length 95th (ft)	178	126	m24	m0	m0
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	972	547	136	2339	1902
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.40	0.59	0.28	0.79

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	56	40	55	171	930	1710
v/c Ratio	0.79	0.12	0.62	0.50	1.40	1.24
Control Delay	108.6	35.6	76.2	39.5	220.3	138.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	108.6	35.6	76.2	39.5	220.3	139.7
Queue Length 50th (ft)	36	22	35	92	-421	-700
Queue Length 95th (ft)	#109	51	#94	159	#549	#841
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	71	335	89	345	666	1383
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.12	0.62	0.50	1.40	1.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	236	52	118	264	621	67	839	127	1488
v/c Ratio	0.94	0.21	0.30	0.64	0.98	0.94	0.65	0.65	0.93
Control Delay	87.0	13.0	33.5	40.9	45.7	65.3	17.8	59.4	37.1
Queue Delay	0.0	0.2	0.1	0.0	11.0	0.0	6.9	0.0	0.4
Total Delay	87.0	13.2	33.6	40.9	56.7	65.3	24.8	59.4	37.5
Queue Length 50th (ft)	151	0	71	165	219	42	288	79	455
Queue Length 95th (ft)	#298	34	m119	m235	m#394	m45	m226	#156	#618
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	251	251	389	410	633	71	1295	195	1601
Starvation Cap Reductn	0	0	0	0	27	0	405	0	0
Spillback Cap Reductn	0	36	21	0	0	0	0	0	12
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.24	0.32	0.64	1.02	0.94	0.94	0.65	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	63	22	224	540	358	237	622	1019	197
v/c Ratio	0.59	0.07	0.82	0.54	0.64	0.84	0.61	0.85	0.31
Control Delay	52.5	18.0	63.9	27.9	13.6	69.1	16.6	36.1	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	4.4	2.7	0.0
Total Delay	52.5	18.0	63.9	27.9	13.9	69.1	21.0	38.8	7.0
Queue Length 50th (ft)	32	3	150	131	30	159	222	336	24
Queue Length 95th (ft)	m45	m4	#271	172	113	m#219	m280	m364	m54
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	106	303	274	991	560	283	1015	1203	638
Starvation Cap Reductn	0	0	0	0	20	0	310	98	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.07	0.82	0.54	0.66	0.84	0.88	0.92	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2013+Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	179	364	1096	1057	626
v/c Ratio	0.69	0.71	1.33	1.30	0.23
Control Delay	48.2	42.5	176.8	155.6	0.5
Queue Delay	6.6	1.2	11.0	0.0	0.4
Total Delay	54.8	43.7	187.8	155.6	0.8
Queue Length 50th (ft)	102	93	~481	~876	4
Queue Length 95th (ft)	m146	m144	m#562	m#976	m6
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	258	511	825	814	2690
Starvation Cap Reductn	0	0	0	0	1442
Spillback Cap Reductn	44	41	15	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.77	1.35	1.30	0.50

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1613	166	850
v/c Ratio	0.88	0.31	0.80
Control Delay	10.4	7.2	17.9
Queue Delay	0.2	0.0	0.0
Total Delay	10.6	7.2	17.9
Queue Length 50th (ft)	214	30	182
Queue Length 95th (ft)	m143	m30	m182
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1836	531	1062
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	21	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.31	0.80

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1459	40	784	361	320
v/c Ratio	0.75	0.09	0.91	0.92	0.56
Control Delay	10.7	14.6	22.7	51.3	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	14.6	22.7	51.3	10.0
Queue Length 50th (ft)	50	12	142	137	43
Queue Length 95th (ft)	54	m12	m130	#276	96
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	1935	432	864	392	576
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	0.09	0.91	0.92	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

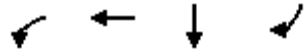
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	245	1114	709	415
v/c Ratio	0.35	0.53	0.50	0.38
Control Delay	7.0	11.2	4.8	2.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.0	11.2	4.8	2.9
Queue Length 50th (ft)	27	85	28	9
Queue Length 95th (ft)	70	118	m33	m11
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	704	2116	1416	1103
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.50	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	773	2540	56	214
v/c Ratio	1.10	1.08	0.09	0.48
Control Delay	75.2	58.0	11.3	17.1
Queue Delay	0.0	5.0	0.0	4.9
Total Delay	75.2	63.0	11.3	22.0
Queue Length 50th (ft)	~359	~377	11	72
Queue Length 95th (ft)	m#895	#517	29	m74
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	701	2346	634	443
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	25	0	164
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.10	1.09	0.09	0.77

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2875	838
v/c Ratio	0.84	0.78
Control Delay	12.9	38.1
Queue Delay	21.7	0.0
Total Delay	34.6	38.1
Queue Length 50th (ft)	364	195
Queue Length 95th (ft)	m347	235
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	3429	1075
Starvation Cap Reductn	667	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.04	0.78

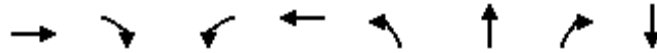
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2013+Proj (Res) AM Peak (Mitigated)

1/10/2007



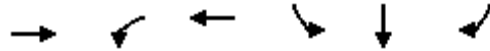
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	102	101	50	50	90	623	499	446
v/c Ratio	0.20	0.20	0.40	0.40	0.54	0.41	0.36	0.35
Control Delay	0.9	0.9	61.5	61.5	43.8	1.7	0.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.6	0.5	1.8
Total Delay	0.9	0.9	61.5	61.5	43.8	2.3	1.0	12.0
Queue Length 50th (ft)	0	0	40	40	62	1	0	138
Queue Length 95th (ft)	0	0	81	81	m87	m74	m0	239
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75			
Base Capacity (vph)	642	642	245	245	218	1504	1374	1273
Starvation Cap Reductn	0	0	0	0	0	498	478	643
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.16	0.20	0.20	0.41	0.62	0.56	0.71

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1059	1032	329	742	745	556
v/c Ratio	1.21	1.03	0.32	1.15	1.15	0.36
Control Delay	135.4	51.2	17.4	120.3	120.6	0.7
Queue Delay	1.8	71.2	3.7	15.1	15.1	0.0
Total Delay	137.3	122.4	21.1	135.3	135.7	0.7
Queue Length 50th (ft)	~424	~455	122	~712	~715	0
Queue Length 95th (ft)	#561	m#468	m124	#960	#965	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	873	1001	1025	644	646	1539
Starvation Cap Reductn	0	144	596	0	0	0
Spillback Cap Reductn	3	0	0	19	19	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.22	1.20	0.77	1.19	1.19	0.36

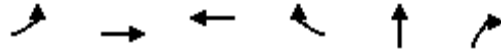
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Richard Blvd & I-5 NB Off

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



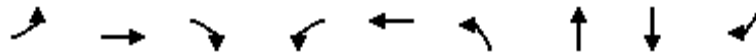
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	425	1466	1263	2638	495	475
v/c Ratio	1.24	0.84	0.98	0.97	0.92	0.71
Control Delay	136.4	4.2	28.6	12.1	53.5	33.0
Queue Delay	0.0	35.7	121.2	0.0	64.3	1.7
Total Delay	136.4	40.0	149.8	12.1	117.8	34.7
Queue Length 50th (ft)	~389	92	285	317	288	295
Queue Length 95th (ft)	m#292	m74	m214	m160	#510	433
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	343	1743	1283	2708	540	677
Starvation Cap Reductn	0	270	161	0	0	0
Spillback Cap Reductn	0	375	302	0	107	86
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.24	1.07	1.29	0.97	1.14	0.80

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

3: Richard Blvd & Bercut Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	164	1479	686	29	2572	1181	87	191	183
v/c Ratio	1.09	0.82	0.77	0.47	1.19	1.15	0.16	1.14	0.89
Control Delay	114.1	19.5	7.9	27.1	110.2	110.0	22.3	159.7	74.9
Queue Delay	0.0	39.2	2.3	0.0	91.3	12.9	0.0	0.0	4.3
Total Delay	114.1	58.7	10.2	27.1	201.5	122.9	22.3	159.7	79.3
Queue Length 50th (ft)	~89	342	69	9	-873	~547	33	~172	92
Queue Length 95th (ft)	m#150	m477	m107	m14	m#865	#681	m53	#322	#230
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	151	1799	894	62	2153	1030	535	168	205
Starvation Cap Reductn	0	429	105	0	0	26	0	0	0
Spillback Cap Reductn	0	0	2	0	314	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.08	0.87	0.47	1.40	1.18	0.16	1.14	0.92

Intersection Summary

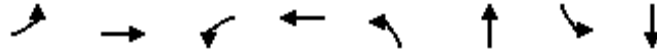
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+ Proj(Res) PM Peak (Mitigated)

4: Richard Blvd & 5th Street

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	230	1143	67	2109	13	264	89	193
v/c Ratio	1.04	0.52	0.45	1.02	0.09	0.76	1.01	0.57
Control Delay	108.1	1.0	48.5	36.9	42.3	60.7	148.8	45.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.1	1.0	48.5	36.9	42.3	60.7	148.8	45.5
Queue Length 50th (ft)	~199	6	51	~767	8	193	~70	118
Queue Length 95th (ft)	m#280	m8	m56	m#938	28	#313	#182	197
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	221	2214	148	2061	141	348	88	340
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.52	0.45	1.02	0.09	0.76	1.01	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+ Proj(Res) PM Peak (Mitigated)

5: Richard Blvd & 7th Street

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	130	807	311	332	1557	461	491	800	353	662	410
v/c Ratio	1.51	0.63	0.45	0.85	1.00	0.69	1.13	0.75	1.26	0.96	0.98
Control Delay	307.7	21.9	5.2	75.4	46.0	50.8	125.5	19.0	179.8	58.8	59.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1
Total Delay	307.7	21.9	5.2	75.4	46.0	50.8	125.5	19.0	179.8	58.8	66.5
Queue Length 50th (ft)	~72	113	17	119	628	172	-441	142	~352	257	220
Queue Length 95th (ft)	m#132	m223	m59	#200	#801	230	#652	193	m#503	m#380	m#366
Internal Link Dist (ft)		1060			1154		615			370	
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	86	1280	684	401	1558	672	435	1072	280	693	417
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	12
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.51	0.63	0.45	0.83	1.00	0.69	1.13	0.75	1.26	0.96	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

6: Richard Blvd & 10th St

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	1859	99	90	1527	115	30	176	71	37	170
v/c Ratio	0.33	0.78	0.10	0.69	0.59	0.57	0.10	0.48	0.33	0.13	0.50
Control Delay	57.7	17.7	5.7	67.8	6.9	56.7	40.7	14.9	47.0	41.3	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	17.7	5.7	67.8	6.9	56.7	40.7	14.9	47.0	41.3	17.9
Queue Length 50th (ft)	19	670	16	68	184	78	19	20	47	23	27
Queue Length 95th (ft)	m27	m635	m31	m116	158	139	46	84	91	54	92
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	89	2380	1012	148	2570	265	380	438	281	380	405
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.78	0.10	0.61	0.59	0.43	0.08	0.40	0.25	0.10	0.42

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+ Proj(Res) PM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	58	1900	7	1451	224	101
v/c Ratio	0.38	0.81	0.11	0.62	0.55	0.24
Control Delay	9.5	11.6	12.1	12.7	40.6	22.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	9.5	11.7	12.1	12.7	40.6	22.0
Queue Length 50th (ft)	3	56	2	306	137	34
Queue Length 95th (ft)	m12	170	10	369	221	82
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	154	2343	62	2356	405	428
Starvation Cap Reductn	0	26	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.82	0.11	0.62	0.55	0.24

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Richard Blvd & 12th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1941	262	100	110	5113	20	2953	1098
v/c Ratio	2.83	0.66	0.44	1.24	1.49	0.04	1.02	0.92
Control Delay	844.2	27.1	44.7	154.1	242.9	12.8	44.2	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	844.2	27.1	44.7	154.1	242.9	12.8	44.2	16.8
Queue Length 50th (ft)	~1098	76	57	~87	~1453	5	~429	30
Queue Length 95th (ft)	#1234	166	107	m#80	m#1305	m5	#499	#772
Internal Link Dist (ft)			371		802			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	687	397	288	89	3430	491	2885	1195
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.83	0.66	0.35	1.24	1.49	0.04	1.02	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Bannon St & Bercut Dr



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	557	607	181	662
v/c Ratio	0.87	0.73	0.72	0.54
Control Delay	23.0	21.8	41.1	8.9
Queue Delay	4.3	6.6	0.0	0.2
Total Delay	27.3	28.5	41.1	9.1
Queue Length 50th (ft)	53	178	76	171
Queue Length 95th (ft)	#209	#355	m108	m225
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	711	837	250	1224
Starvation Cap Reductn	0	0	0	116
Spillback Cap Reductn	94	182	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.90	0.93	0.72	0.60

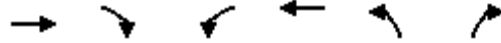
Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th St

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	232	192	499	190	514	519
v/c Ratio	0.46	0.36	0.96	0.17	0.96	0.51
Control Delay	34.2	6.5	49.6	3.5	61.1	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	6.5	49.6	3.5	61.1	3.0
Queue Length 50th (ft)	124	0	330	20	351	1
Queue Length 95th (ft)	198	53	m#389	m25	#543	24
Internal Link Dist (ft)	182			1020	470	
Turn Bay Length (ft)		150	150			
Base Capacity (vph)	504	533	522	1133	540	1015
Starvation Cap Reductn	0	0	0	0	0	8
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.36	0.96	0.17	0.95	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	173	330	1041	474	306	54	1360	1036	275	910
v/c Ratio	1.40	1.33	1.19	1.00	0.58	0.32	0.97	0.97	1.48	0.62
Control Delay	249.2	206.3	123.2	66.5	11.6	47.1	40.0	28.7	275.8	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	249.2	206.3	123.2	66.5	11.6	47.1	40.0	28.7	275.8	25.3
Queue Length 50th (ft)	~152	~148	~407	265	45	35	417	88	~243	250
Queue Length 95th (ft)	#285	#236	#535	m#494	m64	m#73	#590	#848	#403	287
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	124	248	875	475	529	171	1398	1065	186	1461
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.40	1.33	1.19	1.00	0.58	0.32	0.97	0.97	1.48	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

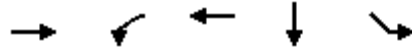
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013+ Proj(Res) PM Peak (Mitigated)
1/10/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	1713	38	386	3680	62
v/c Ratio	1.89	0.51	0.82	1.91dr	0.27
Control Delay	426.9	61.2	54.0	166.3	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	426.9	61.2	54.0	166.3	37.2
Queue Length 50th (ft)	~884	21	227	~961	32
Queue Length 95th (ft)	m#850	m42	m279	#1031	70
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	904	75	473	2791	290
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.89	0.51	0.82	1.32	0.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th St

2013+ Proj(Res) PM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	153	415	264	1126	863
v/c Ratio	0.45	0.68	0.77	0.44	0.55
Control Delay	34.7	10.7	39.1	1.7	10.1
Queue Delay	0.0	0.0	0.0	0.4	0.0
Total Delay	34.7	10.7	39.1	2.2	10.1
Queue Length 50th (ft)	72	19	107	12	64
Queue Length 95th (ft)	m119	69	m141	m13	m215
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	469	686	423	2536	1578
Starvation Cap Reductn	0	0	0	819	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.33	0.60	0.62	0.66	0.55

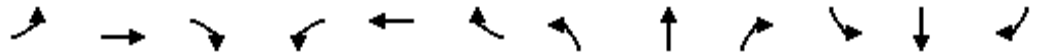
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	365	530	497	314	515	102	472	822	390	134	848	142
v/c Ratio	1.42	0.55	0.85	1.37	0.57	0.23	1.31	0.65	0.53	0.63	0.76	0.26
Control Delay	244.2	33.2	31.1	198.8	20.6	8.5	195.7	30.5	7.5	47.6	33.9	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	244.2	33.2	31.1	198.8	20.6	8.5	195.7	30.5	7.5	47.6	33.9	11.2
Queue Length 50th (ft)	~316	146	146	~276	134	14	~200	237	22	45	276	41
Queue Length 95th (ft)	#495	197	#323	m#192	m101	m8	#300	307	101	m#81	341	84
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	257	1062	619	229	991	484	360	1269	740	213	1117	540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.50	0.80	1.37	0.52	0.21	1.31	0.65	0.53	0.63	0.76	0.26

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	600	478	374	1127	1829
v/c Ratio	0.67	0.79	1.36	0.49	1.19
Control Delay	25.7	17.1	188.9	10.5	106.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	17.1	188.9	10.5	106.4
Queue Length 50th (ft)	163	0	-299	351	-735
Queue Length 95th (ft)	228	288	m105	m140	m#691
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	961	626	274	2299	1532
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.76	1.36	0.49	1.19

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	190	152	93	409	1621	1793
v/c Ratio	1.79	0.48	0.65	0.73	1.94	1.53
Control Delay	421.1	43.3	67.1	15.4	450.9	262.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	421.1	43.3	67.1	15.4	450.9	262.9
Queue Length 50th (ft)	~183	89	59	32	-853	~865
Queue Length 95th (ft)	#320	152	#131	141	#993	m#760
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	106	317	142	563	837	1174
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.79	0.48	0.65	0.73	1.94	1.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	324	212	436	564	1002	42	850	95	1837
v/c Ratio	1.17	0.52	1.41	0.68	1.97	0.47	0.71	0.67	1.39
Control Delay	126.1	16.2	230.7	22.9	463.5	34.6	34.0	68.3	209.7
Queue Delay	0.0	13.7	90.4	4.7	1.8	0.0	11.3	0.0	17.5
Total Delay	126.1	29.9	321.1	27.6	465.3	34.6	45.2	68.3	227.2
Queue Length 50th (ft)	~252	72	~387	227	~951	25	307	60	~833
Queue Length 95th (ft)	m#248	m78	m#439	m250	m#1007	m19	m246	#135	#974
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	278	404	310	829	508	89	1205	142	1319
Starvation Cap Reductn	0	0	0	180	1	0	336	0	0
Spillback Cap Reductn	0	168	39	194	0	0	0	0	36
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.90	1.61	0.89	1.98	0.47	0.98	0.67	1.43

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	278	96	98	997	486	310	893	817	465
v/c Ratio	1.05	0.19	0.38	1.04	1.13	1.03	1.03	0.92	0.72
Control Delay	98.3	26.0	37.4	71.1	108.9	77.9	49.8	44.9	10.2
Queue Delay	0.0	0.0	0.0	33.9	0.0	0.0	83.4	0.0	45.1
Total Delay	98.3	26.0	37.4	105.0	108.9	77.9	133.3	44.9	55.4
Queue Length 50th (ft)	~201	20	51	~358	~310	~198	~512	251	22
Queue Length 95th (ft)	m#240	m25	97	#479	#505	m#187	m325	m272	m57
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	266	505	257	956	429	301	866	885	649
Starvation Cap Reductn	0	0	0	0	0	0	142	0	2
Spillback Cap Reductn	0	0	0	72	0	0	0	0	217
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.19	0.38	1.13	1.13	1.03	1.23	0.92	1.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	255	519	1141	1223	1712
v/c Ratio	1.05	1.09	1.39	1.45	0.62
Control Delay	95.1	93.0	212.9	224.4	1.3
Queue Delay	83.0	38.5	2.3	115.1	10.4
Total Delay	178.1	131.5	215.2	339.5	11.7
Queue Length 50th (ft)	~202	~206	~520	~1053	38
Queue Length 95th (ft)	m#201	m#184	m#319	m#764	m39
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	242	478	823	841	2743
Starvation Cap Reductn	0	0	0	16	1022
Spillback Cap Reductn	40	38	3	126	446
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.26	1.18	1.39	1.71	0.99

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	2264	121	691
v/c Ratio	1.22	0.24	0.67
Control Delay	115.1	22.5	33.7
Queue Delay	39.9	0.0	0.0
Total Delay	154.9	22.5	33.7
Queue Length 50th (ft)	~765	71	215
Queue Length 95th (ft)	m247	m84	m234
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1860	513	1026
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	127	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.31	0.24	0.67

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

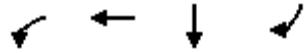


Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2454	275	778	1039	955
v/c Ratio	1.22	0.97	1.37	1.52	1.53
Control Delay	129.6	82.6	211.1	263.4	266.9
Queue Delay	48.8	242.1	0.0	437.2	433.8
Total Delay	178.4	324.8	211.1	700.5	700.7
Queue Length 50th (ft)	~540	185	~357	~983	~904
Queue Length 95th (ft)	#622	m#253	m#410	m#1213	m#1131
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	2010	283	566	682	624
Starvation Cap Reductn	25	0	0	0	0
Spillback Cap Reductn	165	108	0	665	607
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.33	1.57	1.37	61.12	56.18

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	216	2023	829	452
v/c Ratio	0.26	0.74	0.67	0.50
Control Delay	9.4	18.1	20.6	18.3
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	9.4	18.1	20.8	18.3
Queue Length 50th (ft)	58	348	151	80
Queue Length 95th (ft)	105	411	m215	m126
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	824	2736	1239	905
Starvation Cap Reductn	0	0	49	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.74	0.70	0.50

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	537	1685	442	554
v/c Ratio	0.99	0.93	0.57	1.66
Control Delay	38.7	15.5	13.4	321.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.7	15.5	13.4	321.2
Queue Length 50th (ft)	80	83	87	~503
Queue Length 95th (ft)	m#387	#245	158	m#166
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	544	1818	775	334
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.93	0.57	1.66

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2481	1117
v/c Ratio	1.03	0.64
Control Delay	26.1	17.3
Queue Delay	0.0	0.0
Total Delay	26.1	17.3
Queue Length 50th (ft)	~139	171
Queue Length 95th (ft)	m#118	248
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	2401	1757
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.03	0.64

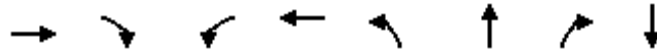
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2013+ Proj(Res) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	86	86	247	247	227	474	134	759
v/c Ratio	0.27	0.27	0.68	0.68	0.93	0.39	0.12	0.84
Control Delay	2.0	2.0	53.0	53.0	41.6	2.2	0.0	37.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.9	0.0	127.0
Total Delay	2.0	2.0	53.0	53.0	41.6	3.1	0.0	164.7
Queue Length 50th (ft)	0	0	185	185	189	43	0	493
Queue Length 95th (ft)	0	0	267	267	m166	m47	m0	#790
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75			
Base Capacity (vph)	476	476	361	361	245	1215	1079	903
Starvation Cap Reductn	0	0	0	0	0	464	0	310
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.18	0.68	0.68	0.93	0.63	0.12	1.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

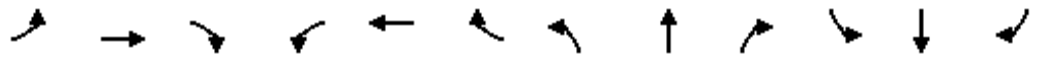
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	273	172	360	193	0	0	0	0	1854	0	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.92		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.94		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3069		3433	1863					1681	1681	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3069		3433	1863					1681	1681	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	273	172	360	193	0	0	0	0	1854	0	686
RTOR Reduction (vph)	0	83	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	362	0	360	193	0	0	0	0	927	927	686
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		33.0		26.5	62.5					50.0	50.0	120.0
Effective Green, g (s)		33.0		25.0	62.0					50.0	50.0	120.0
Actuated g/C Ratio		0.28		0.21	0.52					0.42	0.42	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		844		715	963					700	700	1539
v/s Ratio Prot		0.12		c0.10	0.10					c0.55	0.55	
v/s Ratio Perm												c0.45
v/c Ratio		0.43		0.50	0.20					1.32	1.32	0.45
Uniform Delay, d1		35.7		42.0	15.6					35.0	35.0	0.0
Progression Factor		1.00		0.78	1.66					1.00	1.00	1.00
Incremental Delay, d2		1.0		1.0	0.2					155.8	155.8	0.9
Delay (s)		36.7		33.8	26.1					190.8	190.8	0.9
Level of Service		D		C	C					F	F	A
Approach Delay (s)		36.7			31.1			0.0			139.5	
Approach LOS		D			C			A			F	

Intersection Summary

HCM Average Control Delay	109.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	135.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	147	1980	0	0	488	889	65	0	1356	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1521	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1521	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	1980	0	0	488	889	65	0	1356	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	79	3	0	0	0
Lane Group Flow (vph)	147	1980	0	0	488	889	0	637	702	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	18.0	59.8			43.5	120.0		36.5	46.2			
Effective Green, g (s)	17.0	58.8			40.0	120.0		35.5	40.7			
Actuated g/C Ratio	0.14	0.49			0.33	1.00		0.30	0.34			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	251	1734			1180	2708		450	510			
v/s Ratio Prot	0.08	c0.56			0.14			c0.42	c0.47			
v/s Ratio Perm						c0.33						
v/c Ratio	0.59	1.14			0.41	0.33		1.42	1.38			
Uniform Delay, d1	48.2	30.6			30.9	0.0		42.2	39.7			
Progression Factor	0.55	0.18			0.90	1.00		1.00	1.00			
Incremental Delay, d2	0.5	64.6			0.4	0.3		199.9	181.8			
Delay (s)	27.0	70.0			28.4	0.3		242.1	221.4			
Level of Service	C	E			C	A		F	F			
Approach Delay (s)		67.1			10.2			231.9			0.0	
Approach LOS		E			B			F			A	

Intersection Summary

HCM Average Control Delay	98.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	135.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘↗	↗			↘	↗
Volume (vph)	205	2368	763	26	793	45	505	65	14	21	81	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2	4.6	5.2	5.2		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1755	3539	1408	1770	4996		3433	1790			1844	1583
Flt Permitted	0.28	1.00	1.00	0.06	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	523	3539	1408	108	4996		3433	1790			1844	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	2368	763	26	793	45	505	65	14	21	81	79
RTOR Reduction (vph)	0	0	120	0	5	0	0	7	0	0	0	74
Lane Group Flow (vph)	205	2368	643	26	833	0	505	72	0	0	102	5
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	79.9	79.9	79.9	69.4	69.4		21.0	21.0			7.5	7.5
Effective Green, g (s)	79.4	79.3	79.9	68.8	68.8		20.5	20.5			7.0	7.0
Actuated g/C Ratio	0.66	0.66	0.67	0.57	0.57		0.17	0.17			0.06	0.06
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	413	2339	937	62	2864		586	306			108	92
v/s Ratio Prot	0.03	c0.67			0.17		c0.15	0.04			c0.06	
v/s Ratio Perm	0.30		0.46	0.24								0.00
v/c Ratio	0.50	1.01	0.69	0.42	0.29		0.86	0.24			0.94	0.05
Uniform Delay, d1	8.3	20.4	12.3	14.4	13.1		48.4	43.0			56.3	53.4
Progression Factor	0.61	0.59	0.37	0.33	0.35		0.88	0.84			1.00	1.00
Incremental Delay, d2	0.0	9.1	0.4	15.2	0.2		11.7	0.1			68.0	0.1
Delay (s)	5.1	21.1	5.0	20.0	4.8		54.0	36.1			124.3	53.4
Level of Service	A	C	A	B	A		D	D			F	D
Approach Delay (s)		16.4			5.2			51.6			93.4	
Approach LOS		B			A			D			F	

Intersection Summary

HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	115.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	289	1785	12	66	1018	51	17	279	7	126	163	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3533		1770	3496		1719	1852		1715	1671	
Flt Permitted	0.95	1.00		0.95	1.00		0.28	1.00		0.31	1.00	
Satd. Flow (perm)	1770	3533		1770	3496		501	1852		563	1671	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	289	1785	12	66	1018	51	17	279	7	126	163	143
RTOR Reduction (vph)	0	0	0	0	3	0	0	1	0	0	27	0
Lane Group Flow (vph)	289	1797	0	66	1066	0	17	285	0	126	279	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	22.8	72.2		8.0	57.4		29.0	29.0		29.0	29.0	
Effective Green, g (s)	21.8	71.9		7.0	57.1		28.5	28.5		28.5	28.5	
Actuated g/C Ratio	0.18	0.60		0.06	0.48		0.24	0.24		0.24	0.24	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	322	2117		103	1664		119	440		134	397	
v/s Ratio Prot	0.16	c0.51		0.04	c0.30			0.15			0.17	
v/s Ratio Perm							0.03			c0.22		
v/c Ratio	0.90	0.85		0.64	0.64		0.14	0.65		0.94	0.70	
Uniform Delay, d1	48.0	19.6		55.3	23.7		36.1	41.2		44.9	41.9	
Progression Factor	1.04	0.23		0.65	0.39		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	1.1		6.0	1.2		0.2	2.5		59.0	4.5	
Delay (s)	57.5	5.7		42.0	10.4		36.3	43.7		103.9	46.4	
Level of Service	E	A		D	B		D	D		F	D	
Approach Delay (s)		12.8			12.2			43.3			63.2	
Approach LOS		B			B			D			E	

Intersection Summary

HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.6
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘↗	↑	↗↘	↘	↑↑	↗
Volume (vph)	495	1214	303	604	821	356	366	611	525	203	416	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	3.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	1.00	0.88	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1508	3433	3330		3433	1863	2637	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1508	3433	3330		3433	1863	2637	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	495	1214	303	604	821	356	366	611	525	203	416	109
RTOR Reduction (vph)	0	0	89	0	37	0	0	0	107	0	0	94
Lane Group Flow (vph)	495	1214	214	604	1140	0	366	611	418	203	416	15
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases			6						8			4
Actuated Green, G (s)	21.0	49.0	49.0	15.0	43.0		25.1	31.5	46.5	10.5	16.9	16.9
Effective Green, g (s)	20.0	49.0	49.0	14.0	43.0		24.6	31.0	45.5	10.0	16.4	16.9
Actuated g/C Ratio	0.17	0.41	0.41	0.12	0.36		0.20	0.26	0.38	0.08	0.14	0.14
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0		3.5	3.5	3.0	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	295	1445	616	401	1193		704	481	1000	148	484	223
v/s Ratio Prot	c0.28	0.34		c0.18	c0.34		0.11	c0.33	0.05	c0.11	0.12	
v/s Ratio Perm			0.14						0.11			0.01
v/c Ratio	1.68	0.84	0.35	1.51	0.96		0.52	1.27	0.42	1.37	0.86	0.07
Uniform Delay, d1	50.0	32.0	24.5	53.0	37.6		42.4	44.5	27.5	55.0	50.7	44.7
Progression Factor	0.71	0.55	0.26	0.94	0.71		1.00	1.00	1.00	1.07	0.77	0.97
Incremental Delay, d2	313.4	2.5	0.1	238.9	15.8		0.3	137.2	0.1	202.6	13.1	0.0
Delay (s)	348.7	20.1	6.5	288.6	42.4		42.7	181.7	27.6	261.6	52.2	43.6
Level of Service	F	C	A	F	D		D	F	C	F	D	D
Approach Delay (s)		98.9			125.9			94.0			109.3	
Approach LOS		F			F			F			F	

Intersection Summary

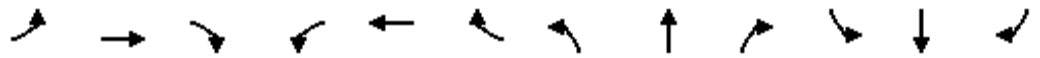
HCM Average Control Delay	106.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	118.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑	↗	↘	↑	↗
Volume (vph)	175	1470	195	206	1379	84	55	38	63	21	28	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3488		1684	1863	1583	1770	1863	1440
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.74	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3488		1310	1863	1583	1364	1863	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1470	195	206	1379	84	55	38	63	21	28	36
RTOR Reduction (vph)	0	0	30	0	3	0	0	0	55	0	0	31
Lane Group Flow (vph)	175	1470	165	206	1460	0	55	38	8	21	28	5
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	15.6	73.6	73.6	18.7	76.7		16.2	16.2	16.2	16.2	16.2	16.2
Effective Green, g (s)	15.1	73.1	73.1	18.2	76.2		15.7	15.7	15.7	15.7	15.7	15.7
Actuated g/C Ratio	0.13	0.61	0.61	0.15	0.64		0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		0.2	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	223	2156	905	268	2215		171	244	207	178	244	188
v/s Ratio Prot	c0.10	c0.42		c0.12	0.42			0.02				0.02
v/s Ratio Perm			0.11				c0.04		0.01	0.02		0.00
v/c Ratio	0.78	0.68	0.18	0.77	0.66		0.32	0.16	0.04	0.12	0.11	0.03
Uniform Delay, d1	50.9	15.7	10.3	48.9	13.7		47.3	46.3	45.6	46.0	46.0	45.5
Progression Factor	0.99	0.70	0.44	0.80	0.62		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.3	1.0	0.3	8.9	1.2		0.4	0.1	0.0	0.1	0.1	0.0
Delay (s)	59.5	12.1	4.8	47.8	9.7		47.7	46.4	45.6	46.1	46.1	45.5
Level of Service	E	B	A	D	A		D	D	D	D	D	D
Approach Delay (s)		15.8			14.4			46.5			45.9	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1445	50	24	1535	32	35	22	24	17	45	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.97			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Frt	1.00	0.99		1.00	1.00			0.96			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	3496		1770	3513			1658			1624	
Flt Permitted	0.10	1.00		0.12	1.00			0.85			0.96	
Satd. Flow (perm)	193	3496		219	3513			1445			1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	1445	50	24	1535	32	35	22	24	17	45	66
RTOR Reduction (vph)	0	2	0	0	1	0	0	13	0	0	29	0
Lane Group Flow (vph)	43	1493	0	24	1566	0	0	68	0	0	99	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	80.5	80.5		80.5	80.5			31.5			31.5	
Effective Green, g (s)	80.0	80.0		80.0	80.0			31.0			31.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.26			0.26	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	129	2331		146	2342			373			407	
v/s Ratio Prot		0.43			c0.45							
v/s Ratio Perm	0.22			0.11				0.05			c0.06	
v/c Ratio	0.33	0.64		0.16	0.67			0.18			0.24	
Uniform Delay, d1	8.6	11.6		7.5	12.0			34.6			35.2	
Progression Factor	0.16	0.33		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.2	1.0		2.4	1.5			1.1			1.4	
Delay (s)	6.6	4.9		9.9	13.6			35.7			36.6	
Level of Service	A	A		A	B			D			D	
Approach Delay (s)		4.9			13.5			35.7			36.6	
Approach LOS		A			B			D			D	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	1306	76	20	0	20	106	1395	50	3860	1535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.90		1.00		1.00	1.00	0.83	1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1425		1695		1770	6408	1319	6408	1425
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1425		1695		1770	6408	1319	6408	1425
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1306	76	20	0	20	106	1395	50	3860	1535
RTOR Reduction (vph)	0	30	0	14	0	0	0	29	0	408
Lane Group Flow (vph)	1306	46	0	26	0	106	1395	21	3860	1127
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	37.0	37.0		14.4		7.0	80.6	62.6	69.6	69.6
Effective Green, g (s)	37.0	37.0		14.4		7.0	80.6	62.6	69.6	69.6
Actuated g/C Ratio	0.25	0.25		0.10		0.05	0.54	0.42	0.46	0.46
Clearance Time (s)	4.0	4.0		4.0		4.0		5.0		
Vehicle Extension (s)	2.0	2.0		2.0		3.0		3.0		
Lane Grp Cap (vph)	847	352		163		83	3443	550	2973	661
v/s Ratio Prot	c0.38			c0.02		c0.06	0.22		0.60	
v/s Ratio Perm		0.03						0.02		c0.79
v/c Ratio	1.54	0.13		0.16		1.28	0.41	0.04	1.30	1.70
Uniform Delay, d1	56.5	44.0		62.3		71.5	20.5	25.9	40.2	40.2
Progression Factor	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	249.8	0.1		0.2		190.2	0.1	0.1	136.8	323.4
Delay (s)	306.3	44.0		62.4		261.7	20.6	26.0	177.0	363.6
Level of Service	F	D		E		F	C	C	F	F
Approach Delay (s)				62.4			37.3			
Approach LOS				E			D			

Intersection Summary

HCM Average Control Delay	203.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	119.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Volume (vph)	0	167	367	1	212	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	167	367	1	212	601
RTOR Reduction (vph)	155	0	0	0	0	0
Lane Group Flow (vph)	12	0	368	0	212	601
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	4.4		31.4		12.2	47.6
Effective Green, g (s)	4.4		31.4		12.2	47.6
Actuated g/C Ratio	0.07		0.52		0.20	0.79
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	118		974		360	1478
v/s Ratio Prot	c0.01		0.20		c0.12	c0.32
v/s Ratio Perm						
v/c Ratio	0.10		0.38		0.59	0.41
Uniform Delay, d1	26.0		8.5		21.6	1.9
Progression Factor	1.00		1.00		1.04	0.78
Incremental Delay, d2	0.4		1.1		1.6	0.6
Delay (s)	26.3		9.6		24.0	2.0
Level of Service	C		A		C	A
Approach Delay (s)	26.3		9.6			7.8
Approach LOS	C		A			A

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th St

2013+Proj(Off) AM Peak (Mitigated)
 1/10/2007



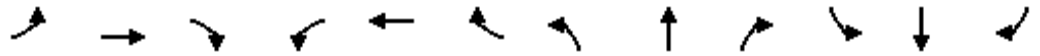
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	110	163	182	212	134	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1591
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1591
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	163	182	212	134	177
RTOR Reduction (vph)	0	69	0	0	0	126
Lane Group Flow (vph)	110	94	182	212	134	51
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot		pm+ov	
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	57.6	57.6	15.6	77.7	13.3	28.9
Effective Green, g (s)	57.6	57.6	15.6	77.7	13.3	28.9
Actuated g/C Ratio	0.58	0.58	0.16	0.78	0.13	0.29
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1073	837	276	1448	235	531
v/s Ratio Prot	0.06		c0.10	c0.11	c0.08	0.02
v/s Ratio Perm		0.06				0.02
v/c Ratio	0.10	0.11	0.66	0.15	0.57	0.10
Uniform Delay, d1	9.6	9.6	39.7	2.8	40.7	26.0
Progression Factor	1.00	1.00	1.17	0.91	0.83	1.10
Incremental Delay, d2	0.0	0.1	5.1	0.2	3.3	0.1
Delay (s)	9.6	9.7	51.6	2.8	36.8	28.6
Level of Service	A	A	D	A	D	C
Approach Delay (s)	9.6			25.3	32.2	
Approach LOS	A			C	C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
15: North B Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↕		↙	↕	↗	↙	↕	↗	↙	↕	↗
Volume (vph)	106	121	13	988	206	533	4	943	328	215	992	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3457		3433	1863	1437	1770	3539	1498	1770	3410	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3457		3433	1863	1437	1770	3539	1498	1770	3410	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	106	121	13	988	206	533	4	943	328	215	992	102
RTOR Reduction (vph)	0	8	0	0	0	344	0	0	133	0	6	0
Lane Group Flow (vph)	106	126	0	988	206	189	4	943	195	215	1088	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	22.4	18.9		23.5	20.0	20.0	1.0	33.1	56.6	6.5	38.6	
Effective Green, g (s)	22.4	18.9		23.5	20.0	20.0	1.0	33.1	56.6	6.5	38.6	
Actuated g/C Ratio	0.22	0.19		0.24	0.20	0.20	0.01	0.33	0.57	0.06	0.39	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	396	653		807	373	287	18	1171	915	115	1316	
v/s Ratio Prot	c0.06	0.04		c0.29	0.11		0.00	0.27	0.05	c0.12	c0.32	
v/s Ratio Perm						0.13			0.08			
v/c Ratio	0.27	0.19		1.22	0.55	0.66	0.22	0.81	0.21	1.87	0.83	
Uniform Delay, d1	32.0	34.1		38.2	36.0	36.9	49.1	30.5	10.7	46.8	27.7	
Progression Factor	0.80	0.79		0.92	0.90	0.71	1.44	0.43	0.33	1.00	1.00	
Incremental Delay, d2	0.4	0.1		110.6	1.5	4.7	5.9	5.7	0.1	422.5	6.1	
Delay (s)	25.9	27.2		145.8	33.9	31.0	76.6	18.9	3.6	469.2	33.7	
Level of Service	C	C		F	C	C	E	B	A	F	C	
Approach Delay (s)		26.6			97.0			15.2			105.3	
Approach LOS		C			F			B			F	

Intersection Summary

HCM Average Control Delay	72.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2
Lane Configurations	↑↑		↖	↑			↑↑↑↑		↘		
Volume (vph)	425	250	20	564	29	22	2736	1140	34	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		
Lane Util. Factor	0.95		1.00		1.00		0.86		1.00		
Frbp, ped/bikes	0.97		1.00		0.99		1.00		0.89		
Flpb, ped/bikes	1.00		0.99		1.00		1.00		1.00		
Frt	0.94		1.00		0.99		0.96		0.92		
Flt Protected	1.00		0.95		1.00		1.00		0.98		
Satd. Flow (prot)	3249		1745		1838		6125		1500		
Flt Permitted	1.00		0.17		1.00		1.00		0.98		
Satd. Flow (perm)	3249		308		1838		6125		1500		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	250	20	564	29	22	2736	1140	34	43	7
RTOR Reduction (vph)	57	0	0	0	0	0	0	0	2	0	0
Lane Group Flow (vph)	618		0		20		593		0		0
Confl. Peds. (#/hr)	36		36		36				36		36
Turn Type			Perm				Perm				
Protected Phases	4				4				2 3		
Permitted Phases			4				2 3		1		
Actuated Green, G (s)	40.0		40.0		40.0		73.8		17.2		
Effective Green, g (s)	40.0		40.0		40.0		76.8		17.2		
Actuated g/C Ratio	0.27		0.27		0.27		0.51		0.11		
Clearance Time (s)	4.0		4.0		4.0				4.0		
Vehicle Extension (s)	5.0		5.0		5.0				5.0		
Lane Grp Cap (vph)	866		82		490		3136		172		
v/s Ratio Prot	0.19				c0.32						
v/s Ratio Perm			0.07				0.64		c0.05		
v/c Ratio	0.71		0.24		1.21		1.38dr		0.48		
Uniform Delay, d1	49.8		43.1		55.0		36.6		62.2		
Progression Factor	1.00		1.00		1.00		1.00		1.00		
Incremental Delay, d2	3.5		3.2		112.4		112.2		4.3		
Delay (s)	53.3		46.4		167.4		148.8		66.5		
Level of Service	D		D		F		F		E		
Approach Delay (s)	53.3				163.4		148.8		66.5		
Approach LOS	D				F		F		E		

Intersection Summary

HCM Average Control Delay	137.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	114.7%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th St

2013+Proj(Off) AM Peak (Mitigated)
 1/10/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	46	210	199	545	523	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.91	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3451	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3451	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	210	199	545	523	40
RTOR Reduction (vph)	0	171	0	0	5	0
Lane Group Flow (vph)	46	39	199	545	558	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.7	18.7	26.5	72.3	41.3	
Effective Green, g (s)	18.7	18.7	26.5	72.3	41.3	
Actuated g/C Ratio	0.19	0.19	0.26	0.72	0.41	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	331	269	469	2559	1425	
v/s Ratio Prot	0.03		c0.11	0.15	c0.16	
v/s Ratio Perm		c0.03				
v/c Ratio	0.14	0.15	0.42	0.21	0.39	
Uniform Delay, d1	33.9	34.0	30.4	4.5	20.6	
Progression Factor	1.00	1.00	0.74	0.13	0.69	
Incremental Delay, d2	0.2	0.3	0.6	0.2	0.8	
Delay (s)	34.1	34.2	23.2	0.8	14.9	
Level of Service	C	C	C	A	B	
Approach Delay (s)	34.2			6.8	14.9	
Approach LOS	C			A	B	

Intersection Summary

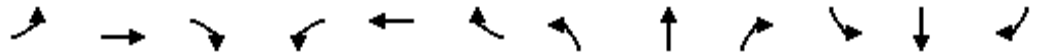
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘↗	↑↑	↗	↘↗	↑↑	↗
Volume (vph)	129	389	434	234	245	32	388	560	221	8	553	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	129	389	434	234	245	32	388	560	221	8	553	74
RTOR Reduction (vph)	0	0	243	0	0	23	0	0	127	0	0	51
Lane Group Flow (vph)	129	389	191	234	245	9	388	560	94	8	553	23
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.2	25.0	25.0	13.6	28.4	28.4	11.7	42.4	42.4	1.0	31.7	31.7
Effective Green, g (s)	10.2	25.0	25.0	13.6	28.4	28.4	11.7	42.4	42.4	1.0	31.7	31.7
Actuated g/C Ratio	0.10	0.25	0.25	0.14	0.28	0.28	0.12	0.42	0.42	0.01	0.32	0.32
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	885	366	241	1005	416	402	1501	616	34	1122	464
v/s Ratio Prot	0.07	0.11		c0.13	c0.07		c0.11	0.16		0.00	c0.16	
v/s Ratio Perm			c0.13			0.01			0.06			0.02
v/c Ratio	0.71	0.44	0.52	0.97	0.24	0.02	0.97	0.37	0.15	0.24	0.49	0.05
Uniform Delay, d1	43.5	31.6	32.3	43.0	27.5	25.8	43.9	19.7	17.7	49.1	27.6	23.7
Progression Factor	1.00	1.00	1.00	1.12	0.69	0.41	1.00	1.00	1.00	0.57	0.41	0.06
Incremental Delay, d2	12.5	0.4	1.3	38.1	0.1	0.0	35.5	0.7	0.5	3.3	1.5	0.2
Delay (s)	55.9	31.9	33.7	86.2	19.0	10.5	79.5	20.4	18.3	31.4	12.7	1.7
Level of Service	E	C	C	F	B	B	E	C	B	C	B	A
Approach Delay (s)		36.0			49.3			39.6			11.6	
Approach LOS		D			D			D			B	

Intersection Summary

HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	404	219	80	819	1055	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	0.92	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3304	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3304	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	404	219	80	819	1055	451
RTOR Reduction (vph)	0	140	0	0	43	0
Lane Group Flow (vph)	404	79	80	819	1463	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.9	24.9	6.2	66.1	55.4	
Effective Green, g (s)	24.9	24.9	6.2	66.1	55.4	
Actuated g/C Ratio	0.25	0.25	0.06	0.66	0.55	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	855	365	110	2339	1830	
v/s Ratio Prot	c0.12		c0.05	0.23	c0.44	
v/s Ratio Perm		0.05				
v/c Ratio	0.47	0.22	0.73	0.35	0.80	
Uniform Delay, d1	32.0	29.8	46.1	7.5	17.9	
Progression Factor	0.59	0.23	0.23	0.48	0.41	
Incremental Delay, d2	0.4	0.3	2.2	0.0	1.0	
Delay (s)	19.2	7.1	12.6	3.6	8.3	
Level of Service	B	A	B	A	A	
Approach Delay (s)	15.0			4.4	8.3	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	40	0	55	137	34	25	1025	39	321	1156	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1770			3496			3342	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1770			3496			3342	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	40	0	55	137	34	25	1025	39	321	1156	228
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	12	0
Lane Group Flow (vph)	56	40	0	55	162	0	0	1087	0	0	1693	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	4.0	18.0		5.0	19.0			21.0			39.0	
Effective Green, g (s)	4.0	18.0		5.0	19.0			21.0			39.0	
Actuated g/C Ratio	0.04	0.18		0.05	0.19			0.21			0.39	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	71	335		89	336			734			1303	
v/s Ratio Prot	c0.03	0.02		0.03	c0.09			c0.31			c0.51	
v/s Ratio Perm												
v/c Ratio	0.79	0.12		0.62	0.48			1.48			1.30	
Uniform Delay, d1	47.6	34.4		46.6	36.1			39.5			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.92	
Incremental Delay, d2	58.6	0.7		28.1	4.9			223.5			139.5	
Delay (s)	106.1	35.1		74.7	41.0			263.0			167.7	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		76.5			49.2			263.0			167.7	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	189.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	112.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↖	↗	↖	↕		↖	↗	
Volume (vph)	37	199	52	118	264	621	67	918	104	127	1403	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.87	1.00	1.00	0.87	1.00	0.98		1.00	0.99	
Flpb, ped/bikes		0.99	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1378	1770	1863	1378	1770	3409		1770	3472	
Flt Permitted		0.91	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1676	1378	1770	1863	1378	1770	3409		1770	3472	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	199	52	118	264	621	67	918	104	127	1403	77
RTOR Reduction (vph)	0	0	44	0	0	310	0	9	0	0	4	0
Lane Group Flow (vph)	0	236	8	118	264	311	67	1013	0	127	1476	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		15.0	15.0	24.0	24.0	24.0	4.0	37.0		10.0	44.0	
Effective Green, g (s)		15.0	15.0	24.0	24.0	24.0	4.0	37.0		10.0	44.0	
Actuated g/C Ratio		0.15	0.15	0.24	0.24	0.24	0.04	0.37		0.10	0.44	
Clearance Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		251	207	425	447	331	71	1261		177	1528	
v/s Ratio Prot				0.07	0.14		0.04	c0.30		0.07	c0.43	
v/s Ratio Perm		c0.14	0.01			c0.23						
v/c Ratio		0.94	0.04	0.28	0.59	0.94	0.94	0.80		0.72	0.97	
Uniform Delay, d1		42.1	36.3	30.9	33.6	37.3	47.9	28.2		43.6	27.3	
Progression Factor		1.29	2.25	1.06	1.08	2.30	1.28	1.52		1.00	1.00	
Incremental Delay, d2		38.3	0.3	1.4	4.8	32.4	20.9	0.5		22.0	16.2	
Delay (s)		92.8	81.9	34.2	41.1	118.1	82.1	43.6		65.6	43.5	
Level of Service		F	F	C	D	F	F	D		E	D	
Approach Delay (s)		90.8			88.0			45.9			45.3	
Approach LOS		F			F			D			D	

Intersection Summary

HCM Average Control Delay	59.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	0	22	224	540	424	237	714	0	0	1014	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	0	22	224	540	424	237	714	0	0	1014	197
RTOR Reduction (vph)	0	0	18	0	0	149	0	0	0	0	0	93
Lane Group Flow (vph)	63	0	4	224	540	275	237	714	0	0	1014	104
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0		18.0	16.0	28.0	28.0	16.0	54.5			34.5	34.5
Effective Green, g (s)	6.0		18.0	15.5	28.0	27.5	16.0	54.5			34.0	34.5
Actuated g/C Ratio	0.06		0.18	0.16	0.28	0.28	0.16	0.55			0.34	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	106		285	274	991	379	283	1015			1203	546
v/s Ratio Prot	0.04			c0.13	0.15		c0.13	0.38			c0.29	
v/s Ratio Perm			0.00			c0.20						0.07
v/c Ratio	0.59		0.01	0.82	0.54	0.73	0.84	0.70			0.84	0.19
Uniform Delay, d1	45.8		33.7	40.9	30.6	32.8	40.7	16.8			30.5	23.0
Progression Factor	0.70		1.09	1.03	0.89	0.87	1.17	0.93			0.98	0.91
Incremental Delay, d2	11.9		0.0	21.5	2.0	10.7	20.8	3.3			6.8	0.7
Delay (s)	43.8		36.9	63.5	29.3	39.3	68.4	19.0			36.7	21.5
Level of Service	D		D	E	C	D	E	B			D	C
Approach Delay (s)		42.0			39.3			31.3			34.2	
Approach LOS		D			D			C			C	

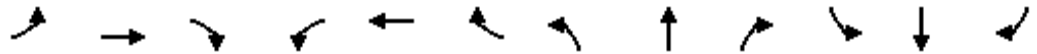
Intersection Summary

HCM Average Control Delay	35.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 24: H Street & 6th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	426	316	55	0	0	0	0	578	539	1057	618	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3239						3040		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3239						3040		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	426	316	55	0	0	0	0	578	539	1057	618	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	264	525	0	0	0	0	0	1088	0	1057	618	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.0	16.0						27.5		45.5	76.5	
Effective Green, g (s)	16.0	15.5						27.0		45.0	76.0	
Actuated g/C Ratio	0.16	0.16						0.27		0.45	0.76	
Clearance Time (s)	4.0	4.0						3.5		3.5	3.5	
Lane Grp Cap (vph)	258	502						821		797	2690	
v/s Ratio Prot	c0.16	0.16						c0.36		c0.60	0.17	
v/s Ratio Perm												
v/c Ratio	1.02	1.04						1.32		1.33	0.23	
Uniform Delay, d1	42.0	42.2						36.5		27.5	3.5	
Progression Factor	0.88	0.89						0.77		1.08	0.40	
Incremental Delay, d2	49.0	43.2						150.4		151.4	0.1	
Delay (s)	86.2	80.6						178.6		181.1	1.5	
Level of Service	F	F						F		F	A	
Approach Delay (s)		82.5			0.0			178.6			114.8	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	127.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007

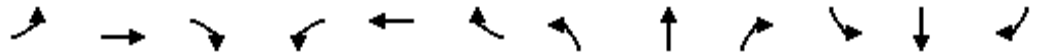


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↕	↕↕		
Volume (vph)	604	892	209	0	0	0	0	0	0	166	845	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3379								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3379								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	604	892	209	0	0	0	0	0	0	166	845	0	
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1695	0	0	0	0	0	0	0	166	845	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		27.7								15.3	15.3		
Effective Green, g (s)		27.2								14.8	14.8		
Actuated g/C Ratio		0.54								0.30	0.30		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1838								524	1048		
v/s Ratio Prot		c0.50								0.09	c0.24		
v/s Ratio Perm													
v/c Ratio		0.92								0.32	0.81		
Uniform Delay, d1		10.4								13.7	16.3		
Progression Factor		0.93								0.49	0.77		
Incremental Delay, d2		1.0								0.9	3.7		
Delay (s)		10.7								7.5	16.1		
Level of Service		B								A	B		
Approach Delay (s)		10.7			0.0			0.0			14.7		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM Average Control Delay			12.2		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.88										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			79.5%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↖	↑↑			↗	↖
Volume (vph)	0	0	0	57	1098	304	40	804	0	0	269	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			0.96	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6134		1770	3539			1704	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6134		1770	3539			1704	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	57	1098	304	40	804	0	0	269	405
RTOR Reduction (vph)	0	0	0	0	95	0	0	0	0	0	24	249
Lane Group Flow (vph)	0	0	0	0	1364	0	40	804	0	0	334	67
Confl. Peds. (#/hr)						36						
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					15.4		13.0	13.0			11.1	11.1
Effective Green, g (s)					14.9		12.5	12.5			10.6	10.6
Actuated g/C Ratio					0.30		0.25	0.25			0.21	0.21
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1828		443	885			361	319
v/s Ratio Prot							0.02	c0.23			c0.20	0.04
v/s Ratio Perm					0.22							
v/c Ratio					0.75		0.09	0.91			0.93	0.21
Uniform Delay, d1					15.8		14.4	18.2			19.3	16.2
Progression Factor					0.61		1.45	1.45			1.19	3.10
Incremental Delay, d2					2.5		0.0	1.7			31.3	1.4
Delay (s)					12.2		21.0	28.2			54.3	51.8
Level of Service					B		C	C			D	D
Approach Delay (s)		0.0			12.2			27.9			53.1	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	272	1089	0	0	0	0	0	705	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.95
Flpb, ped/bikes				0.96	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1467	4796						3539	2655
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1467	4796						3539	2655
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	272	1089	0	0	0	0	0	705	413
RTOR Reduction (vph)	0	0	0	59	5	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	0	0	186	1111	0	0	0	0	0	705	372
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				22.5	22.5						20.5	20.5
Effective Green, g (s)				22.0	22.0						20.0	20.0
Actuated g/C Ratio				0.44	0.44						0.40	0.40
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				645	2110						1416	1062
v/s Ratio Prot											c0.20	
v/s Ratio Perm				0.13	0.23							0.14
v/c Ratio				0.29	0.53						0.50	0.35
Uniform Delay, d1				9.0	10.2						11.2	10.5
Progression Factor				1.00	1.00						0.32	0.23
Incremental Delay, d2				1.1	0.9						0.8	0.5
Delay (s)				10.1	11.1						4.3	3.0
Level of Service				B	B						A	A
Approach Delay (s)		0.0			11.0			0.0			3.8	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	861	2454	0	0	0	0	0	65	8	214	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.99		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.95		
Frt	1.00	1.00						0.99		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4788						1821		1674		
Flt Permitted	0.95	1.00						1.00		0.71		
Satd. Flow (perm)	1431	4788						1821		1250		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	861	2454	0	0	0	0	0	65	8	214	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	775	2540	0	0	0	0	0	72	0	214	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	25.0	25.0						18.0		18.0		
Effective Green, g (s)	24.5	24.5						17.5		17.5		
Actuated g/C Ratio	0.49	0.49						0.35		0.35		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	701	2346						637		438		
v/s Ratio Prot								0.04				
v/s Ratio Perm	c0.54	0.53								c0.17		
v/c Ratio	1.11	1.08						0.11		0.49		
Uniform Delay, d1	12.8	12.8						11.0		12.7		
Progression Factor	1.05	1.06						1.00		0.31		
Incremental Delay, d2	59.0	41.9						0.4		1.6		
Delay (s)	72.3	55.4						11.4		5.6		
Level of Service	E	E						B		A		
Approach Delay (s)		59.3			0.0			11.4				5.6
Approach LOS		E			A			B				A

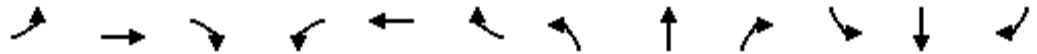
Intersection Summary

HCM Average Control Delay	55.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

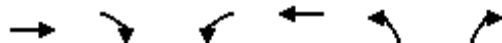
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2471	404	0	0	0	0	0	0	221	613	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									0.97	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4887									4859	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4887									4859	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2471	404	0	0	0	0	0	0	221	613	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	2866	0	0	0	0	0	0	0	0	828	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		69.5									23.5	
Effective Green, g (s)		69.0									23.0	
Actuated g/C Ratio		0.69									0.23	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3372									1118	
v/s Ratio Prot		0.59										
v/s Ratio Perm											0.17	
v/c Ratio		0.85									0.74	
Uniform Delay, d1		11.6									35.7	
Progression Factor		1.14									0.93	
Incremental Delay, d2		0.9									4.0	
Delay (s)		14.2									37.3	
Level of Service		B									D	
Approach Delay (s)		14.2			0.0			0.0			37.3	
Approach LOS		B			A			A			D	
Intersection Summary												
HCM Average Control Delay			19.4									HCM Level of Service B
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			100.0								8.0	Sum of lost time (s)
Intersection Capacity Utilization			80.4%									ICU Level of Service D
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	0	0	65	0	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	65	0	0	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0	130	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	130	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			96	100	97	
cM capacity (veh/h)			1623	830	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	65	31
Volume Left	0	65	0
Volume Right	0	0	31
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization	13.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2013+Proj(Off) AM Peak (Mitigated)
 1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	65	0	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	65	0	0	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		130	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		130	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	97
cM capacity (veh/h)			1623		830	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	65	31
Volume Left	0	65	0
Volume Right	0	0	31
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		13.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕	↗		↕	
Volume (vph)	0	0	158	100	0	0	323	641	499	0	471	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.95	0.95		1.00	1.00	1.00		1.00	
Frt		0.85	0.85	1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	1681	1681		1770	1863	1425		1863	
Flt Permitted		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	1681	1681		1770	1863	1425		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	158	100	0	0	323	641	499	0	471	0
RTOR Reduction (vph)	0	75	75	0	0	0	0	0	99	0	0	0
Lane Group Flow (vph)	0	4	4	50	50	0	323	641	400	0	471	0
Parking (#/hr)									0			
Turn Type	Split		Perm	Split			Prot		Perm		Perm	
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2		6	
Actuated Green, G (s)		5.5	5.5	7.8	7.8		26.3	96.2	96.2		66.4	
Effective Green, g (s)		5.5	5.5	7.8	7.8		26.3	96.2	96.2		66.4	
Actuated g/C Ratio		0.05	0.05	0.06	0.06		0.22	0.80	0.80		0.55	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		69	69	109	109		388	1494	1142		1031	
v/s Ratio Prot		c0.00		c0.03	0.03		c0.18	0.34			c0.25	
v/s Ratio Perm			0.00						0.28			
v/c Ratio		0.05	0.05	0.46	0.46		0.83	0.43	0.35		0.46	
Uniform Delay, d1		54.8	54.8	54.1	54.1		44.7	3.6	3.3		16.0	
Progression Factor		1.00	1.00	1.00	1.00		0.83	0.44	0.11		1.00	
Incremental Delay, d2		0.3	0.3	3.0	3.0		1.5	0.1	0.1		1.5	
Delay (s)		55.1	55.1	57.1	57.1		38.5	1.7	0.5		17.5	
Level of Service		E	E	E	E		D	A	A		B	
Approach Delay (s)		55.1		57.1			9.4				17.5	
Approach LOS		E		E			A				B	

Intersection Summary

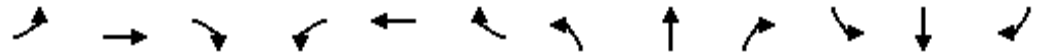
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 1: Richard Blvd & I-5 SB Off

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑					↑	↑	↑
Volume (vph)	0	407	652	1032	329	0	0	0	0	1486	3	556
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	1.00					0.95	0.95	1.00
Frbp, ped/bikes		0.87		1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.91		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		2805		3433	1863					1681	1686	1539
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		2805		3433	1863					1681	1686	1539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	407	652	1032	329	0	0	0	0	1486	3	556
RTOR Reduction (vph)	0	242	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	817	0	1032	329	0	0	0	0	743	746	556
Confl. Peds. (#/hr)			55									55
Turn Type				Prot						Split		Free
Protected Phases		2		1 9	3 12 13					4	4	
Permitted Phases												Free
Actuated Green, G (s)		27.0		36.5	66.5					46.0	46.0	120.0
Effective Green, g (s)		27.0		35.0	66.0					46.0	46.0	120.0
Actuated g/C Ratio		0.22		0.29	0.55					0.38	0.38	1.00
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		6.0								5.0	5.0	
Lane Grp Cap (vph)		631		1001	1025					644	646	1539
v/s Ratio Prot		c0.29		c0.30	0.18					0.44	c0.44	
v/s Ratio Perm												0.36
v/c Ratio		1.30		1.03	0.32					1.15	1.15	0.36
Uniform Delay, d1		46.5		42.5	14.8					37.0	37.0	0.0
Progression Factor		1.00		0.62	1.14					1.00	1.00	1.00
Incremental Delay, d2		144.3		23.4	0.1					86.0	86.4	0.7
Delay (s)		190.8		49.8	16.9					123.0	123.4	0.7
Level of Service		F		D	B					F	F	A
Approach Delay (s)		190.8			41.8			0.0			89.9	
Approach LOS		F			D			A			F	

Intersection Summary

HCM Average Control Delay	99.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	146.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richard Blvd & I-5 NB Off

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗↗		↕	↗			
Volume (vph)	425	1468	0	0	1263	2798	98	9	863	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	0.88		0.95	0.95			
Frbp, ped/bikes	1.00	1.00			1.00	0.97		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	2708		1546	1504			
Flt Permitted	0.95	1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	2708		1546	1504			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	1468	0	0	1263	2798	98	9	863	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	109	11	0	0	0
Lane Group Flow (vph)	425	1468	0	0	1263	2798	0	386	464	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type	Prot					Free	Split		custom			
Protected Phases	5 14	7 14 15			6 11 15		8 16	8 16	8 11 16			
Permitted Phases						Free						
Actuated Green, G (s)	24.3	59.6			43.5	120.0		33.7	53.4			
Effective Green, g (s)	23.3	59.1			40.0	120.0		33.2	48.4			
Actuated g/C Ratio	0.19	0.49			0.33	1.00		0.28	0.40			
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	344	1743			1180	2708		428	607			
v/s Ratio Prot	c0.24	0.41			0.36			0.25	0.31			
v/s Ratio Perm						c1.03						
v/c Ratio	1.24	0.84			1.07	1.03		0.90	0.76			
Uniform Delay, d1	48.3	26.4			40.0	60.0		41.8	30.9			
Progression Factor	0.55	0.14			0.97	1.00		1.00	1.00			
Incremental Delay, d2	108.4	0.4			33.6	16.6		22.8	6.7			
Delay (s)	135.1	4.1			72.2	76.6		64.7	37.6			
Level of Service	F	A			E	E		E	D			
Approach Delay (s)		33.5			75.3			51.4			0.0	
Approach LOS		C			E			D			A	

Intersection Summary

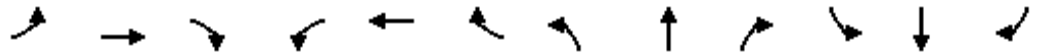
HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	146.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richard Blvd & Bercut Dr

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘↗	↑			↖	↗
Volume (vph)	164	1481	686	29	2697	35	1181	61	26	54	137	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.6	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.89	1.00	1.00		1.00	0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1770	3539	1408	1770	5064		3433	1742			1837	1583
Flt Permitted	0.07	1.00	1.00	0.08	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	131	3539	1408	141	5064		3433	1742			1837	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	1481	686	29	2697	35	1181	61	26	54	137	183
RTOR Reduction (vph)	0	0	185	0	1	0	0	13	0	0	0	60
Lane Group Flow (vph)	164	1481	501	29	2731	0	1181	74	0	0	191	123
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type	pm+pt		Perm	Perm			Split			Split		Perm
Protected Phases	1	6			2		8	8		4	4	
Permitted Phases	6		6	2								4
Actuated Green, G (s)	63.5	62.4	62.4	52.4	52.4		35.5	35.5			10.5	10.5
Effective Green, g (s)	63.0	63.0	62.4	53.0	53.0		35.0	35.0			10.0	10.0
Actuated g/C Ratio	0.52	0.52	0.52	0.44	0.44		0.29	0.29			0.08	0.08
Clearance Time (s)	3.5	4.6	4.6	4.6	4.6		3.5	3.5			3.5	3.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2			0.2	0.2
Lane Grp Cap (vph)	151	1858	732	62	2237		1001	508			153	132
v/s Ratio Prot	0.05	c0.42			c0.54		c0.34	0.04			c0.10	
v/s Ratio Perm	0.52		0.36	0.21								0.08
v/c Ratio	1.09	0.80	0.68	0.47	1.22		1.18	0.15			1.25	0.93
Uniform Delay, d1	53.9	23.3	21.5	23.6	33.5		42.5	31.4			55.0	54.7
Progression Factor	0.78	0.65	0.36	0.41	0.47		0.90	0.90			1.00	1.00
Incremental Delay, d2	78.5	2.0	2.8	11.2	101.4		88.6	0.0			154.5	57.7
Delay (s)	120.3	17.1	10.5	21.0	117.2		126.8	28.2			209.5	112.4
Level of Service	F	B	B	C	F		F	C			F	F
Approach Delay (s)		22.4			116.1			120.1			162.0	
Approach LOS		C			F			F			F	

Intersection Summary

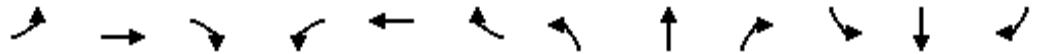
HCM Average Control Delay	87.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	119.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: Richard Blvd & 5th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	1124	21	231	2192	73	13	251	17	99	127	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3510		1702	1836		1713	1694	
Flt Permitted	0.95	1.00		0.95	1.00		0.38	1.00		0.26	1.00	
Satd. Flow (perm)	1770	3523		1770	3510		672	1836		467	1694	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	231	1124	21	231	2192	73	13	251	17	99	127	88
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	21	0
Lane Group Flow (vph)	231	1144	0	231	2263	0	13	266	0	99	194	0
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases		6			2		8			4		
Actuated Green, G (s)	14.0	59.7		26.0	71.7		23.5	23.5		23.5	23.5	
Effective Green, g (s)	13.0	60.0		25.0	72.0		23.0	23.0		23.0	23.0	
Actuated g/C Ratio	0.11	0.50		0.21	0.60		0.19	0.19		0.19	0.19	
Clearance Time (s)	3.0	4.3		3.0	4.3		3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	192	1762		369	2106		129	352		90	325	
v/s Ratio Prot	c0.13	0.32		0.13	c0.64			0.14			0.11	
v/s Ratio Perm							0.02			c0.21		
v/c Ratio	1.20	0.65		0.63	1.07		0.10	0.75		1.10	0.60	
Uniform Delay, d1	53.5	22.2		43.2	24.0		40.0	45.8		48.5	44.3	
Progression Factor	1.02	0.16		0.76	0.72		1.00	1.00		1.00	1.00	
Incremental Delay, d2	116.3	1.1		1.2	38.8		0.1	7.9		124.5	2.0	
Delay (s)	170.7	4.7		34.0	56.2		40.1	53.7		173.0	46.2	
Level of Service	F	A		C	E		D	D		F	D	
Approach Delay (s)		32.6			54.2			53.1			86.2	
Approach LOS		C			D			D			F	

Intersection Summary

HCM Average Control Delay	49.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Richard Blvd & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↖	↖↗	↕		↖↗	↕	↖↗	↖	↕	↖
Volume (vph)	132	813	315	332	1348	212	464	491	800	514	880	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	3.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	1.00	0.88	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1508	3433	3445		3433	1863	2637	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1508	3433	3445		3433	1863	2637	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	132	813	315	332	1348	212	464	491	800	514	880	415
RTOR Reduction (vph)	0	0	140	0	9	0	0	0	114	0	0	98
Lane Group Flow (vph)	132	813	175	332	1551	0	464	491	686	514	880	317
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases			6						8			4
Actuated Green, G (s)	4.0	42.0	42.0	13.0	51.0		24.0	27.5	40.5	23.5	27.0	27.0
Effective Green, g (s)	3.0	42.0	42.0	12.0	51.0		23.5	27.0	39.5	23.0	26.5	27.0
Actuated g/C Ratio	0.02	0.35	0.35	0.10	0.42		0.20	0.22	0.33	0.19	0.22	0.22
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0		3.5	3.5	3.0	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	86	1239	528	343	1464		672	419	868	339	782	356
v/s Ratio Prot	c0.04	0.23		0.10	c0.45		0.14	c0.26	0.08	c0.29	0.25	
v/s Ratio Perm			0.12						0.18			0.20
v/c Ratio	1.53	0.66	0.33	0.97	1.06		0.69	1.17	0.79	1.52	1.13	0.89
Uniform Delay, d1	58.5	32.9	28.7	53.8	34.5		44.9	46.5	36.5	48.5	46.8	45.1
Progression Factor	0.73	0.54	0.21	1.14	0.79		1.00	1.00	1.00	0.85	0.90	0.85
Incremental Delay, d2	278.5	0.7	0.1	35.9	39.4		2.5	100.0	4.6	241.8	67.4	15.9
Delay (s)	321.0	18.5	6.0	97.2	66.8		47.3	146.5	41.1	283.1	109.3	54.4
Level of Service	F	B	A	F	E		D	F	D	F	F	D
Approach Delay (s)		47.1			72.1			72.2			146.1	
Approach LOS		D			E			E			F	

Intersection Summary

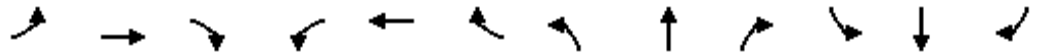
HCM Average Control Delay	87.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Richard Blvd & 10th St

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑	↗	↘	↑	↗
Volume (vph)	26	2027	99	90	1504	26	115	30	176	71	37	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1486	1770	3524		1685	1863	1583	1770	1863	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1770	3539	1486	1770	3524		1300	1863	1583	1374	1863	1459
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	2027	99	90	1504	26	115	30	176	71	37	170
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	107	0	0	107
Lane Group Flow (vph)	26	2027	87	90	1529	0	115	30	69	71	37	63
Confl. Peds. (#/hr)			35			35	35					35
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm		Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	3.8	79.4	79.4	10.1	85.7		19.0	19.0	19.0	19.0	19.0	19.0
Effective Green, g (s)	3.3	79.9	79.9	9.6	86.2		18.5	18.5	18.5	18.5	18.5	18.5
Actuated g/C Ratio	0.03	0.67	0.67	0.08	0.72		0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	49	2356	989	142	2531		200	287	244	212	287	225
v/s Ratio Prot	0.01	c0.57		0.05	c0.43			0.02			0.02	
v/s Ratio Perm			0.06				c0.09		0.04	0.05		0.04
v/c Ratio	0.53	0.86	0.09	0.63	0.60		0.57	0.10	0.28	0.33	0.13	0.28
Uniform Delay, d1	57.6	15.7	7.1	53.5	8.4		47.1	43.6	44.9	45.3	43.8	44.8
Progression Factor	0.91	1.01	1.03	0.95	0.88		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	1.8	0.1	5.6	0.9		2.5	0.1	0.2	0.3	0.1	0.2
Delay (s)	54.7	17.7	7.4	56.2	8.3		49.6	43.7	45.1	45.6	43.9	45.1
Level of Service	D	B	A	E	A		D	D	D	D	D	D
Approach Delay (s)		17.7			11.0			46.6			45.1	
Approach LOS		B			B			D			D	

Intersection Summary

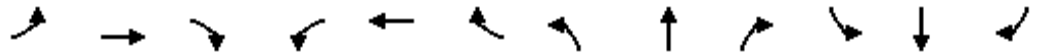
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	2029	39	7	1449	5	42	38	144	24	25	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.94			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Frt	1.00	1.00		1.00	1.00			0.91			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3515		1770	3535			1565			1613	
Flt Permitted	0.13	1.00		0.05	1.00			0.93			0.91	
Satd. Flow (perm)	239	3515		91	3535			1468			1487	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	58	2029	39	7	1449	5	42	38	144	24	25	52
RTOR Reduction (vph)	0	1	0	0	0	0	0	11	0	0	32	0
Lane Group Flow (vph)	58	2067	0	7	1454	0	0	213	0	0	70	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	81.5	81.5		81.5	81.5			30.5			30.5	
Effective Green, g (s)	82.0	82.0		82.0	82.0			30.0			30.0	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.25			0.25	
Clearance Time (s)	4.5	4.5		4.5	4.5			3.5			3.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0			2.0	
Lane Grp Cap (vph)	163	2402		62	2416			367			372	
v/s Ratio Prot		c0.59			0.41							
v/s Ratio Perm	0.24			0.08				c0.14			0.05	
v/c Ratio	0.36	0.86		0.11	0.60			0.58			0.19	
Uniform Delay, d1	7.9	14.6		6.5	10.2			39.5			35.4	
Progression Factor	0.25	0.56		0.84	0.86			1.00			1.00	
Incremental Delay, d2	3.5	2.6		1.6	0.5			6.5			1.1	
Delay (s)	5.5	10.7		7.1	9.3			46.0			36.5	
Level of Service	A	B		A	A			D			D	
Approach Delay (s)		10.5			9.3			46.0			36.5	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Richard Blvd & 12th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Volume (vph)	2109	262	50	0	50	110	5113	20	2953	1101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		3.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00		1.00	0.86	1.00	*0.86	1.00
Frbp, ped/bikes	1.00	0.91		1.00		1.00	1.00	0.86	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	1446		1695		1770	6408	1365	6408	1453
Flt Permitted	0.95	1.00		0.98		0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	1446		1695		1770	6408	1365	6408	1453
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2109	262	50	0	50	110	5113	20	2953	1101
RTOR Reduction (vph)	0	80	0	0	0	0	0	5	0	474
Lane Group Flow (vph)	2109	182	0	100	0	110	5113	15	2953	627
Confl. Peds. (#/hr)		36						36		36
Turn Type	Prot	custom	Split			Prot		custom	custom	custom
Protected Phases	4		3	3		5	2 10		6 14	
Permitted Phases		4						2		6 14
Actuated Green, G (s)	34.0	34.0		13.8		6.5	56.2	37.2	46.2	46.2
Effective Green, g (s)	34.0	34.0		13.8		6.5	56.2	37.2	46.2	46.2
Actuated g/C Ratio	0.28	0.28		0.12		0.05	0.47	0.31	0.39	0.39
Clearance Time (s)	4.0	4.0		4.0		3.5		4.0		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)	973	410		195		96	3001	423	2467	559
v/s Ratio Prot	c0.61			c0.06		0.06	c0.80		0.46	
v/s Ratio Perm		0.13						0.01		0.43
v/c Ratio	2.17	0.44		0.51		1.15	1.70	0.04	1.20	1.12
Uniform Delay, d1	43.0	35.3		49.9		56.8	31.9	28.9	36.9	36.9
Progression Factor	0.77	0.53		1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	527.5	0.5		2.3		136.5	318.1	0.2	92.9	76.4
Delay (s)	560.4	19.3		52.2		193.2	350.0	29.0	129.8	113.3
Level of Service	F	B		D		F	F	C	F	F
Approach Delay (s)				52.2			345.5			
Approach LOS				D			F			

Intersection Summary

HCM Average Control Delay	298.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	147.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



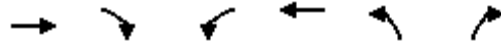
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	557	606	1	181	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1862		1770	1863
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1862		1770	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	557	606	1	181	662
RTOR Reduction (vph)	303	0	0	0	0	0
Lane Group Flow (vph)	254	0	607	0	181	662
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		26.9		8.5	39.4
Effective Green, g (s)	12.6		26.9		8.5	39.4
Actuated g/C Ratio	0.21		0.45		0.14	0.66
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	338		835		251	1223
v/s Ratio Prot	c0.16		c0.33		c0.10	0.36
v/s Ratio Perm						
v/c Ratio	0.75		0.73		0.72	0.54
Uniform Delay, d1	22.2		13.5		24.6	5.5
Progression Factor	1.00		1.00		1.20	1.28
Incremental Delay, d2	9.0		5.5		5.5	0.9
Delay (s)	31.3		19.0		35.1	8.0
Level of Service	C		B		D	A
Approach Delay (s)	31.3		19.0			13.8
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: North B Street & 6th St

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	232	192	499	190	514	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92	1.00	1.00	1.00	0.88
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1453	1770	1863	1770	1570
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1453	1770	1863	1770	1570
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	232	192	499	190	514	519
RTOR Reduction (vph)	0	140	0	0	0	78
Lane Group Flow (vph)	232	52	499	190	514	441
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot		pm+ov	
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	27.0	27.0	29.3	60.8	30.2	59.5
Effective Green, g (s)	27.0	27.0	29.3	60.8	30.2	59.5
Actuated g/C Ratio	0.27	0.27	0.29	0.61	0.30	0.60
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	503	392	519	1133	535	1005
v/s Ratio Prot	c0.12		c0.28	0.10	c0.29	0.13
v/s Ratio Perm		0.04				0.15
v/c Ratio	0.46	0.13	0.96	0.17	0.96	0.44
Uniform Delay, d1	30.4	27.6	34.8	8.6	34.3	11.1
Progression Factor	1.00	1.00	0.68	0.38	0.81	0.21
Incremental Delay, d2	0.7	0.2	21.2	0.2	27.6	0.3
Delay (s)	31.1	27.8	45.0	3.4	55.5	2.7
Level of Service	C	C	D	A	E	A
Approach Delay (s)	29.6			33.5	29.0	
Approach LOS	C			C	C	

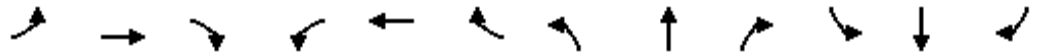
Intersection Summary

HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: North B Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	330	0	1041	474	308	54	1360	1036	384	943	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539		3433	1863	1437	1770	3539	1496	1770	3430	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539		3433	1863	1437	1770	3539	1496	1770	3430	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	330	0	1041	474	308	54	1360	1036	384	943	80
RTOR Reduction (vph)	0	0	0	0	0	164	0	0	92	0	6	0
Lane Group Flow (vph)	173	330	0	1041	474	144	54	1360	944	384	1017	0
Confl. Peds. (#/hr)	60		60	60		60			60			60
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	6.0	6.0		25.5	25.5	25.5	6.9	37.6	63.1	13.4	44.1	
Effective Green, g (s)	6.0	6.0		25.5	25.5	25.5	6.9	37.6	63.1	13.4	44.1	
Actuated g/C Ratio	0.06	0.06		0.26	0.26	0.26	0.07	0.38	0.63	0.13	0.44	
Clearance Time (s)	4.0	4.0		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	106	212		875	475	366	122	1331	1011	237	1513	
v/s Ratio Prot	c0.10	0.09		c0.30	0.25		0.03	c0.38	0.24	c0.22	0.30	
v/s Ratio Perm						0.10			0.39			
v/c Ratio	1.63	1.56		1.19	1.00	0.39	0.44	1.02	0.93	1.62	0.67	
Uniform Delay, d1	47.0	47.0		37.2	37.2	30.8	44.7	31.2	16.6	43.3	22.2	
Progression Factor	0.89	0.90		0.71	0.70	0.70	0.93	0.65	0.62	1.00	1.00	
Incremental Delay, d2	318.9	269.9		94.2	35.2	0.5	2.4	29.6	14.2	297.7	2.4	
Delay (s)	360.7	312.2		120.8	61.4	22.2	44.0	50.0	24.4	341.0	24.6	
Level of Service	F	F		F	E	C	D	D	C	F	C	
Approach Delay (s)		328.8			88.7			39.1			111.0	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	93.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	115.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: North B Street & 12th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	SEL	SER	SER2	
Lane Configurations	↑↑		↖	↑		↑↑↑↑			↘			
Volume (vph)	1341	481	38	350	38	54	2201	1425	18	40	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0			
Lane Util. Factor	0.95		1.00		1.00		0.86		1.00			
Frbp, ped/bikes	0.99		1.00		0.99		1.00		0.91			
Flpb, ped/bikes	1.00		1.00		1.00		1.00		1.00			
Frt	0.96		1.00		0.99		0.94		0.90			
Flt Protected	1.00		0.95		1.00		1.00		0.99			
Satd. Flow (prot)	3350		1770		1819		6031		1515			
Flt Permitted	1.00		0.15		1.00		1.00		0.99			
Satd. Flow (perm)	3350		287		1819		6031		1515			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	1341	481	38	350	38	54	2201	1425	18	40	4	
RTOR Reduction (vph)	36	0	0	0	0	0	0	0	3	0	0	
Lane Group Flow (vph)	1786		0		38		388		0		0	
Confl. Peds. (#/hr)			36		36		36				36	
Turn Type	Perm				Perm							
Protected Phases	4		4		4		2 3					
Permitted Phases			4				2 3		1			
Actuated Green, G (s)	26.0		26.0		26.0		41.7		13.3			
Effective Green, g (s)	26.0		26.0		26.0		44.7		13.3			
Actuated g/C Ratio	0.26		0.26		0.26		0.45		0.13			
Clearance Time (s)	4.0		4.0		4.0				4.0			
Vehicle Extension (s)	5.0		5.0		5.0				5.0			
Lane Grp Cap (vph)	871		75		473		2696		201			
v/s Ratio Prot	c0.53				0.21							
v/s Ratio Perm			0.13				0.61		c0.04			
v/c Ratio	2.05		0.51		0.82		1.91dr		0.30			
Uniform Delay, d1	37.0		31.5		34.8		27.6		39.1			
Progression Factor	0.94		1.16		1.14		0.85		1.00			
Incremental Delay, d2	473.9		10.1		11.4		166.3		1.7			
Delay (s)	508.6		46.6		51.2		189.7		40.8			
Level of Service	F		D		D		F		D			
Approach Delay (s)	508.6				50.8		189.7		40.8			
Approach LOS	F				D		F		D			

Intersection Summary

HCM Average Control Delay	275.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Canal St & 6th St

2013+Proj(Off) PM Peak (Mitigated)
 1/10/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	153	415	264	1130	847	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	0.91	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1437	1770	3539	3311	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1437	1770	3539	3311	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	415	264	1130	847	193
RTOR Reduction (vph)	0	335	0	0	17	0
Lane Group Flow (vph)	153	80	264	1130	1023	0
Confl. Peds. (#/hr)	60	60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	19.3	19.1	71.7	48.1	
Effective Green, g (s)	19.3	19.3	19.1	71.7	48.1	
Actuated g/C Ratio	0.19	0.19	0.19	0.72	0.48	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	277	338	2537	1593	
v/s Ratio Prot	c0.09		c0.15	0.32	c0.31	
v/s Ratio Perm		0.06				
v/c Ratio	0.45	0.29	0.78	0.45	0.64	
Uniform Delay, d1	35.6	34.5	38.5	5.9	19.5	
Progression Factor	0.87	1.29	0.79	0.31	0.68	
Incremental Delay, d2	0.9	0.6	7.1	0.3	1.7	
Delay (s)	32.0	45.1	37.5	2.1	15.0	
Level of Service	C	D	D	A	B	
Approach Delay (s)	41.6			8.8	15.0	
Approach LOS	D			A	B	

Intersection Summary

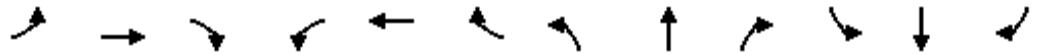
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘↗	↑↑	↗	↘↗	↑↑	↗
Volume (vph)	365	530	497	314	515	102	472	826	390	134	1025	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.93	1.00	1.00	0.92	1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1465	1770	3539	1465	3433	3539	1453	3433	3539	1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	365	530	497	314	515	102	472	826	390	134	1025	142
RTOR Reduction (vph)	0	0	185	0	0	76	0	0	217	0	0	64
Lane Group Flow (vph)	365	530	312	314	515	26	472	826	173	134	1025	78
Confl. Peds. (#/hr)			60			60			60			60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.5	27.0	27.0	12.9	25.4	25.4	10.5	35.9	35.9	6.2	31.6	31.6
Effective Green, g (s)	14.5	27.0	27.0	12.9	25.4	25.4	10.5	35.9	35.9	6.2	31.6	31.6
Actuated g/C Ratio	0.14	0.27	0.27	0.13	0.25	0.25	0.10	0.36	0.36	0.06	0.32	0.32
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	257	956	396	228	899	372	360	1271	522	213	1118	463
v/s Ratio Prot	c0.21	0.15		c0.18	0.15		c0.14	0.23		0.04	c0.29	
v/s Ratio Perm			c0.21			0.02			0.12			0.05
v/c Ratio	1.42	0.55	0.79	1.38	0.57	0.07	1.31	0.65	0.33	0.63	0.92	0.17
Uniform Delay, d1	42.8	31.3	33.9	43.5	32.6	28.3	44.8	26.8	23.3	45.8	32.9	24.7
Progression Factor	1.00	1.00	1.00	0.74	0.65	1.49	1.00	1.00	1.00	0.71	0.92	0.99
Incremental Delay, d2	210.4	0.7	10.0	172.3	0.1	0.0	158.6	2.6	1.7	4.5	10.8	0.6
Delay (s)	253.1	32.0	43.9	204.6	21.2	42.1	203.4	29.4	25.0	37.1	41.0	25.0
Level of Service	F	C	D	F	C	D	F	C	C	D	D	C
Approach Delay (s)		94.2			85.3			77.0			38.9	
Approach LOS		F			F			E			D	

Intersection Summary

HCM Average Control Delay	73.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↖	↖	↑↑	↑↓	
Volume (vph)	600	478	374	1127	1356	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	0.93	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1465	1770	3539	3303	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1465	1770	3539	3303	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	478	374	1127	1356	586
RTOR Reduction (vph)	0	206	0	0	46	0
Lane Group Flow (vph)	600	272	374	1127	1896	0
Confl. Peds. (#/hr)		60				60
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	14.5	65.0	46.0	
Effective Green, g (s)	26.0	26.0	14.5	65.0	46.0	
Actuated g/C Ratio	0.26	0.26	0.14	0.65	0.46	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	893	381	257	2300	1519	
v/s Ratio Prot	0.17		c0.21	0.32	c0.57	
v/s Ratio Perm		c0.19				
v/c Ratio	0.67	0.71	1.46	0.49	1.25	
Uniform Delay, d1	33.2	33.6	42.8	9.0	27.0	
Progression Factor	0.67	0.61	0.44	1.32	0.49	
Incremental Delay, d2	1.7	5.4	206.9	0.1	113.6	
Delay (s)	24.1	25.8	225.8	12.0	126.7	
Level of Service	C	C	F	B	F	
Approach Delay (s)	24.9			65.2	126.7	
Approach LOS	C			E	F	

Intersection Summary

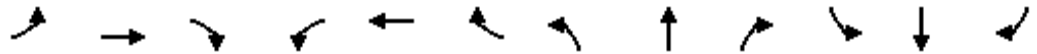
HCM Average Control Delay	82.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	152	0	93	46	363	0	1503	118	464	1372	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.91			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.87			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1465			3463			3451	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1465			3463			3451	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	152	0	93	46	363	0	1503	118	464	1372	70
RTOR Reduction (vph)	0	0	0	0	284	0	0	6	0	0	3	0
Lane Group Flow (vph)	190	152	0	93	125	0	0	1615	0	0	1903	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)	6.0	17.0		8.0	19.0			23.0			35.0	
Effective Green, g (s)	6.0	17.0		8.0	19.0			23.0			35.0	
Actuated g/C Ratio	0.06	0.17		0.08	0.19			0.23			0.35	
Clearance Time (s)	4.0	4.5		4.0	4.5			4.0			4.5	
Lane Grp Cap (vph)	106	317		142	278			796			1208	
v/s Ratio Prot	c0.11	0.08		0.05	c0.09			c0.47			c0.55	
v/s Ratio Perm												
v/c Ratio	1.79	0.48		0.65	0.45			2.03			1.58	
Uniform Delay, d1	47.0	37.5		44.7	35.9			38.5			32.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.85	
Incremental Delay, d2	391.6	5.1		21.2	5.2			467.3			259.4	
Delay (s)	438.6	42.6		65.8	41.0			505.8			287.2	
Level of Service	F	D		E	D			F			F	
Approach Delay (s)		262.6			45.6			505.8			287.2	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	338.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	152.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↖	↖	↖	↖↗		↖	↖↗	
Volume (vph)	108	216	212	436	564	1002	42	815	39	95	1956	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.90	1.00	1.00	0.88	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.98	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801	1425	1770	1863	1395	1770	3484		1770	3514	
Flt Permitted		0.67	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1219	1425	1770	1863	1395	1770	3484		1770	3514	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	216	212	436	564	1002	42	815	39	95	1956	58
RTOR Reduction (vph)	0	0	81	0	0	263	0	3	0	0	2	0
Lane Group Flow (vph)	0	324	131	436	564	739	42	851	0	95	2012	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Turn Type	Perm		Perm	Prot		custom	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			3						
Actuated Green, G (s)		22.5	22.5	16.5	43.5	16.5	5.0	35.5		8.0	38.5	
Effective Green, g (s)		22.5	22.5	16.5	43.5	16.5	5.0	35.5		8.0	38.5	
Actuated g/C Ratio		0.22	0.22	0.16	0.44	0.16	0.05	0.36		0.08	0.38	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Lane Grp Cap (vph)		274	321	292	810	230	89	1237		142	1353	
v/s Ratio Prot				0.25	0.30		0.02	0.24		c0.05	c0.57	
v/s Ratio Perm		c0.27	0.09			c0.53						
v/c Ratio		1.18	0.41	1.49	0.70	3.21	0.47	0.69		0.67	1.49	
Uniform Delay, d1		38.8	33.1	41.8	22.9	41.8	46.2	27.5		44.7	30.8	
Progression Factor		0.99	1.01	1.22	0.59	1.61	1.32	1.07		1.00	1.00	
Incremental Delay, d2		99.1	1.8	230.8	2.5	1001.4	1.6	0.3		22.3	223.2	
Delay (s)		137.5	35.1	281.7	15.9	1068.4	62.7	29.8		67.0	254.0	
Level of Service		F	D	F	B	F	E	C		E	F	
Approach Delay (s)		97.0			600.6			31.4			245.5	
Approach LOS		F			F			C			F	

Intersection Summary

HCM Average Control Delay	324.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	121.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	278	0	96	98	997	486	310	893	0	0	930	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.87	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1378	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	278	0	96	98	997	486	310	893	0	0	930	465
RTOR Reduction (vph)	0	0	70	0	0	64	0	0	0	0	0	240
Lane Group Flow (vph)	278	0	26	98	997	422	310	893	0	0	930	225
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	15.0		27.5	15.0	27.0	27.0	16.0	46.5			26.5	26.5
Effective Green, g (s)	15.0		27.5	14.5	27.0	26.5	16.0	46.5			26.0	26.5
Actuated g/C Ratio	0.15		0.28	0.14	0.27	0.26	0.16	0.46			0.26	0.26
Clearance Time (s)	4.0		4.0	3.5	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	266		435	257	956	365	283	866			920	419
v/s Ratio Prot	c0.16			0.06	0.28		0.18	c0.48			0.26	
v/s Ratio Perm			0.02			c0.31						0.14
v/c Ratio	1.05		0.06	0.38	1.04	1.16	1.10	1.03			1.01	0.54
Uniform Delay, d1	42.5		26.7	38.7	36.5	36.8	42.0	26.8			37.0	31.5
Progression Factor	1.28		2.35	0.84	0.80	0.75	0.83	0.73			0.79	0.41
Incremental Delay, d2	46.0		0.1	4.0	40.0	95.5	63.7	28.4			31.2	4.5
Delay (s)	100.5		62.9	36.4	69.2	123.1	98.7	47.8			60.3	17.3
Level of Service	F		E	D	E	F	F	D			E	B
Approach Delay (s)		90.9			83.7			60.9			46.0	
Approach LOS		F			F			E			D	

Intersection Summary

HCM Average Control Delay	66.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↔						↕↔		↖	↕↔	
Volume (vph)	373	324	79	0	0	0	0	642	501	1223	1889	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98						0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.98						0.93		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3200						3085		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3200						3085		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	373	324	79	0	0	0	0	642	501	1223	1889	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	257	505	0	0	0	0	0	1122	0	1223	1889	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.0	15.0						26.5		48.0	78.0	
Effective Green, g (s)	15.0	14.5						26.0		47.5	77.5	
Actuated g/C Ratio	0.15	0.14						0.26		0.48	0.78	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	242	464						802		841	2743	
v/s Ratio Prot	c0.16	0.16						c0.36		c0.69	0.53	
v/s Ratio Perm												
v/c Ratio	1.06	1.09						1.40		1.45	0.69	
Uniform Delay, d1	42.5	42.8						37.0		26.2	5.4	
Progression Factor	0.98	0.98						1.36		0.43	0.31	
Incremental Delay, d2	56.0	55.3						180.0		205.0	0.1	
Delay (s)	97.5	97.1						230.3		216.4	1.8	
Level of Service	F	F						F		F	A	
Approach Delay (s)		97.2			0.0			230.3			86.1	
Approach LOS		F			A			F			F	

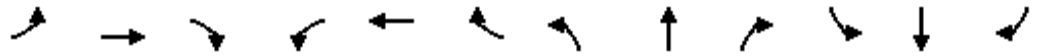
Intersection Summary

HCM Average Control Delay	120.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	129.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕								↕	↕↕		
Volume (vph)	881	1026	357	0	0	0	0	0	0	121	804	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		0.98								0.95	1.00		
Satd. Flow (prot)		3345								1770	3539		
Flt Permitted		0.98								0.95	1.00		
Satd. Flow (perm)		3345								1770	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	881	1026	357	0	0	0	0	0	0	121	804	0	
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	2253	0	0	0	0	0	0	0	121	804	0	
Confl. Peds. (#/hr)			72							72			
Turn Type	Split					Split							
Protected Phases	1	1								2	2		
Permitted Phases													
Actuated Green, G (s)		28.0								15.0	15.0		
Effective Green, g (s)		27.5								14.5	14.5		
Actuated g/C Ratio		0.55								0.29	0.29		
Clearance Time (s)		3.5								3.5	3.5		
Lane Grp Cap (vph)		1840								513	1026		
v/s Ratio Prot		c0.67								0.07	c0.23		
v/s Ratio Perm													
v/c Ratio		1.22								0.24	0.78		
Uniform Delay, d1		11.2								13.5	16.3		
Progression Factor		1.22								1.63	2.27		
Incremental Delay, d2		101.4								0.5	2.7		
Delay (s)		115.1								22.6	39.7		
Level of Service		F								C	D		
Approach Delay (s)		115.1			0.0			0.0			37.5		
Approach LOS		F			A			A			D		
Intersection Summary													
HCM Average Control Delay			92.6		HCM Level of Service					F			
HCM Volume to Capacity ratio			1.07										
Actuated Cycle Length (s)			50.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			95.1%		ICU Level of Service					F			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	42	2101	366	275	780	0	0	640	1531
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.93	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6187		1770	3539			1655	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6187		1770	3539			1655	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	42	2101	366	275	780	0	0	640	1531
RTOR Reduction (vph)	0	0	0	0	31	0	0	0	0	0	23	23
Lane Group Flow (vph)	0	0	0	0	2478	0	275	780	0	0	1107	1018
Confl. Peds. (#/hr)						36						
Turn Type				Perm			Split					Prot
Protected Phases					4		1	1			2	2
Permitted Phases				4								
Actuated Green, G (s)					31.5		16.5	16.5			41.5	41.5
Effective Green, g (s)					31.0		16.0	16.0			41.0	41.0
Actuated g/C Ratio					0.31		0.16	0.16			0.41	0.41
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1918		283	566			679	617
v/s Ratio Prot							0.16	c0.22			0.67	c0.68
v/s Ratio Perm					0.40							
v/c Ratio					1.29		0.97	1.38			1.63	1.65
Uniform Delay, d1					34.5		41.8	42.0			29.5	29.5
Progression Factor					0.71		1.03	1.03			0.70	0.70
Incremental Delay, d2					134.2		37.3	177.6			288.8	298.0
Delay (s)					158.5		80.3	221.0			309.5	318.7
Level of Service					F		F	F			F	F
Approach Delay (s)		0.0			158.5			184.4			313.9	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	222.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	161.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↔						↕	↗
Volume (vph)	0	0	0	240	2000	0	0	0	0	0	889	506
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.95	0.88
Frbp, ped/bikes				1.00	1.00						1.00	0.92
Flpb, ped/bikes				0.93	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1412	4799						3539	2557
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1412	4799						3539	2557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	240	2000	0	0	0	0	0	889	506
RTOR Reduction (vph)	0	0	0	17	1	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	0	0	199	2023	0	0	0	0	0	889	497
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1						2	
Permitted Phases				1								2
Actuated Green, G (s)				56.5	56.5						36.5	36.5
Effective Green, g (s)				56.0	56.0						36.0	36.0
Actuated g/C Ratio				0.56	0.56						0.36	0.36
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				791	2687						1274	921
v/s Ratio Prot											c0.25	
v/s Ratio Perm				0.14	0.42							0.19
v/c Ratio				0.25	0.75						0.70	0.54
Uniform Delay, d1				11.3	16.7						27.4	25.4
Progression Factor				1.00	1.00						0.67	0.68
Incremental Delay, d2				0.8	2.0						2.0	1.4
Delay (s)				12.0	18.7						20.4	18.8
Level of Service				B	B						C	B
Approach Delay (s)		0.0			18.1			0.0			19.8	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 28: J St & 6th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↙↙						↑		↘		
Volume (vph)	618	1605	0	0	0	0	0	228	214	577	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.97		1.00		
Flpb, ped/bikes	0.94	1.00						1.00		0.97		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	1.00						1.00		0.95		
Satd. Flow (prot)	1431	4781						1681		1719		
Flt Permitted	0.95	1.00						1.00		0.41		
Satd. Flow (perm)	1431	4781						1681		746		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	618	1605	0	0	0	0	0	228	214	577	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	538	1685	0	0	0	0	0	441	0	577	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	18.5	18.5						24.5		24.5		
Effective Green, g (s)	18.0	18.0						24.0		24.0		
Actuated g/C Ratio	0.36	0.36						0.48		0.48		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	515	1721						807		358		
v/s Ratio Prot								0.26				
v/s Ratio Perm	c0.38	0.35								c0.77		
v/c Ratio	1.04	0.98						0.55		1.61		
Uniform Delay, d1	16.0	15.8						9.2		13.0		
Progression Factor	0.62	0.61						1.00		1.90		
Incremental Delay, d2	41.5	11.8						2.7		276.5		
Delay (s)	51.4	21.5						11.8		301.1		
Level of Service	D	C						B		F		
Approach Delay (s)		28.7			0.0			11.8			301.1	
Approach LOS		C			A			B			F	

Intersection Summary			
HCM Average Control Delay	74.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	161.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2062	442	0	0	0	0	0	0	232	945	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4889									4976	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4889									4976	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2062	442	0	0	0	0	0	0	232	945	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2490	0	0	0	0	0	0	0	0	1175	0
Confl. Peds. (#/hr)			72							72		
Turn Type										Perm		
Protected Phases		1									2	
Permitted Phases										2		
Actuated Green, G (s)		25.0									18.0	
Effective Green, g (s)		24.5									17.5	
Actuated g/C Ratio		0.49									0.35	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		2396									1742	
v/s Ratio Prot		c0.51										
v/s Ratio Perm											0.24	
v/c Ratio		1.04									0.67	
Uniform Delay, d1		12.8									13.8	
Progression Factor		0.48									1.70	
Incremental Delay, d2		19.2									1.7	
Delay (s)		25.4									25.2	
Level of Service		C									C	
Approach Delay (s)		25.4			0.0			0.0			25.2	
Approach LOS		C			A			A			C	
Intersection Summary												
HCM Average Control Delay			25.4		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			50.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			80.2%		ICU Level of Service						D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	→
Volume (veh/h)	0	0	52	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0	104	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	104	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			97	100	93	
cM capacity (veh/h)			1623	865	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization	14.4%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2013+Proj(Off) PM Peak (Mitigated)
 1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	0	0	52	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0	104	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	104	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			97	100	93	
cM capacity (veh/h)			1623	865	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization	14.4%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



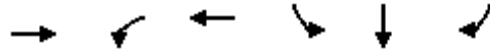
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↗	↖	↗		↕	
Volume (vph)	0	0	530	494	0	0	220	481	134	0	785	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.95	0.95		1.00	1.00	1.00		1.00	
Fr _t		0.85	0.85	1.00	1.00		1.00	1.00	0.85		1.00	
Fl _t Protected		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	1681	1681		1770	1863	1583		1863	
Fl _t Permitted		1.00	1.00	0.95	0.95		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	1681	1681		1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	530	494	0	0	220	481	134	0	785	0
RTOR Reduction (vph)	0	238	238	0	0	0	0	0	49	0	0	0
Lane Group Flow (vph)	0	27	27	247	247	0	220	481	85	0	785	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		9.6	9.6	23.5	23.5		16.0	76.4	76.4		56.9	
Effective Green, g (s)		9.6	9.6	23.5	23.5		16.0	76.4	76.4		56.9	
Actuated g/C Ratio		0.08	0.08	0.20	0.20		0.13	0.64	0.64		0.47	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		120	120	329	329		236	1186	1008		883	
v/s Ratio Prot		c0.02		c0.15	0.15		c0.12	0.26			c0.42	
v/s Ratio Perm			0.02						0.05			
v/c Ratio		0.22	0.22	0.75	0.75		0.93	0.41	0.08		0.89	
Uniform Delay, d ₁		51.7	51.7	45.5	45.5		51.5	10.7	8.4		28.7	
Progression Factor		1.00	1.00	1.00	1.00		1.02	0.63	0.00		1.00	
Incremental Delay, d ₂		0.9	0.9	9.3	9.3		6.8	0.1	0.0		13.0	
Delay (s)		52.6	52.6	54.8	54.8		59.3	6.8	0.0		41.6	
Level of Service		D	D	D	D		E	A	A		D	
Approach Delay (s)		52.6		54.8			19.6				41.6	
Approach LOS		D		D			B				D	

Intersection Summary

HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: Richard Blvd & I-5 SB Off



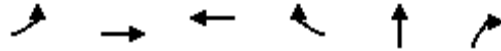
Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	445	360	193	927	927	686
v/c Ratio	0.48	0.50	0.20	1.32	1.32	0.45
Control Delay	28.5	35.3	26.7	186.8	186.8	0.9
Queue Delay	0.8	0.0	0.0	7.7	7.7	0.0
Total Delay	29.2	35.3	26.7	194.5	194.5	0.9
Queue Length 50th (ft)	111	112	104	-978	-978	0
Queue Length 95th (ft)	163	m132	m136	#1240	#1240	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	927	715	963	700	700	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	225	0	0	9	9	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.50	0.20	1.34	1.34	0.45

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2: Richard Blvd & I-5 NB Off



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	147	1980	488	889	716	705
v/c Ratio	0.59	1.14	0.38	0.33	1.35	1.24
Control Delay	23.9	75.5	15.4	0.3	200.1	153.4
Queue Delay	0.0	37.9	0.2	0.0	512.1	393.5
Total Delay	23.9	113.4	15.6	0.3	712.2	546.9
Queue Length 50th (ft)	76	-902	86	0	-709	-715
Queue Length 95th (ft)	m61	m74	112	0	#960	#965
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	251	1734	1283	2708	529	569
Starvation Cap Reductn	0	121	239	0	0	0
Spillback Cap Reductn	0	18	0	0	243	236
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.23	0.47	0.33	2.50	2.12

Intersection Summary

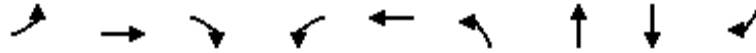
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated)

3: Richard Blvd & Bercut Dr

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	205	2368	763	26	838	505	79	102	79
v/c Ratio	0.50	1.01	0.72	0.42	0.29	0.86	0.25	0.94	0.47
Control Delay	5.3	23.5	3.0	24.2	4.9	57.0	33.4	129.4	21.6
Queue Delay	3.4	109.3	14.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	132.8	17.2	24.2	4.9	57.0	33.4	129.4	21.6
Queue Length 50th (ft)	40	~1052	79	2	28	191	37	80	0
Queue Length 95th (ft)	m33	m416	m32	m4	35	200	74	#194	50
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	420	2339	1057	62	2872	672	357	108	167
Starvation Cap Reductn	134	474	286	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	1.27	0.99	0.42	0.29	0.75	0.22	0.94	0.47

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

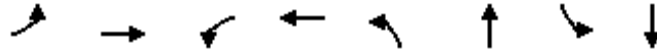
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated)

4: Richard Blvd & 5th Street

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	289	1797	66	1069	17	286	126	306
v/c Ratio	0.90	0.85	0.64	0.64	0.14	0.65	0.94	0.72
Control Delay	58.7	6.4	54.7	11.1	37.2	47.7	108.5	46.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	58.7	6.4	54.7	11.1	37.2	47.7	108.5	46.9
Queue Length 50th (ft)	199	273	47	188	10	192	92	187
Queue Length 95th (ft)	m191	m259	m67	m222	31	284	#208	288
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	369	2116	103	1664	134	495	150	472
Starvation Cap Reductn	0	0	0	0	0	0	0	19
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.85	0.64	0.64	0.13	0.58	0.84	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated)

5: Richard Blvd & 7th Street

1/10/2007



Lane Group	EBL	EBT		WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	495	1214		604	1177	366	611	525	203	416	
v/c Ratio	1.68	0.84	0.43	1.51	0.96	0.52	1.27	0.47	1.37	0.86	0.34
Control Delay	340.4	21.4	4.3	274.2	41.8	45.9	174.8	13.1	245.7	56.5	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0	9.5	0.0	0.0	0.0	0.0
Total Delay	340.4	21.4	4.3	274.2	42.4	45.9	184.3	13.1	245.7	56.5	11.1
Queue Length 50th (ft)	~559	296	8	~330	471	132	~597	81	~214	168	24
Queue Length 95th (ft)	m#703	423	m26	#448	#582	182	#823	121	#370	#242	46
Internal Link Dist (ft)		1060			1154		615			370	
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	295	1445	705	401	1231	703	481	1117	148	516	330
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	7	0	8	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.68	0.84	0.43	1.51	0.96	0.52	1.29	0.47	1.37	0.81	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated)

6: Richard Blvd & 10th St

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1470	195	206	1463	55	38	63	21	28	36
v/c Ratio	0.79	0.67	0.21	0.77	0.65	0.31	0.15	0.23	0.11	0.11	0.15
Control Delay	64.7	14.1	4.1	54.0	11.6	47.1	42.2	11.8	41.5	41.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	14.1	4.1	54.0	11.6	47.1	42.2	11.8	41.5	41.3	13.7
Queue Length 50th (ft)	118	338	6	156	186	36	24	0	13	18	0
Queue Length 95th (ft)	m149	m606	m44	234	511	75	55	38	36	44	29
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	280	2179	944	325	2239	267	380	373	278	380	332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.67	0.21	0.63	0.65	0.21	0.10	0.17	0.08	0.07	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	1495	24	1567	81	128
v/c Ratio	0.33	0.64	0.17	0.67	0.21	0.29
Control Delay	6.8	5.0	10.8	13.8	29.1	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	5.0	10.8	13.8	29.1	26.6
Queue Length 50th (ft)	1	15	6	351	39	54
Queue Length 95th (ft)	m2	31	20	424	82	110
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	129	2333	145	2343	386	436
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.64	0.17	0.67	0.21	0.29

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

8: Richard Blvd & 12th Street



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	1306	76	40	106	1395	50	3860	1535
v/c Ratio	1.54	0.20	0.21	1.28	0.40	0.09	1.27	1.42
Control Delay	287.2	24.6	44.4	243.4	12.0	7.3	148.9	212.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	287.2	24.6	44.4	243.4	12.0	7.3	148.9	212.8
Queue Length 50th (ft)	~922	27	22	~131	144	0	~1204	~1915
Queue Length 95th (ft)	#1059	73	61	#261	161	28	#1241	#2185
Internal Link Dist (ft)			487		826			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	847	382	216	83	3520	586	3051	1078
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.54	0.20	0.19	1.28	0.40	0.09	1.27	1.42

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

11: Bannon St & Bercut Dr



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	368	212	601
v/c Ratio	0.25	0.37	0.59	0.39
Control Delay	0.9	11.2	26.3	2.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.9	11.2	26.3	2.1
Queue Length 50th (ft)	0	76	86	57
Queue Length 95th (ft)	0	153	m120	m81
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	859	999	412	1528
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.37	0.51	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th St

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	110	182	212	134	177
v/c Ratio	0.10	0.18	0.66	0.15	0.30
Control Delay	11.9	2.8	56.3	3.2	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.8	56.3	3.2	42.5
Queue Length 50th (ft)	29	0	112	27	55
Queue Length 95th (ft)	70	34	m175	m56	71
Internal Link Dist (ft)	182		1020	470	
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	1073	906	504	1447	416
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.36	0.15	0.32

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



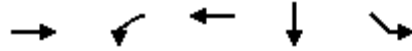
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	134	988	206	533	4	943	328	215	1094
v/c Ratio	0.27	0.20	1.22	0.55	0.84	0.04	0.80	0.33	1.87	0.76
Control Delay	27.6	24.6	143.2	36.6	17.8	66.5	20.5	1.4	450.8	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	24.6	143.2	36.6	17.8	66.5	20.5	1.4	450.8	30.5
Queue Length 50th (ft)	32	15	~404	116	74	3	172	1	~210	308
Queue Length 95th (ft)	77	38	#531	168	#242	m7	#399	0	#356	#518
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	400	768	807	438	667	89	1172	980	115	1445
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.17	1.22	0.47	0.80	0.04	0.80	0.33	1.87	0.76

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	675	20	593	3898	84
v/c Ratio	0.73	0.24	1.21	1.38dr	0.48
Control Delay	49.5	52.6	158.4	137.4	69.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	52.6	158.4	137.4	69.7
Queue Length 50th (ft)	284	16	-706	-1159	75
Queue Length 95th (ft)	359	43	#943	#1195	134
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	923	82	490	3138	192
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.24	1.21	1.24	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th St

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	46	210	199	545	563
v/c Ratio	0.14	0.48	0.42	0.21	0.39
Control Delay	32.6	8.6	25.7	0.9	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	8.6	25.7	0.9	15.6
Queue Length 50th (ft)	24	0	102	5	85
Queue Length 95th (ft)	54	58	m175	13	124
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	487	547	469	2559	1430
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.38	0.42	0.21	0.39

Intersection Summary

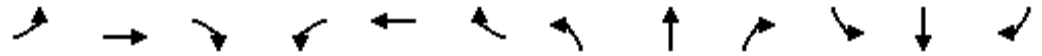
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated)

19: Big Four Blvd & 6th Street

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	389	434	234	245	32	388	560	221	8	553	74
v/c Ratio	0.72	0.44	0.71	0.97	0.24	0.07	0.97	0.34	0.28	0.05	0.49	0.14
Control Delay	66.0	32.5	15.7	88.3	18.9	3.8	82.1	19.6	3.9	26.4	13.2	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	32.5	15.7	88.3	18.9	3.8	82.1	19.6	3.9	26.4	13.2	1.0
Queue Length 50th (ft)	80	105	55	137	44	3	128	119	0	2	49	0
Queue Length 95th (ft)	#163	148	168	m#240	m54	m3	#222	192	48	m6	80	1
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	189	991	643	241	1094	475	402	1628	788	172	1122	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.39	0.67	0.97	0.22	0.07	0.97	0.34	0.28	0.05	0.49	0.14

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated)

20: Big Four Blvd & 7th Street

1/10/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	404	219	80	819	1506
v/c Ratio	0.47	0.43	0.61	0.35	0.79
Control Delay	20.2	4.1	13.8	4.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	4.1	13.8	4.0	8.9
Queue Length 50th (ft)	38	0	29	2	249
Queue Length 95th (ft)	59	2	m20	m0	m41
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	972	548	136	2339	1903
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.40	0.59	0.35	0.79

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	56	40	55	171	1089	1705
v/c Ratio	0.79	0.12	0.62	0.50	1.48	1.30
Control Delay	108.6	35.6	76.2	39.5	253.4	165.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	108.6	35.6	76.2	39.5	253.4	165.5
Queue Length 50th (ft)	36	22	35	92	-510	-720
Queue Length 95th (ft)	#109	51	#94	159	#642	#863
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	71	335	89	345	737	1316
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.12	0.62	0.50	1.48	1.30

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	236	52	118	264	621	67	1022	127	1480
v/c Ratio	0.94	0.21	0.28	0.59	0.97	0.94	0.80	0.72	0.97
Control Delay	92.9	26.5	34.8	41.9	53.0	81.7	43.6	66.9	44.3
Queue Delay	0.0	1.9	2.6	0.0	27.6	0.0	16.0	0.0	38.1
Total Delay	92.9	28.4	37.4	41.9	80.6	81.7	59.6	66.9	82.4
Queue Length 50th (ft)	130	6	72	168	259	40	301	80	469
Queue Length 95th (ft)	#275	m18	m114	m237	m#445	m38	m262	#167	#638
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	251	251	425	447	641	71	1271	177	1531
Starvation Cap Reductn	0	0	0	0	59	0	258	0	0
Spillback Cap Reductn	0	116	212	0	0	0	0	0	174
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.39	0.55	0.59	1.07	0.94	1.01	0.72	1.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	63	22	224	540	424	237	714	1014	197
v/c Ratio	0.59	0.07	0.82	0.54	0.80	0.84	0.70	0.84	0.31
Control Delay	45.7	15.6	64.6	29.6	27.2	69.3	19.6	37.3	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	15.0	2.1	0.0
Total Delay	45.7	15.6	64.6	29.6	27.6	69.3	34.6	39.4	8.2
Queue Length 50th (ft)	41	0	148	142	97	159	263	331	31
Queue Length 95th (ft)	m51	m2	#269	185	#183	m#204	m324	m354	m63
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	106	303	274	991	528	283	1015	1203	639
Starvation Cap Reductn	0	0	0	0	8	0	294	89	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.07	0.82	0.54	0.82	0.84	0.99	0.91	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	264	533	1117	1057	618
v/c Ratio	1.02	1.04	1.31	1.33	0.23
Control Delay	88.1	79.8	171.3	179.4	1.5
Queue Delay	26.0	12.9	29.7	10.6	0.2
Total Delay	114.1	92.7	201.0	190.0	1.8
Queue Length 50th (ft)	~178	~147	~363	~856	20
Queue Length 95th (ft)	m#296	m#297	m#542	m#937	m20
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	258	511	851	797	2690
Starvation Cap Reductn	0	0	0	14	1250
Spillback Cap Reductn	18	17	41	14	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.10	1.08	1.38	1.35	0.43

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1705	166	845
v/c Ratio	0.92	0.32	0.81
Control Delay	11.5	7.6	16.5
Queue Delay	1.6	0.0	0.0
Total Delay	13.1	7.6	16.5
Queue Length 50th (ft)	220	22	134
Queue Length 95th (ft)	m117	m29	m133
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1850	524	1048
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	55	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.95	0.32	0.81

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1459	40	804	358	316
v/c Ratio	0.76	0.09	0.91	0.93	0.56
Control Delay	11.4	21.2	29.3	54.6	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	21.2	29.3	54.6	10.3
Queue Length 50th (ft)	50	13	145	126	49
Queue Length 95th (ft)	80	m13	m134	m#262	m96
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	1923	443	885	385	568
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.09	0.91	0.93	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2013+Proj(Off) AM Peak (Mitigated)
1/10/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	245	1116	705	413
v/c Ratio	0.35	0.53	0.50	0.37
Control Delay	6.9	11.3	4.4	2.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.9	11.3	4.4	2.6
Queue Length 50th (ft)	27	85	27	10
Queue Length 95th (ft)	69	118	m31	m11
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	705	2116	1416	1103
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.50	0.37

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	775	2540	73	214
v/c Ratio	1.11	1.08	0.11	0.49
Control Delay	76.4	58.1	11.5	5.7
Queue Delay	0.0	6.4	0.0	3.2
Total Delay	76.4	64.6	11.5	8.9
Queue Length 50th (ft)	~362	~377	14	17
Queue Length 95th (ft)	m#898	#507	35	m17
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	701	2346	638	437
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	32	0	137
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.11	1.10	0.11	0.71

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2875	834
v/c Ratio	0.85	0.74
Control Delay	14.5	37.2
Queue Delay	21.6	0.0
Total Delay	36.1	37.2
Queue Length 50th (ft)	378	192
Queue Length 95th (ft)	m350	239
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	3382	1124
Starvation Cap Reductn	620	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.04	0.74

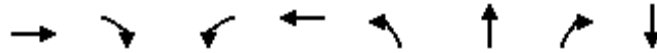
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2013+Proj(Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	79	79	50	50	323	641	499	471
v/c Ratio	0.14	0.14	0.40	0.40	0.83	0.43	0.40	0.45
Control Delay	0.5	0.5	61.5	61.5	38.8	1.9	0.1	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.3	2.4	1.3	3.3
Total Delay	0.5	0.5	61.5	61.5	39.1	4.3	1.4	22.6
Queue Length 50th (ft)	0	0	40	40	239	27	0	217
Queue Length 95th (ft)	0	0	81	81	m207	m63	m0	347
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75			
Base Capacity (vph)	701	701	231	231	442	1504	1247	1042
Starvation Cap Reductn	0	0	0	0	8	706	513	458
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.11	0.22	0.22	0.74	0.80	0.68	0.81

Intersection Summary

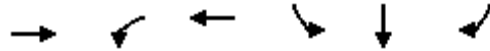
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007

1: Richard Blvd & I-5 SB Off



Lane Group	EBT	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1059	1032	329	743	746	556
v/c Ratio	1.21	1.03	0.32	1.15	1.15	0.36
Control Delay	135.4	51.1	17.4	120.9	121.2	0.7
Queue Delay	1.8	71.2	3.7	15.1	15.1	0.0
Total Delay	137.3	122.4	21.1	136.0	136.3	0.7
Queue Length 50th (ft)	~424	~455	122	~713	~717	0
Queue Length 95th (ft)	#561	m#468	m124	#963	#966	0
Internal Link Dist (ft)	304		280		611	
Turn Bay Length (ft)		100		300		300
Base Capacity (vph)	873	1001	1025	644	646	1539
Starvation Cap Reductn	0	144	596	0	0	0
Spillback Cap Reductn	3	0	0	19	19	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.22	1.20	0.77	1.19	1.19	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

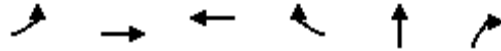
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2: Richard Blvd & I-5 NB Off



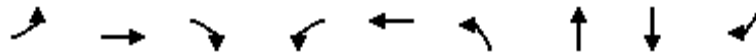
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	425	1468	1263	2798	495	475
v/c Ratio	1.24	0.84	0.98	1.03	0.92	0.71
Control Delay	136.4	4.2	28.4	28.8	53.5	33.0
Queue Delay	0.0	27.2	120.0	0.0	27.8	0.8
Total Delay	136.4	31.5	148.4	28.8	81.2	33.7
Queue Length 50th (ft)	~389	92	288	~1267	288	295
Queue Length 95th (ft)	m#292	m74	m210	m180	#510	433
Internal Link Dist (ft)		280	237		719	
Turn Bay Length (ft)	100					300
Base Capacity (vph)	343	1743	1283	2708	540	677
Starvation Cap Reductn	0	270	165	0	0	0
Spillback Cap Reductn	0	345	300	0	68	50
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.24	1.05	1.28	1.03	1.05	0.76

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

3: Richard Blvd & Bercut Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	164	1481	686	29	2732	1181	87	191	183
v/c Ratio	1.09	0.80	0.75	0.47	1.22	1.18	0.17	1.25	0.95
Control Delay	115.9	17.4	6.5	24.6	120.8	123.9	23.2	199.5	89.5
Queue Delay	0.0	28.1	1.9	0.0	93.6	7.3	0.0	0.0	7.9
Total Delay	115.9	45.5	8.3	24.6	214.4	131.2	23.2	199.5	97.5
Queue Length 50th (ft)	~90	322	58	9	-943	~555	33	~185	93
Queue Length 95th (ft)	m#151	m436	m100	m12	m#872	#694	m54	#334	#242
Internal Link Dist (ft)		237			2115		402	634	
Turn Bay Length (ft)	150		150	150		200			100
Base Capacity (vph)	150	1858	917	62	2238	1001	521	153	192
Starvation Cap Reductn	0	449	110	0	0	14	0	0	0
Spillback Cap Reductn	0	0	0	0	327	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.05	0.85	0.47	1.43	1.20	0.17	1.25	0.99

Intersection Summary

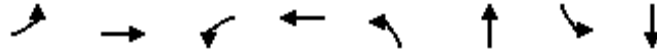
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) PM Peak (Mitigated)

4: Richard Blvd & 5th Street

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	231	1145	231	2265	13	268	99	215
v/c Ratio	1.20	0.65	0.63	1.07	0.10	0.76	1.10	0.62
Control Delay	162.4	4.8	37.4	58.0	42.5	60.1	170.6	47.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.4	4.8	37.4	58.0	42.5	60.1	170.6	47.8
Queue Length 50th (ft)	~225	32	155	~1014	8	196	~87	135
Queue Length 95th (ft)	m#318	m36	m178	m#1019	28	#316	#202	220
Internal Link Dist (ft)		2115		1060		442		372
Turn Bay Length (ft)	150		150				150	
Base Capacity (vph)	192	1762	369	2108	129	354	90	346
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.65	0.63	1.07	0.10	0.76	1.10	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) PM Peak (Mitigated)

5: Richard Blvd & 7th Street

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	132	813	315	332	1560	464	491	800	514	880	415
v/c Ratio	1.53	0.66	0.47	0.97	1.06	0.69	1.17	0.81	1.52	1.13	0.91
Control Delay	310.7	20.0	3.7	98.3	66.7	51.0	141.4	22.7	273.2	106.6	46.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	14.8	0.0	0.0	0.0	0.4
Total Delay	310.7	20.0	3.7	98.3	66.7	51.0	156.2	22.7	273.2	106.6	46.5
Queue Length 50th (ft)	~74	141	15	137	~702	173	~454	146	~563	~411	211
Queue Length 95th (ft)	m#125	m214	m44	#229	#845	231	#665	201	m#725	m#529	m#329
Internal Link Dist (ft)		1060			1154		615			370	
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	86	1239	668	343	1474	672	419	992	339	782	454
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	2
Spillback Cap Reductn	0	0	0	0	0	0	12	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.53	0.66	0.47	0.97	1.06	0.69	1.21	0.81	1.52	1.13	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) PM Peak (Mitigated)

6: Richard Blvd & 10th St

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	2027	99	90	1530	115	30	176	71	37	170
v/c Ratio	0.33	0.85	0.10	0.73	0.60	0.57	0.10	0.50	0.33	0.13	0.50
Control Delay	55.3	19.0	5.9	79.8	9.7	56.7	40.7	18.6	47.0	41.3	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	19.0	5.9	79.8	9.7	56.7	40.7	18.6	47.0	41.3	18.2
Queue Length 50th (ft)	20	670	22	69	246	78	19	31	47	23	28
Queue Length 95th (ft)	m24	m602	m25	m#135	274	139	46	97	91	54	92
Internal Link Dist (ft)		1154			849		1509			985	
Turn Bay Length (ft)	150		100	150		125			150		75
Base Capacity (vph)	89	2393	1017	133	2570	265	380	424	281	380	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.85	0.10	0.68	0.60	0.43	0.08	0.42	0.25	0.10	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) PM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	58	2068	7	1454	224	101
v/c Ratio	0.36	0.86	0.11	0.60	0.59	0.25
Control Delay	5.8	11.0	8.1	9.4	44.3	23.4
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	5.8	11.2	8.1	9.4	44.3	23.4
Queue Length 50th (ft)	3	61	2	262	143	36
Queue Length 95th (ft)	m5	79	m2	m248	230	85
Internal Link Dist (ft)		849		1309	1902	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	163	2403	62	2415	378	403
Starvation Cap Reductn	0	36	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.87	0.11	0.60	0.59	0.25

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

8: Richard Blvd & 12th Street



Lane Group	EBL	EBR2	WBT	NBL	NBT	NBR	SBR	SBR2
Lane Group Flow (vph)	2109	262	100	110	5113	20	2953	1101
v/c Ratio	2.17	0.54	0.51	1.15	1.70	0.05	1.20	1.07
Control Delay	549.4	13.7	58.3	186.6	339.2	23.8	115.2	56.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	549.4	13.7	58.3	186.6	339.2	23.8	115.2	56.7
Queue Length 50th (ft)	~1359	85	72	~100	~1732	7	~590	~441
Queue Length 95th (ft)	#1490	m110	128	#219	#1767	27	#671	#1033
Internal Link Dist (ft)			371		802			
Turn Bay Length (ft)				200		300	300	300
Base Capacity (vph)	973	489	254	96	3000	428	2466	1033
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.17	0.54	0.39	1.15	1.70	0.05	1.20	1.07

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

11: Bannon St & Bercut Dr



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	557	607	181	662
v/c Ratio	0.87	0.73	0.72	0.54
Control Delay	23.0	21.8	40.8	9.0
Queue Delay	5.1	7.3	0.0	0.2
Total Delay	28.1	29.1	40.8	9.2
Queue Length 50th (ft)	53	178	74	176
Queue Length 95th (ft)	#209	#355	m106	m231
Internal Link Dist (ft)	1110	739		402
Turn Bay Length (ft)			90	
Base Capacity (vph)	711	837	250	1224
Starvation Cap Reductn	0	0	0	115
Spillback Cap Reductn	101	187	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.93	0.72	0.60

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: North B Street & 6th St

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	232	192	499	190	514	519
v/c Ratio	0.46	0.36	0.96	0.17	0.96	0.51
Control Delay	34.2	6.5	48.7	3.5	58.8	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	6.5	48.7	3.5	58.8	2.9
Queue Length 50th (ft)	124	0	332	22	346	4
Queue Length 95th (ft)	198	53	m#388	m19	#537	26
Internal Link Dist (ft)	182			1020	470	
Turn Bay Length (ft)		150	150			
Base Capacity (vph)	504	533	522	1133	540	1015
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.36	0.96	0.17	0.95	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: North B Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	173	330	1041	474	308	54	1360	1036	384	1023
v/c Ratio	1.63	1.56	1.19	1.00	0.58	0.38	1.00	0.99	1.74	0.66
Control Delay	349.2	301.2	121.4	64.4	10.6	49.9	45.0	34.1	379.2	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	349.2	301.2	121.4	64.4	10.6	49.9	45.0	34.1	379.2	24.4
Queue Length 50th (ft)	~164	~161	~405	261	39	36	361	312	~365	278
Queue Length 95th (ft)	#294	#247	#535	m#496	m71	m#81	#603	#864	#545	325
Internal Link Dist (ft)		1020		1154			974			776
Turn Bay Length (ft)	150		150		150	150		150	150	
Base Capacity (vph)	106	212	875	475	530	141	1363	1047	221	1548
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.63	1.56	1.19	1.00	0.58	0.38	1.00	0.99	1.74	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

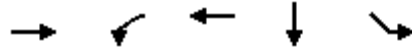
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: North B Street & 12th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBT	WBL	WBT	SBT	SEL
Lane Group Flow (vph)	1822	38	388	3680	62
v/c Ratio	2.01	0.51	0.82	1.91dr	0.27
Control Delay	478.4	61.7	54.6	165.4	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	478.4	61.7	54.6	165.4	37.2
Queue Length 50th (ft)	~957	22	233	~959	32
Queue Length 95th (ft)	m#932	m43	m285	#1031	70
Internal Link Dist (ft)	765		1679	1542	1902
Turn Bay Length (ft)		125			
Base Capacity (vph)	907	75	473	2791	290
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	2.01	0.51	0.82	1.32	0.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
17: Canal St & 6th St

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	153	415	264	1130	1040
v/c Ratio	0.45	0.68	0.78	0.45	0.65
Control Delay	34.5	10.6	40.8	2.3	16.0
Queue Delay	0.0	0.0	0.0	0.5	0.2
Total Delay	34.5	10.6	40.8	2.8	16.2
Queue Length 50th (ft)	72	0	115	12	272
Queue Length 95th (ft)	m118	69	m153	m12	m385
Internal Link Dist (ft)	572			481	470
Turn Bay Length (ft)	150		150		
Base Capacity (vph)	434	665	398	2537	1609
Starvation Cap Reductn	0	0	0	833	125
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.62	0.66	0.66	0.70

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	365	530	497	314	515	102	472	826	390	134	1025	142
v/c Ratio	1.42	0.55	0.86	1.38	0.57	0.23	1.31	0.65	0.53	0.63	0.92	0.27
Control Delay	244.2	33.2	31.7	201.2	21.0	8.8	195.7	30.6	7.6	43.9	43.1	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	244.2	33.2	31.7	201.2	21.0	8.8	195.7	30.6	7.6	43.9	43.1	11.7
Queue Length 50th (ft)	~316	145	149	~278	135	15	~200	239	22	45	346	48
Queue Length 95th (ft)	#495	197	#327	m#174	m96	m7	#300	308	102	m67	#492	m84
Internal Link Dist (ft)		631			942			700			481	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	257	1062	617	228	991	484	360	1269	739	213	1117	527
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.50	0.81	1.38	0.52	0.21	1.31	0.65	0.53	0.63	0.92	0.27

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	600	478	374	1127	1942
v/c Ratio	0.67	0.81	1.46	0.49	1.24
Control Delay	25.7	19.3	229.1	12.7	128.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	19.3	229.1	12.7	128.8
Queue Length 50th (ft)	163	0	~308	377	-808
Queue Length 95th (ft)	228	#313	m102	m166	m#768
Internal Link Dist (ft)	942			1386	974
Turn Bay Length (ft)		150	150		
Base Capacity (vph)	961	611	257	2299	1564
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.78	1.46	0.49	1.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	190	152	93	409	1621	1906
v/c Ratio	1.79	0.48	0.65	0.73	2.02	1.58
Control Delay	421.1	43.3	67.1	15.4	487.2	284.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	421.1	43.3	67.1	15.4	487.2	284.3
Queue Length 50th (ft)	~183	89	59	32	-865	~935
Queue Length 95th (ft)	#320	152	#131	141	#1005	m#782
Internal Link Dist (ft)		196		961	148	1386
Turn Bay Length (ft)						
Base Capacity (vph)	106	317	142	563	803	1210
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.79	0.48	0.65	0.73	2.02	1.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	324	212	436	564	1002	42	854	95	2014
v/c Ratio	1.18	0.53	1.49	0.70	2.03	0.47	0.69	0.67	1.49
Control Delay	133.5	19.9	266.9	16.3	489.0	63.5	30.1	68.3	249.9
Queue Delay	0.0	14.6	115.6	5.9	11.3	1.6	12.2	0.0	18.2
Total Delay	133.5	34.6	382.4	22.2	500.2	65.2	42.2	68.3	268.2
Queue Length 50th (ft)	~255	74	~377	151	-944	29	309	60	~947
Queue Length 95th (ft)	m#250	m80	m#423	m170	m#986	m23	m247	#135	#1088
Internal Link Dist (ft)	313			324			323		1199
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	275	402	292	810	493	89	1240	142	1355
Starvation Cap Reductn	0	0	0	190	6	0	371	0	0
Spillback Cap Reductn	0	168	43	143	0	8	0	0	36
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.91	1.75	0.91	2.06	0.52	0.98	0.67	1.53

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	278	96	98	997	486	310	893	930	465
v/c Ratio	1.05	0.19	0.38	1.04	1.13	1.10	1.03	1.01	0.71
Control Delay	98.4	14.5	37.0	70.3	108.3	99.3	50.1	61.9	9.9
Queue Delay	0.0	0.0	0.0	11.4	0.0	0.0	83.4	0.0	36.5
Total Delay	98.4	14.5	37.0	81.7	108.3	99.3	133.5	61.9	46.5
Queue Length 50th (ft)	~198	20	49	~297	~186	~220	~510	~299	21
Queue Length 95th (ft)	m#237	m25	100	#480	#506	m#211	m332	m#354	m54
Internal Link Dist (ft)				360			311	148	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	266	505	257	956	429	283	866	920	659
Starvation Cap Reductn	0	0	0	0	0	0	142	0	0
Spillback Cap Reductn	0	0	0	27	0	0	0	0	217
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.19	0.38	1.07	1.13	1.10	1.23	1.01	1.05

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	257	519	1143	1223	1889
v/c Ratio	1.06	1.09	1.39	1.45	0.69
Control Delay	97.6	93.2	212.9	223.3	1.9
Queue Delay	90.0	39.6	1.5	90.1	47.0
Total Delay	187.6	132.8	214.4	313.4	48.9
Queue Length 50th (ft)	~205	~206	~530	~1054	53
Queue Length 95th (ft)	m#201	m#185	m#313	m#698	m42
Internal Link Dist (ft)		318	379		323
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	242	478	823	841	2743
Starvation Cap Reductn	0	0	0	36	1023
Spillback Cap Reductn	42	39	2	102	543
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.29	1.18	1.39	1.65	1.10

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	2264	121	804
v/c Ratio	1.22	0.24	0.78
Control Delay	118.8	23.0	40.1
Queue Delay	39.3	0.0	0.0
Total Delay	158.1	23.0	40.1
Queue Length 50th (ft)	~831	72	255
Queue Length 95th (ft)	m274	m79	m256
Internal Link Dist (ft)	342		311
Turn Bay Length (ft)		175	
Base Capacity (vph)	1851	513	1026
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	124	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.31	0.24	0.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



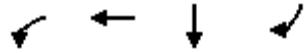
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2509	275	780	1130	1041
v/c Ratio	1.29	0.97	1.38	1.61	1.63
Control Delay	157.1	81.8	212.4	301.1	309.0
Queue Delay	40.3	322.8	0.0	398.6	390.9
Total Delay	197.4	404.7	212.4	699.7	699.9
Queue Length 50th (ft)	~588	185	~358	~1113	~1028
Queue Length 95th (ft)	#657	m#239	m#394	m#1345	m#1255
Internal Link Dist (ft)	345		302	379	
Turn Bay Length (ft)					
Base Capacity (vph)	1948	283	566	702	640
Starvation Cap Reductn	12	0	0	0	0
Spillback Cap Reductn	127	126	0	685	623
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.38	1.75	1.38	66.47	61.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2013+Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	216	2024	889	506
v/c Ratio	0.27	0.75	0.70	0.54
Control Delay	10.2	19.0	20.7	18.6
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	10.2	19.0	21.0	18.6
Queue Length 50th (ft)	61	357	175	100
Queue Length 95th (ft)	111	422	m231	m140
Internal Link Dist (ft)		1246	376	
Turn Bay Length (ft)				100
Base Capacity (vph)	808	2688	1274	929
Starvation Cap Reductn	0	0	75	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.75	0.74	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	538	1685	442	577
v/c Ratio	1.04	0.98	0.55	1.61
Control Delay	56.4	23.4	12.3	300.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	56.4	23.4	12.3	300.1
Queue Length 50th (ft)	~222	88	83	~518
Queue Length 95th (ft)	m#437	#284	151	m#133
Internal Link Dist (ft)		335	356	
Turn Bay Length (ft)				
Base Capacity (vph)	515	1722	808	358
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.04	0.98	0.55	1.61

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	SBT
Lane Group Flow (vph)	2504	1177
v/c Ratio	1.04	0.68
Control Delay	28.2	25.4
Queue Delay	0.0	0.0
Total Delay	28.2	25.4
Queue Length 50th (ft)	~305	239
Queue Length 95th (ft)	m109	285
Internal Link Dist (ft)	346	299
Turn Bay Length (ft)		
Base Capacity (vph)	2411	1743
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.04	0.68

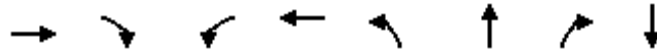
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2013+Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	265	265	247	247	220	481	134	785
v/c Ratio	0.74	0.74	0.75	0.75	0.93	0.41	0.13	0.89
Control Delay	19.4	19.4	60.5	60.5	60.7	7.6	0.0	43.4
Queue Delay	0.3	0.3	1.4	1.4	0.0	3.8	0.0	141.9
Total Delay	19.7	19.7	61.9	61.9	60.7	11.4	0.0	185.3
Queue Length 50th (ft)	5	5	185	185	182	89	0	537
Queue Length 95th (ft)	88	88	#351	#351	m154	m81	m0	#859
Internal Link Dist (ft)	331			546		370		286
Turn Bay Length (ft)		150			75			
Base Capacity (vph)	472	472	329	329	236	1186	1057	884
Starvation Cap Reductn	0	0	0	0	0	602	0	288
Spillback Cap Reductn	27	27	17	17	0	0	0	158
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.60	0.79	0.79	0.93	0.82	0.13	1.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2013+Proj (Res) AM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑		↔↔	↑	↔↔	↗	↑↑	↗
Volume (vph)	141	1560	300	693	727	64	259	202	754	180	341	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	3.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	1.00	0.88	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1508	3433	3483		3433	1863	2720	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1508	3433	3483		3433	1863	2720	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	141	1560	300	693	727	64	259	202	754	180	341	70
RTOR Reduction (vph)	0	0	64	0	6	0	0	0	113	0	0	64
Lane Group Flow (vph)	141	1560	236	693	785	0	259	202	641	180	341	6
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases			6						8			4
Actuated Green, G (s)	33.8	57.0	57.0	19.0	42.2		19.5	19.5	38.5	10.5	10.5	10.5
Effective Green, g (s)	32.8	57.0	57.0	18.0	42.2		19.0	19.0	37.5	10.0	10.0	10.5
Actuated g/C Ratio	0.27	0.48	0.48	0.15	0.35		0.16	0.16	0.31	0.08	0.08	0.09
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0		3.5	3.5	3.0	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	938	1681	716	515	1225		544	295	850	148	295	139
v/s Ratio Prot	0.04	c0.44		c0.20	0.23		0.08	0.11	c0.12	c0.10	c0.10	
v/s Ratio Perm			0.16						0.12			0.00
v/c Ratio	0.15	0.93	0.33	1.35	0.64		0.48	0.68	0.75	1.22	1.16	0.04
Uniform Delay, d1	33.0	29.6	19.6	51.0	32.6		46.0	47.7	37.1	55.0	55.0	50.2
Progression Factor	0.57	0.50	0.19	0.89	0.51		1.00	1.00	1.00	1.07	0.96	1.10
Incremental Delay, d2	0.0	6.5	0.1	164.6	1.8		0.2	5.2	3.4	142.5	100.7	0.0
Delay (s)	18.8	21.4	3.7	210.0	18.6		46.2	52.8	40.5	201.3	153.6	55.5
Level of Service	B	C	A	F	B		D	D	D	F	F	E
Approach Delay (s)		18.6			108.0			43.8			156.5	
Approach LOS		B			F			D			F	

Intersection Summary

HCM Average Control Delay	64.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2013+Proj (Res) AM Peak (Mitigated w/ 8th St)
 33: Riverfront Dr & 5th Street

1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Volume (veh/h)	0	0	64	0	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	64	0	0	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0	128	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	128	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			96	100	98	
cM capacity (veh/h)			1623	832	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	64	27
Volume Left	0	64	0
Volume Right	0	0	27
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.02
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization	13.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis 2013+Proj (Res) AM Peak (Mitigated w/ 8th St)
 34: Riverfront Dr & 7th Street

1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	0	0	64	0	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	64	0	0	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0	128	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	128	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			96	100	98	
cM capacity (veh/h)			1623	832	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	64	27
Volume Left	0	64	0
Volume Right	0	0	27
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.02
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization	13.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis 2013+Proj (Res) AM Peak (Mitigated w/ 8th St)

36: Signature & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗	↖		↕	
Volume (vph)	0	0	203	21	0	0	90	221	97	0	367	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00			1.00	1.00	1.00		1.00	
Frt		0.86		1.00			1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770			1770	1863	1583		1863	
Flt Permitted		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770			1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	203	21	0	0	90	221	97	0	367	0
RTOR Reduction (vph)	0	184	0	0	0	0	0	0	30	0	0	0
Lane Group Flow (vph)	0	19	0	21	0	0	90	221	67	0	367	0
Turn Type	Perm			Prot			Prot		Perm	Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		5.5		0.8			7.3	41.7	41.7		30.4	
Effective Green, g (s)		5.5		0.8			7.3	41.7	41.7		30.4	
Actuated g/C Ratio		0.09		0.01			0.12	0.70	0.70		0.51	
Clearance Time (s)		4.0		4.0			4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0		3.0			3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		148		24			215	1295	1100		944	
v/s Ratio Prot		c0.01		c0.01			c0.05	0.12			c0.20	
v/s Ratio Perm									0.04			
v/c Ratio		0.13		0.88			0.42	0.17	0.06		0.39	
Uniform Delay, d1		25.0		29.6			24.4	3.2	2.9		9.1	
Progression Factor		1.00		1.00			1.00	0.85	1.04		1.00	
Incremental Delay, d2		0.4		127.4			1.2	0.3	0.1		1.2	
Delay (s)		25.4		156.9			25.7	3.0	3.1		10.3	
Level of Service		C		F			C	A	A		B	
Approach Delay (s)		25.4		156.9			8.0				10.3	
Approach LOS		C		F			A				B	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2013+Proj (Res) AM Peak (Mitigated w/ 8th St)
 39: Richard Blvd & 8th St

1/12/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	580	1914	1360	224	34	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3464		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3464		1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	580	1914	1360	224	34	124
RTOR Reduction (vph)	0	0	9	0	0	116
Lane Group Flow (vph)	580	1914	1575	0	34	8
Turn Type	Prot			Perm		
Protected Phases	7	4	8	6		
Permitted Phases						6
Actuated Green, G (s)	26.0	104.2	74.2	7.8		7.8
Effective Green, g (s)	26.0	104.2	74.2	7.8		7.8
Actuated g/C Ratio	0.22	0.87	0.62	0.06		0.06
Clearance Time (s)	4.0	4.0	4.0	4.0		4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	744	3073	2142	115		181
v/s Ratio Prot	c0.17	0.54	c0.45	c0.02		
v/s Ratio Perm						0.00
v/c Ratio	0.78	0.62	0.74	0.30		0.04
Uniform Delay, d1	44.3	2.3	16.0	53.5		52.6
Progression Factor	0.86	1.15	0.48	1.00		1.00
Incremental Delay, d2	2.2	0.4	2.1	1.4		0.1
Delay (s)	40.2	3.0	9.8	54.9		52.7
Level of Service	D	A	A	D		D
Approach Delay (s)	11.7		9.8	53.2		
Approach LOS	B		A	D		

Intersection Summary

HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2013+ Proj(Res) PM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↑		↖↗	↑	↖↗	↖	↑↑	↖
Volume (vph)	81	856	311	641	1619	168	461	373	919	144	353	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	3.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	1.00	0.88	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1508	3433	3474		3433	1863	2721	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1508	3433	3474		3433	1863	2721	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	856	311	641	1619	168	461	373	919	144	353	135
RTOR Reduction (vph)	0	0	130	0	6	0	0	0	138	0	0	99
Lane Group Flow (vph)	81	856	181	641	1781	0	461	373	781	144	353	36
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases			6						8			4
Actuated Green, G (s)	4.0	44.3	44.3	25.5	65.8		23.7	25.3	50.8	10.9	12.5	12.5
Effective Green, g (s)	3.0	44.3	44.3	24.5	65.8		23.2	24.8	49.8	10.4	12.0	12.5
Actuated g/C Ratio	0.02	0.37	0.37	0.20	0.55		0.19	0.21	0.42	0.09	0.10	0.10
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0		3.5	3.5	3.0	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	86	1306	557	701	1905		664	385	1129	153	354	165
v/s Ratio Prot	0.02	c0.24		0.19	c0.51		0.13	c0.20	0.14	c0.08	0.10	
v/s Ratio Perm			0.12						0.14			0.02
v/c Ratio	0.94	0.66	0.33	0.91	0.93		0.69	0.97	0.69	0.94	1.00	0.22
Uniform Delay, d1	58.4	31.5	27.1	46.7	25.1		45.1	47.2	28.8	54.5	54.0	49.3
Progression Factor	0.78	0.65	0.44	1.05	0.62		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	69.8	0.8	0.1	9.5	5.8		2.6	37.0	1.5	54.7	46.7	0.2
Delay (s)	115.2	21.1	12.1	58.5	21.4		47.6	84.3	30.3	109.2	100.7	49.5
Level of Service	F	C	B	E	C		D	F	C	F	F	D
Approach Delay (s)		25.0			31.2			46.3			91.7	
Approach LOS		C			C			D			F	

Intersection Summary

HCM Average Control Delay	40.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2013+ Proj(Res) PM Peak (Mitigated w/ 8th St)
 33: Riverfront Dr & 5th Street

1/12/2007

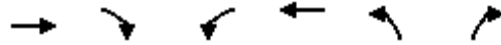


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Volume (veh/h)	0	0	48	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	48	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0	96		0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	96		0
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			97	100		93
cM capacity (veh/h)			1623	877		1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	48	71
Volume Left	0	48	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	14.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis 2013+ Proj(Res) PM Peak (Mitigated w/ 8th St)
 34: Riverfront Dr & 7th Street 1/12/2007

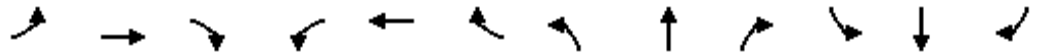


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	48	0	71	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	48	0	71	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		96	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		96	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		92	100
cM capacity (veh/h)			1623		877	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	48	71
Volume Left	0	48	71
Volume Right	0	0	0
cSH	1700	1623	877
Volume to Capacity	0.00	0.03	0.08
Queue Length 95th (ft)	0	2	7
Control Delay (s)	0.0	7.3	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.5
Approach LOS			A

Intersection Summary			
Average Delay		8.6	
Intersection Capacity Utilization		13.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis 2013+ Proj(Res) PM Peak (Mitigated w/ 8th St)
 36: Signature & 7th Street 1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↑	↗		↕	
Volume (vph)	0	0	172	98	0	0	227	368	28	0	363	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00			1.00	1.00	1.00		1.00	
Frt		0.86		1.00			1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770			1770	1863	1583		1863	
Flt Permitted		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770			1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	172	98	0	0	227	368	28	0	363	0
RTOR Reduction (vph)	0	165	0	0	0	0	0	0	6	0	0	0
Lane Group Flow (vph)	0	7	0	98	0	0	227	368	22	0	363	0
Turn Type	Perm			Prot			Prot		Perm	Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		5.5		12.8			22.7	105.7	105.7		79.0	
Effective Green, g (s)		5.5		12.8			22.7	105.7	105.7		79.0	
Actuated g/C Ratio		0.04		0.09			0.17	0.78	0.78		0.58	
Clearance Time (s)		4.0		4.0			4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0		3.0			3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		65		167			295	1448	1230		1082	
v/s Ratio Prot		c0.00		c0.06			c0.13	0.20			c0.19	
v/s Ratio Perm									0.01			
v/c Ratio		0.11		0.59			0.77	0.25	0.02		0.34	
Uniform Delay, d1		62.9		59.1			54.1	4.2	3.4		14.8	
Progression Factor		1.00		1.00			1.00	1.00	1.00		1.00	
Incremental Delay, d2		0.7		5.2			11.4	0.4	0.0		0.8	
Delay (s)		63.6		64.2			65.6	4.6	3.4		15.7	
Level of Service		E		E			E	A	A		B	
Approach Delay (s)		63.6		64.2			26.8				15.7	
Approach LOS		E		E			C				B	

Intersection Summary

HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	136.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2013+ Proj(Res) PM Peak (Mitigated w/ 8th St)
 39: Richard Blvd & 8th St

1/12/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	167	1752	1844	45	209	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3527		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3527		1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	1752	1844	45	209	584
RTOR Reduction (vph)	0	0	2	0	0	190
Lane Group Flow (vph)	167	1752	1888	0	209	394
Turn Type	Prot			Perm		
Protected Phases	7	4	8	6		
Permitted Phases						6
Actuated Green, G (s)	9.0	88.0	75.0	24.0		
Effective Green, g (s)	9.0	88.0	75.0	24.0		
Actuated g/C Ratio	0.08	0.73	0.62	0.20		
Clearance Time (s)	4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	257	2595	2204	354		
v/s Ratio Prot	0.05	c0.50	c0.54	0.12		
v/s Ratio Perm						c0.14
v/c Ratio	0.65	0.68	0.86	0.59		
Uniform Delay, d1	54.0	8.5	18.2	43.5		
Progression Factor	0.93	0.91	0.56	1.00		
Incremental Delay, d2	3.9	1.0	3.9	7.1		
Delay (s)	54.1	8.7	14.1	50.6		
Level of Service	D	A	B	D		
Approach Delay (s)	12.6		14.1	51.7		
Approach LOS	B		B	D		

Intersection Summary

HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2013+Proj (Res) AM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT		
Lane Group Flow (vph)	141	1560	693	791	259	202	754	180	341		
v/c Ratio	0.15	0.93	0.38	1.35	0.64	0.48	0.68	0.77	1.22	1.16	0.35
Control Delay	20.3	24.7	3.3	201.2	18.5	47.9	58.9	25.6	190.9	147.4	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	24.7	3.3	201.2	18.5	47.9	58.9	25.6	190.9	147.4	18.0
Queue Length 50th (ft)	35	~582	44	~354	230	90	142	167	~160	~165	0
Queue Length 95th (ft)	m51	#794	m43	#477	190	131	222	226	#326	#264	37
Internal Link Dist (ft)		1060		491		615				370	
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	938	1680	780	515	1558	672	365	974	148	295	202
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.93	0.38	1.35	0.51	0.39	0.55	0.77	1.22	1.16	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2013+Proj (Res) AM Peak (Mitigated w/ 8th St)

1/12/2007



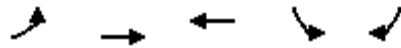
Lane Group	EBT	WBL	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	203	21	90	221	97	367
v/c Ratio	0.35	0.13	0.36	0.16	0.08	0.34
Control Delay	1.6	27.3	26.7	2.4	0.8	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.6	27.3	26.7	2.4	0.8	10.2
Queue Length 50th (ft)	0	7	27	9	0	63
Queue Length 95th (ft)	0	26	91	99	23	167
Internal Link Dist (ft)	331			370		286
Turn Bay Length (ft)						
Base Capacity (vph)	782	165	251	1394	1209	1068
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.13	0.36	0.16	0.08	0.34

Intersection Summary

Queues
39: Richard Blvd & 8th St

2013+Proj (Res) AM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	580	1914	1584	34	124
v/c Ratio	0.78	0.62	0.74	0.30	0.42
Control Delay	41.8	3.3	10.0	59.3	13.5
Queue Delay	0.0	0.6	0.4	0.0	0.0
Total Delay	41.8	3.9	10.4	59.3	13.5
Queue Length 50th (ft)	200	215	243	26	0
Queue Length 95th (ft)	m230	m248	118	59	32
Internal Link Dist (ft)		491	576	172	
Turn Bay Length (ft)					
Base Capacity (vph)	744	3073	2152	236	479
Starvation Cap Reductn	0	686	180	0	0
Spillback Cap Reductn	0	13	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	0.80	0.80	0.14	0.26

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+ Proj(Res) PM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	81	856	311	641	1787	461	373	919	144	353	135
v/c Ratio	0.94	0.65	0.45	0.92	0.94	0.70	0.97	0.72	0.94	1.00	0.51
Control Delay	122.7	22.9	6.2	60.2	22.1	51.3	86.3	17.0	113.5	101.3	21.0
Queue Delay	0.0	0.0	0.0	0.0	20.8	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.7	22.9	6.2	60.2	42.9	51.3	86.3	17.0	113.5	101.3	21.0
Queue Length 50th (ft)	31	126	20	234	531	172	288	172	113	146	17
Queue Length 95th (ft)	m#79	m240	m67	m#328	#838	230	#479	232	#242	#248	80
Internal Link Dist (ft)		1060			443		615			370	
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	86	1308	687	715	1911	672	390	1288	153	354	264
Starvation Cap Reductn	0	0	0	0	194	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	1	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.65	0.45	0.90	1.04	0.69	0.96	0.71	0.94	1.00	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

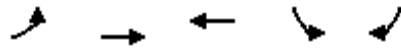
2013+ Proj(Res) PM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBT	WBL	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	172	98	227	368	28	363
v/c Ratio	0.27	0.59	0.77	0.25	0.02	0.34
Control Delay	1.1	72.5	70.5	5.0	1.5	17.6
Queue Delay	0.0	0.0	0.0	1.1	0.0	2.4
Total Delay	1.1	72.5	70.5	6.1	1.5	20.0
Queue Length 50th (ft)	0	84	194	78	0	160
Queue Length 95th (ft)	0	141	271	130	8	278
Internal Link Dist (ft)	331			370		286
Turn Bay Length (ft)						
Base Capacity (vph)	722	234	443	1448	1237	1081
Starvation Cap Reductn	0	0	0	823	0	576
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.42	0.51	0.59	0.02	0.72

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	167	1752	1889	209	584
v/c Ratio	0.65	0.68	0.86	0.59	0.78
Control Delay	59.2	8.9	14.4	51.3	34.9
Queue Delay	0.0	0.3	9.9	0.0	0.4
Total Delay	59.2	9.1	24.3	51.3	35.4
Queue Length 50th (ft)	65	315	649	148	148
Queue Length 95th (ft)	m97	m322	754	230	225
Internal Link Dist (ft)		443	624	197	
Turn Bay Length (ft)					
Base Capacity (vph)	257	2595	2205	354	747
Starvation Cap Reductn	0	264	98	0	0
Spillback Cap Reductn	0	12	316	0	21
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.75	1.00	0.59	0.80

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2013+Proj(Off) AM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↔		↖↗	↑	↖↗	↖	↑↑	↖
Volume (vph)	144	1565	303	693	856	132	366	382	754	169	328	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	3.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	1.00	0.88	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1508	3433	3446		3433	1863	2713	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1508	3433	3446		3433	1863	2713	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	1565	303	693	856	132	366	382	754	169	328	74
RTOR Reduction (vph)	0	0	69	0	11	0	0	0	102	0	0	68
Lane Group Flow (vph)	144	1565	234	693	977	0	366	382	652	169	328	6
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases			6						8			4
Actuated Green, G (s)	26.1	52.5	52.5	19.0	45.4		24.0	24.0	43.0	10.5	10.5	10.5
Effective Green, g (s)	25.1	52.5	52.5	18.0	45.4		23.5	23.5	42.0	10.0	10.0	10.5
Actuated g/C Ratio	0.21	0.44	0.44	0.15	0.38		0.20	0.20	0.35	0.08	0.08	0.09
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0		3.5	3.5	3.0	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	718	1548	660	515	1304		672	365	950	148	295	139
v/s Ratio Prot	0.04	c0.44		c0.20	0.28		0.11	c0.21	0.11	c0.10	0.09	
v/s Ratio Perm			0.15						0.13			0.00
v/c Ratio	0.20	1.01	0.35	1.35	0.75		0.54	1.05	0.69	1.14	1.11	0.05
Uniform Delay, d1	39.2	33.8	22.5	51.0	32.4		43.4	48.2	33.4	55.0	55.0	50.2
Progression Factor	0.55	0.73	0.76	1.08	0.36		1.00	1.00	1.00	0.82	0.82	1.08
Incremental Delay, d2	0.0	19.9	0.1	162.0	2.0		0.5	59.8	1.7	113.4	83.3	0.0
Delay (s)	21.5	44.6	17.1	216.9	13.6		43.9	108.0	35.0	158.5	128.5	54.0
Level of Service	C	D	B	F	B		D	F	D	F	F	D
Approach Delay (s)		38.8			97.4			55.8			127.8	
Approach LOS		D			F			E			F	

Intersection Summary

HCM Average Control Delay	69.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2013+Proj(Off) AM Peak (Mitigated w/ 8th St)
 33: Riverfront Dr & 5th Street

1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	0	0	65	0	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	65	0	0	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			0		130	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		130	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	97
cM capacity (veh/h)			1623		830	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	65	31
Volume Left	0	65	0
Volume Right	0	0	31
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization	13.6%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis 2013+Proj(Off) AM Peak (Mitigated w/ 8th St)
 34: Riverfront Dr & 7th Street

1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Volume (veh/h)	0	0	65	0	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	65	0	0	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		130	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		130	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	97
cM capacity (veh/h)			1623		830	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	65	31
Volume Left	0	65	0
Volume Right	0	0	31
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		13.6%	ICU Level of Service
Analysis Period (min)		15	A

HCM Signalized Intersection Capacity Analysis 2013+Proj(Off) AM Peak (Mitigated w/ 8th St)
 36: Signature & 7th Street 1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗	↖		↕	
Volume (vph)	0	0	158	21	0	0	323	239	97	0	392	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00			1.00	1.00	1.00		1.00	
Frt		0.86		1.00			1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770			1770	1863	1425		1863	
Flt Permitted		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770			1770	1863	1425		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	158	21	0	0	323	239	97	0	392	0
RTOR Reduction (vph)	0	146	0	0	0	0	0	0	28	0	0	0
Lane Group Flow (vph)	0	12	0	21	0	0	323	239	69	0	392	0
Parking (#/hr)									0			
Turn Type	Perm		Prot				Prot		Perm	Perm		
Protected Phases		4	3	8			5	2			6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		4.4	0.8				21.5	42.8	42.8		17.3	
Effective Green, g (s)		4.4	0.8				21.5	42.8	42.8		17.3	
Actuated g/C Ratio		0.07	0.01				0.36	0.71	0.71		0.29	
Clearance Time (s)		4.0	4.0				4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0	3.0				3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		118	24				634	1329	1017		537	
v/s Ratio Prot		c0.01	c0.01				c0.18	0.13			c0.21	
v/s Ratio Perm									0.05			
v/c Ratio		0.10	0.88				0.51	0.18	0.07		0.73	
Uniform Delay, d1		25.9	29.6				15.1	2.8	2.6		19.2	
Progression Factor		1.00	1.00				1.30	0.38	0.00		1.00	
Incremental Delay, d2		0.4	127.4				0.4	0.2	0.1		8.5	
Delay (s)		26.3	156.9				20.1	1.3	0.1		27.7	
Level of Service		C	F				C	A	A		C	
Approach Delay (s)		26.3		156.9				10.3			27.7	
Approach LOS		C		F				B			C	

Intersection Summary		
HCM Average Control Delay	20.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.56	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	65.0%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis 2013+Proj(Off) AM Peak (Mitigated w/ 8th St)
 39: Richard Blvd & 8th St

1/12/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	580	1908	1557	224	34	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3472		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3472		1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	580	1908	1557	224	34	124
RTOR Reduction (vph)	0	0	10	0	0	107
Lane Group Flow (vph)	580	1908	1771	0	34	17
Turn Type	Prot			Perm		
Protected Phases	7	4	8	6		
Permitted Phases						6
Actuated Green, G (s)	24.0	96.0	68.0	16.0		
Effective Green, g (s)	24.0	96.0	68.0	16.0		
Actuated g/C Ratio	0.20	0.80	0.57	0.13		
Clearance Time (s)	4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	687	2831	1967	236		
v/s Ratio Prot	c0.17	0.54	c0.51	c0.02		
v/s Ratio Perm						0.01
v/c Ratio	0.84	0.67	0.90	0.14		
Uniform Delay, d1	46.2	5.2	23.0	45.9		
Progression Factor	0.77	0.58	0.57	1.00		
Incremental Delay, d2	3.6	0.5	6.3	1.3		
Delay (s)	39.1	3.5	19.4	47.2		
Level of Service	D	A	B	D		
Approach Delay (s)	11.8		19.4	45.9		
Approach LOS	B		B	D		

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2013+Proj(Off) PM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



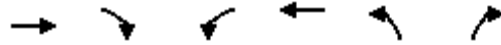
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↔		↖↗	↑	↖↗	↖	↑↑	↖
Volume (vph)	83	862	315	641	1623	167	464	373	919	305	571	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	3.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	1.00	0.88	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1508	3433	3474		3433	1863	2719	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1508	3433	3474		3433	1863	2719	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	83	862	315	641	1623	167	464	373	919	305	571	140
RTOR Reduction (vph)	0	0	132	0	5	0	0	0	123	0	0	98
Lane Group Flow (vph)	83	862	183	641	1785	0	464	373	796	305	571	42
Confl. Peds. (#/hr)			24			24			24			
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases			6						8			4
Actuated Green, G (s)	4.0	41.5	41.5	23.0	60.5		24.0	24.0	47.0	17.5	17.5	17.5
Effective Green, g (s)	3.0	41.5	41.5	22.0	60.5		23.5	23.5	46.0	17.0	17.0	17.5
Actuated g/C Ratio	0.02	0.35	0.35	0.18	0.50		0.20	0.20	0.38	0.14	0.14	0.15
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0		3.5	3.5	3.0	3.5	3.5	3.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	86	1224	522	629	1751		672	365	1042	251	501	231
v/s Ratio Prot	0.02	c0.24		0.19	c0.51		0.14	c0.20	0.14	c0.17	c0.16	
v/s Ratio Perm			0.12						0.15			0.03
v/c Ratio	0.97	0.70	0.35	1.02	1.02		0.69	1.02	0.76	1.22	1.14	0.18
Uniform Delay, d1	58.4	33.9	29.2	49.0	29.8		44.9	48.2	32.3	51.5	51.5	45.0
Progression Factor	0.70	0.51	0.15	1.13	0.73		1.00	1.00	1.00	1.02	1.02	1.32
Incremental Delay, d2	70.9	1.1	0.1	30.7	20.5		2.5	52.8	3.0	123.5	81.8	0.1
Delay (s)	111.9	18.4	4.5	86.0	42.1		47.3	101.1	35.3	176.0	134.4	59.3
Level of Service	F	B	A	F	D		D	F	D	F	F	E
Approach Delay (s)		21.1			53.7			52.4			136.5	
Approach LOS		C			D			D			F	

Intersection Summary

HCM Average Control Delay	60.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2013+Proj(Off) PM Peak (Mitigated w/ 8th St)
 33: Riverfront Dr & 5th Street 1/12/2007

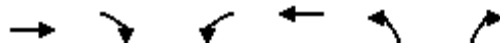


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	52	0	0	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			0	104	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0	104	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			97	100	93	
cM capacity (veh/h)			1623	865	1085	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	0
Volume Right	0	0	71
cSH	1700	1623	1085
Volume to Capacity	0.00	0.03	0.07
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	7.3	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.6
Approach LOS			A

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization	14.4%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis 2013+Proj(Off) PM Peak (Mitigated w/ 8th St)
 34: Riverfront Dr & 7th Street 1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	52	0	71	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	52	0	71	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			0		104	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		104	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		92	100
cM capacity (veh/h)			1623		865	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	52	71
Volume Left	0	52	71
Volume Right	0	0	0
cSH	1700	1623	865
Volume to Capacity	0.00	0.03	0.08
Queue Length 95th (ft)	0	2	7
Control Delay (s)	0.0	7.3	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.5
Approach LOS			A

Intersection Summary			
Average Delay		8.6	
Intersection Capacity Utilization		13.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis 2013+Proj(Off) PM Peak (Mitigated w/ 8th St)

36: Signature & 7th Street

1/12/2007

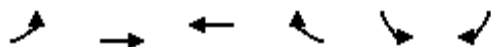


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗	↖		↕	
Volume (vph)	0	0	530	98	0	0	220	375	28	0	389	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00			1.00	1.00	1.00		1.00	
Frt		0.86		1.00			1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770			1770	1863	1583		1863	
Flt Permitted		1.00		0.95			0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770			1770	1863	1583		1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	530	98	0	0	220	375	28	0	389	0
RTOR Reduction (vph)	0	461	0	0	0	0	0	0	8	0	0	0
Lane Group Flow (vph)	0	69	0	98	0	0	220	375	20	0	389	0
Turn Type	Perm			Prot			Prot		Perm	Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		12.2		11.8			19.6	84.0	84.0		60.4	
Effective Green, g (s)		12.2		11.8			19.6	84.0	84.0		60.4	
Actuated g/C Ratio		0.10		0.10			0.16	0.70	0.70		0.50	
Clearance Time (s)		4.0		4.0			4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0		3.0			3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		164		174			289	1304	1108		938	
v/s Ratio Prot		c0.04		c0.06			c0.12	0.20			c0.21	
v/s Ratio Perm									0.01			
v/c Ratio		0.42		0.56			0.76	0.29	0.02		0.41	
Uniform Delay, d1		50.6		51.6			48.0	6.8	5.5		18.7	
Progression Factor		1.00		1.00			1.12	0.42	0.13		1.00	
Incremental Delay, d2		1.7		4.1			1.1	0.1	0.0		1.4	
Delay (s)		52.3		55.8			54.9	2.9	0.7		20.1	
Level of Service		D		E			D	A	A		C	
Approach Delay (s)		52.3		55.8			21.2				20.1	
Approach LOS		D		E			C				C	

Intersection Summary

HCM Average Control Delay	33.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2013+Proj(Off) PM Peak (Mitigated w/ 8th St)
 39: Richard Blvd & 1/12/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔↔	↑↑	↑↔		↔	↔↔
Volume (vph)	167	1919	1847	45	209	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3527		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3527		1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	1919	1847	45	209	584
RTOR Reduction (vph)	0	0	1	0	0	189
Lane Group Flow (vph)	167	1919	1891	0	209	395
Turn Type	Prot			Perm		
Protected Phases	7	4	8	6		
Permitted Phases						6
Actuated Green, G (s)	8.8	88.0	75.2	24.0		
Effective Green, g (s)	8.8	88.0	75.2	24.0		
Actuated g/C Ratio	0.07	0.73	0.63	0.20		
Clearance Time (s)	4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	252	2595	2210	354		
v/s Ratio Prot	0.05	c0.54	c0.54	0.12		
v/s Ratio Perm						c0.14
v/c Ratio	0.66	0.74	0.86	0.59		
Uniform Delay, d1	54.2	9.3	18.0	43.5		
Progression Factor	0.96	0.74	0.76	1.00		
Incremental Delay, d2	3.6	1.1	3.9	7.1		
Delay (s)	55.8	8.0	17.6	50.6		
Level of Service	E	A	B	D		
Approach Delay (s)	11.8		17.6	51.8		
Approach LOS	B		B	D		

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2013+Proj(Off) AM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT		
Lane Group Flow (vph)	144	1565	693	988	366	382	754	169	328		
v/c Ratio	0.20	1.01	0.42	1.35	0.75	0.54	1.05	0.71	1.14	1.11	0.36
Control Delay	22.9	45.6	11.2	203.7	13.2	46.9	106.7	22.0	155.6	126.1	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	45.6	11.2	203.7	13.6	46.9	106.7	22.0	155.6	126.1	17.1
Queue Length 50th (ft)	40	-455	47	-373	249	132	-322	169	-155	-154	6
Queue Length 95th (ft)	m54	#797	m82	m#443	m252	182	#515	228	#285	#240	m25
Internal Link Dist (ft)		1060		427		615			370		
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	717	1548	729	515	1547	672	365	1062	148	295	206
Starvation Cap Reductn	0	0	0	0	190	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	1.01	0.42	1.35	0.73	0.54	1.05	0.71	1.14	1.11	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2013+Proj(Off) AM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBT	WBL	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	158	21	323	239	97	392
v/c Ratio	0.26	0.16	0.51	0.16	0.08	0.59
Control Delay	1.0	29.5	23.0	1.1	0.1	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	29.5	23.0	1.1	0.1	22.5
Queue Length 50th (ft)	0	7	140	10	0	109
Queue Length 95th (ft)	0	26	m108	m18	m0	#258
Internal Link Dist (ft)	331			370		286
Turn Bay Length (ft)						
Base Capacity (vph)	801	131	634	1478	1150	661
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.16	0.51	0.16	0.08	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

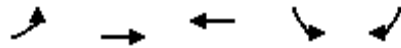
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) AM Peak (Mitigated w/ 8th St)

39: Richard Blvd & 8th St

1/12/2007



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	580	1908	1781	34	124
v/c Ratio	0.84	0.67	0.90	0.14	0.26
Control Delay	40.9	3.6	19.9	47.8	9.5
Queue Delay	0.0	0.6	4.3	0.0	0.0
Total Delay	40.9	4.2	24.1	47.8	9.5
Queue Length 50th (ft)	208	178	675	24	0
Queue Length 95th (ft)	m224	m132	144	56	31
Internal Link Dist (ft)		427	644	248	
Turn Bay Length (ft)					
Base Capacity (vph)	687	2831	1977	236	479
Starvation Cap Reductn	0	485	144	0	0
Spillback Cap Reductn	0	9	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.81	0.97	0.14	0.26

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2013+Proj(Off) PM Peak (Mitigated w/ 8th St)

5: Richard Blvd & 7th Street

1/12/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	83	862	315	641	1790	464	373	919	305	571	140
v/c Ratio	0.97	0.70	0.48	1.02	1.02	0.69	1.02	0.78	1.22	1.14	0.43
Control Delay	118.7	19.9	3.5	84.7	43.0	51.0	100.6	19.9	167.8	128.7	20.1
Queue Delay	0.0	0.0	0.0	0.0	29.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	118.7	19.9	3.5	84.7	72.3	51.0	100.6	19.9	167.8	128.7	20.1
Queue Length 50th (ft)	33	223	12	~255	~644	173	~307	175	~292	~274	3
Queue Length 95th (ft)	m#65	m268	m31	m#366	#904	231	#499	233	#465	#395	m91
Internal Link Dist (ft)		1060			500		615			370	
Turn Bay Length (ft)	200		150	200		200		200	200		200
Base Capacity (vph)	86	1224	654	629	1757	672	365	1176	251	501	329
Starvation Cap Reductn	0	0	0	0	122	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.70	0.48	1.02	1.09	0.69	1.02	0.78	1.22	1.14	0.43

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2013+Proj(Off) PM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBT	WBL	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	530	98	220	375	28	389
v/c Ratio	0.85	0.56	0.76	0.29	0.03	0.41
Control Delay	18.3	63.3	54.9	3.8	0.5	24.5
Queue Delay	0.0	0.0	0.0	0.8	0.0	2.3
Total Delay	18.3	63.3	54.9	4.5	0.5	26.8
Queue Length 50th (ft)	13	74	174	28	0	171
Queue Length 95th (ft)	119	126	m86	m72	m0	376
Internal Link Dist (ft)	331			370		286
Turn Bay Length (ft)						
Base Capacity (vph)	778	236	335	1304	1116	938
Starvation Cap Reductn	0	0	0	616	0	406
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.42	0.66	0.55	0.03	0.73

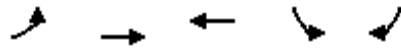
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
39: Richard Blvd &

2013+Proj(Off) PM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	167	1919	1892	209	584
v/c Ratio	0.66	0.74	0.86	0.59	0.78
Control Delay	59.8	8.2	18.0	51.3	35.1
Queue Delay	0.0	0.5	12.4	1.1	0.5
Total Delay	59.8	8.8	30.4	52.4	35.5
Queue Length 50th (ft)	65	309	674	148	149
Queue Length 95th (ft)	m85	m337	793	230	225
Internal Link Dist (ft)		500	569	234	
Turn Bay Length (ft)					
Base Capacity (vph)	257	2595	2210	354	746
Starvation Cap Reductn	0	281	180	0	0
Spillback Cap Reductn	0	63	336	38	22
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.83	1.01	0.66	0.81

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

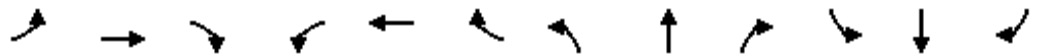
Year 2030 Long Term + Project
(Mitigated)

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Res) AM Peak (Mitigated)

1: Richards Blvd & I-5 SB Off

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖↗	↖↗						↖↗	↖↗
Volume (vph)	0	0	0	448	303	0	0	0	0	0	2444	795
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	448	303	0	0	0	0	0	2444	795
RTOR Reduction (vph)	0	0	0	20	0	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	0	0	428	303	0	0	0	0	0	2444	769
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6							4
Permitted Phases												4
Actuated Green, G (s)				17.5	17.5						75.0	75.0
Effective Green, g (s)				16.0	17.0						75.0	75.0
Actuated g/C Ratio				0.16	0.17						0.75	0.75
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				549	602						2654	1053
v/s Ratio Prot				c0.12	0.09						c0.69	
v/s Ratio Perm												0.55
v/c Ratio				0.78	0.50						0.92	0.73
Uniform Delay, d1				40.3	37.7						10.1	6.9
Progression Factor				0.81	0.80						1.00	1.00
Incremental Delay, d2				10.4	3.0						6.2	3.2
Delay (s)				43.0	33.3						16.3	10.1
Level of Service				D	C						B	B
Approach Delay (s)		0.0			39.0			0.0			14.8	
Approach LOS		A			D			A			B	

Intersection Summary

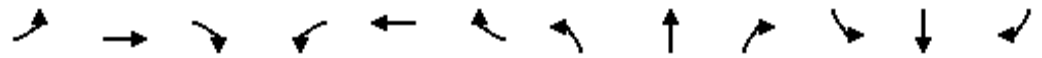
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: Richards Blvd & I-5 NB Off

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	676	1448	74	240	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	676	1448	74	240	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	63	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	676	1448	11	240	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					76.5	100.0	16.0	16.0				
Effective Green, g (s)					76.5	100.0	15.5	15.5				
Actuated g/C Ratio					0.76	1.00	0.16	0.16				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3890	2708	274	549				
v/s Ratio Prot					0.13		0.01	0.07				
v/s Ratio Perm						c0.53						
v/c Ratio					0.17	0.53	0.04	0.44				
Uniform Delay, d1					3.2	0.0	35.9	38.3				
Progression Factor					1.26	1.00	0.69	0.89				
Incremental Delay, d2					0.1	0.7	0.1	1.1				
Delay (s)					4.1	0.7	25.0	35.3				
Level of Service					A	A	C	D				
Approach Delay (s)		0.0			1.8			32.9			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richards Blvd & Bercut Dr

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	23	1566	65	466	249	0	0	90	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	7454		3433	1863			1863	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	7454		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	23	1566	65	466	249	0	0	90	91
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	56
Lane Group Flow (vph)	0	0	0	23	1626	0	466	249	0	0	90	35
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				61.1	61.1		19.0	30.8			7.8	7.8
Effective Green, g (s)				61.7	61.7		18.5	30.3			7.3	7.3
Actuated g/C Ratio				0.62	0.62		0.18	0.30			0.07	0.07
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				946	4599		635	564			136	116
v/s Ratio Prot					c0.22		c0.14	0.13			c0.05	
v/s Ratio Perm				0.01								0.02
v/c Ratio				0.02	0.35		0.73	0.44			0.66	0.31
Uniform Delay, d1				7.4	9.4		38.4	28.0			45.1	43.9
Progression Factor				0.49	0.47		0.57	0.56			1.00	1.00
Incremental Delay, d2				0.0	0.2		3.9	0.2			9.0	0.5
Delay (s)				3.7	4.6		25.7	15.8			54.1	44.5
Level of Service				A	A		C	B			D	D
Approach Delay (s)		0.0			4.6			22.2			49.3	
Approach LOS		A			A			C			D	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

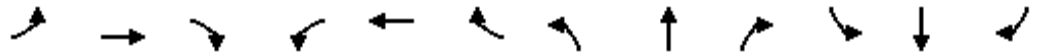
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Res) AM Peak (Mitigated)

4: Richards Blvd & 5th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	224	972	37	433	329	0	0	232	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1593	6730		3090	1676			1676	1332
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1593	6730		3090	1676			1676	1332
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	224	972	37	433	329	0	0	232	388
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	19
Lane Group Flow (vph)	0	0	0	224	1003	0	433	329	0	0	232	369
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				39.8	38.5		18.3	53.7			31.4	31.4
Effective Green, g (s)				38.8	38.8		17.8	53.2			30.9	31.4
Actuated g/C Ratio				0.39	0.39		0.18	0.53			0.31	0.31
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				618	2611		550	892			518	418
v/s Ratio Prot				0.14	c0.15		c0.14	0.20			0.14	
v/s Ratio Perm												c0.28
v/c Ratio				0.36	0.38		0.79	0.37			0.45	0.88
Uniform Delay, d1				21.8	22.0		39.3	13.6			27.7	32.5
Progression Factor				0.67	0.65		0.84	0.80			1.00	1.00
Incremental Delay, d2				0.1	0.4		5.5	0.1			0.2	18.7
Delay (s)				14.6	14.6		38.5	11.0			27.9	51.2
Level of Service				B	B		D	B			C	D
Approach Delay (s)		0.0			14.6			26.6			42.5	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Res) AM Peak (Mitigated)

5: Richards Blvd & 7th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	304	880	219	254	838	0	0	1044	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frft				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6408	1518	1610	3385			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6408	1518	1610	3385			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	304	880	219	254	838	0	0	1044	360
RTOR Reduction (vph)	0	0	0	0	0	149	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	304	880	70	229	863	0	0	1044	360
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				33.0	32.0	32.0	26.7	26.7			30.3	100.0
Effective Green, g (s)				32.0	32.0	32.0	26.2	26.2			29.8	100.0
Actuated g/C Ratio				0.32	0.32	0.32	0.26	0.26			0.30	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				566	2051	486	422	887			1055	1583
v/s Ratio Prot				c0.17	0.14		0.14	c0.25			c0.29	
v/s Ratio Perm						0.05						0.23
v/c Ratio				0.54	0.43	0.14	0.54	0.97			0.99	0.23
Uniform Delay, d1				27.9	26.8	24.2	31.7	36.5			34.9	0.0
Progression Factor				0.61	0.59	0.70	0.93	0.93			1.00	1.00
Incremental Delay, d2				0.4	0.6	0.5	0.7	21.9			24.8	0.3
Delay (s)				17.3	16.4	17.5	30.3	56.0			59.8	0.3
Level of Service				B	B	B	C	E			E	A
Approach Delay (s)		0.0			16.8			50.6			44.5	
Approach LOS		A			B			D			D	

Intersection Summary

HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑		↘	↑			↑↑	↗
Volume (vph)	0	0	0	211	409	87	1092	34	0	0	24	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.74
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Fr _t				1.00	0.97		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6239		3433	1863			3539	1176
Fl _t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6239		3433	1863			3539	1176
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	211	409	87	1092	34	0	0	24	36
RTOR Reduction (vph)	0	0	0	0	31	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	0	0	211	465	0	1092	34	0	0	24	2
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				43.9	42.9		40.4	49.1			4.7	4.7
Effective Green, g (s)				43.4	43.4		39.9	48.6			4.2	4.2
Actuated g/C Ratio				0.43	0.43		0.40	0.49			0.04	0.04
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				768	2708		1370	905			149	49
v/s Ratio Prot				c0.12	0.07		c0.32	0.02			c0.01	
v/s Ratio Perm												0.00
v/c Ratio				0.27	0.17		0.80	0.04			0.16	0.03
Uniform Delay, d ₁				18.2	17.3		26.5	13.5			46.2	45.9
Progression Factor				1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d ₂				0.1	0.1		3.3	0.0			0.2	0.1
Delay (s)				18.3	17.4		29.8	13.5			46.4	46.0
Level of Service				B	B		C	B			D	D
Approach Delay (s)		0.0			17.7			29.3			46.2	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	488	50	237	1151	199	35	150	64	21	75	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.97			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3490		1770	3386			1751			1739	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.95	
Satd. Flow (perm)	1770	3490		1770	3386			1662			1655	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	488	50	237	1151	199	35	150	64	21	75	67
RTOR Reduction (vph)	0	13	0	0	22	0	0	18	0	0	36	0
Lane Group Flow (vph)	43	525	0	237	1328	0	0	231	0	0	127	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	3.1	13.1		16.8	26.8			21.6			21.6	
Effective Green, g (s)	3.6	13.6		17.3	27.3			21.1			21.1	
Actuated g/C Ratio	0.06	0.21		0.27	0.42			0.32			0.32	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	98	730		471	1422			540			537	
v/s Ratio Prot	0.02	c0.15		0.13	c0.39							
v/s Ratio Perm								c0.14			0.08	
v/c Ratio	0.44	0.72		0.50	0.93			0.43			0.24	
Uniform Delay, d1	29.7	23.9		20.2	18.0			17.2			16.1	
Progression Factor	1.00	1.00		1.00	1.00			0.41			1.00	
Incremental Delay, d2	3.1	2.8		0.8	11.3			2.3			1.0	
Delay (s)	32.8	26.8		21.1	29.3			9.3			17.1	
Level of Service	C	C		C	C			A			B	
Approach Delay (s)		27.2			28.1			9.3			17.1	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	628	164	0	0	0	0	0	0	2130	762	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	628	164	0	0	0	0	0	0	2130	762	0
RTOR Reduction (vph)	0	0	97	0	0	0	0	0	0	65	0	0
Lane Group Flow (vph)	0	628	67	0	0	0	0	0	0	2065	762	0
Turn Type			Perm								Split	
Protected Phases		4									2	2
Permitted Phases			4									
Actuated Green, G (s)		24.0	24.0							67.0	67.0	
Effective Green, g (s)		24.0	24.0							67.0	67.0	
Actuated g/C Ratio		0.24	0.24							0.67	0.67	
Clearance Time (s)		4.5	4.5							4.5	4.5	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		849	380							3343	2371	
v/s Ratio Prot		c0.18								c0.41	0.22	
v/s Ratio Perm			0.04									
v/c Ratio		0.74	0.18							0.62	0.32	
Uniform Delay, d1		35.1	30.2							9.3	6.9	
Progression Factor		1.00	1.00							0.67	0.71	
Incremental Delay, d2		3.4	0.2							0.4	0.1	
Delay (s)		38.5	30.4							6.6	5.1	
Level of Service		D	C							A	A	
Approach Delay (s)		36.8			0.0			0.0			6.2	
Approach LOS		D			A			A			A	























Intersection Summary

HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
10: Bannon St & I-5 NB Off

2030 +Proj (Res) AM Peak (Mitigated)























1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   							   			
Volume (vph)	240	2518	0	0	0	0	0	52	1730	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	2518	0	0	0	0	0	52	1730	0	0	0
RTOR Reduction (vph)	97	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	143	2518	0	0	0	0	0	52	1730	0	0	0
Turn Type	Split								Prot			
Protected Phases	2	2						1	4	1	4	
Permitted Phases												
Actuated Green, G (s)	36.2	36.2						55.8	55.8			
Effective Green, g (s)	36.2	36.2						55.8	55.8			
Actuated g/C Ratio	0.36	0.36						0.56	0.56			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	641	2731						1040	2014			
v/s Ratio Prot	0.08	c0.33						0.03	c0.48			
v/s Ratio Perm												
v/c Ratio	0.22	0.92						0.05	0.86			
Uniform Delay, d1	22.1	30.5						10.0	18.8			
Progression Factor	0.65	0.85						1.00	1.00			
Incremental Delay, d2	0.6	5.3						0.0	3.9			
Delay (s)	15.1	31.2						10.1	22.7			
Level of Service	B	C						B	C			
Approach Delay (s)		29.8			0.0			22.3			0.0	
Approach LOS		C			A			C			A	
Intersection Summary												
HCM Average Control Delay			26.9		HCM Level of Service				C			
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			76.2%		ICU Level of Service				D			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		  						 		 				
Volume (vph)	217	3153	878	0	0	0	0	404	42	146	6	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0			
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00			
Frt	1.00	1.00	0.85					0.99		1.00	1.00			
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00			
Satd. Flow (prot)	1770	6408	1583					3489		3433	1863			
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00			
Satd. Flow (perm)	1770	6408	1583					3489		3433	1863			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	217	3153	878	0	0	0	0	404	42	146	6	0		
RTOR Reduction (vph)	0	0	297	0	0	0	0	3	0	0	0	0		
Lane Group Flow (vph)	217	3153	581	0	0	0	0	443	0	146	6	0		
Turn Type	Split		Perm					Prot						
Protected Phases	6	6						8		7	4			
Permitted Phases			6											
Actuated Green, G (s)	66.2	66.2	66.2					16.1		5.7	25.8			
Effective Green, g (s)	66.2	66.2	66.2					16.1		5.7	25.8			
Actuated g/C Ratio	0.66	0.66	0.66					0.16		0.06	0.26			
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0			
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0			
Lane Grp Cap (vph)	1172	4242	1048					562		196	481			
v/s Ratio Prot	0.12	c0.49						c0.13		c0.04	0.00			
v/s Ratio Perm			0.37											
v/c Ratio	0.19	0.74	0.55					0.79		0.74	0.01			
Uniform Delay, d1	6.5	11.2	9.0					40.3		46.4	27.6			
Progression Factor	0.68	0.74	0.80					1.00		0.57	0.42			
Incremental Delay, d2	0.1	0.5	0.9					7.3		14.1	0.0			
Delay (s)	4.6	8.8	8.1					47.6		40.8	11.6			
Level of Service	A	A	A					D		D	B			
Approach Delay (s)		8.4			0.0			47.6			39.6			
Approach LOS		A			A			D			D			
Intersection Summary														
HCM Average Control Delay			13.0									HCM Level of Service	B	
HCM Volume to Capacity ratio			0.75											
Actuated Cycle Length (s)			100.0								12.0			
Intersection Capacity Utilization			72.4%										ICU Level of Service	C
Analysis Period (min)			15											
c	Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	601	1737	1009	0	0	0	0	564	124	69	574	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6055						3380	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6055						3380	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	601	1737	1009	0	0	0	0	564	124	69	574	0
RTOR Reduction (vph)	0	86	0	0	0	0	0	2	86	0	0	0
Lane Group Flow (vph)	601	2660	0	0	0	0	0	574	26	69	574	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	51.7	51.7						23.3	23.3	12.0	39.3	
Effective Green, g (s)	51.7	51.7						23.3	23.3	12.0	39.3	
Actuated g/C Ratio	0.52	0.52						0.23	0.23	0.12	0.39	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	915	3130						788	336	212	1391	
v/s Ratio Prot		c0.44						c0.17		0.04	c0.16	
v/s Ratio Perm	0.34								0.02			
v/c Ratio	0.66	1.11dr						0.73	0.08	0.33	0.41	
Uniform Delay, d1	17.7	20.8						35.4	30.0	40.3	22.0	
Progression Factor	0.43	0.41						0.53	0.21	0.99	0.83	
Incremental Delay, d2	1.1	1.5						5.7	0.4	0.9	0.2	
Delay (s)	8.7	10.1						24.5	6.7	40.7	18.3	
Level of Service	A	B						C	A	D	B	
Approach Delay (s)		9.8			0.0			21.7			20.7	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		

























dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: Bannon St & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	563	1311	28	0	0	0	0	321	341	216	1069	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	563	1311	28	0	0	0	0	321	341	216	1069	0
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	563	1311	11	0	0	0	0	321	341	216	1069	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	38.9	38.9	38.9					30.3	100.0	17.3	52.1	
Effective Green, g (s)	38.9	38.9	38.9					30.3	100.0	17.3	52.1	
Actuated g/C Ratio	0.39	0.39	0.39					0.30	1.00	0.17	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	689	1978	616					1072	1583	306	1844	
v/s Ratio Prot		0.26						0.09		c0.12	c0.30	
v/s Ratio Perm	c0.32		0.01						0.22			
v/c Ratio	0.82	0.66	0.02					0.30	0.22	0.71	0.58	
Uniform Delay, d1	27.4	25.2	18.8					26.7	0.0	39.0	16.4	
Progression Factor	0.38	0.36	0.21					0.67	1.00	1.14	0.20	
Incremental Delay, d2	4.5	0.5	0.0					0.7	0.3	3.2	0.6	
Delay (s)	14.9	9.6	3.9					18.6	0.3	47.7	4.0	
Level of Service	B	A	A					B	A	D	A	
Approach Delay (s)		11.1			0.0			9.2			11.3	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

























Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	46	72	142	195	17	73	583	79	89	1129	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.47	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	878	1863	1583	1354	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	103	46	72	142	195	17	73	583	79	89	1129	143
RTOR Reduction (vph)	0	0	57	0	0	13	0	0	34	0	0	51
Lane Group Flow (vph)	103	46	15	142	195	4	73	583	45	89	1129	92
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.1	56.7	56.7	8.8	57.4	57.4
Effective Green, g (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.1	56.7	56.7	8.8	57.4	57.4
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.08	0.57	0.57	0.09	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	189	401	340	291	401	340	143	2007	898	156	2031	909
v/s Ratio Prot		0.02			0.10		0.04	0.16		c0.05	c0.32	
v/s Ratio Perm	c0.12		0.01	0.10		0.00			0.03			0.06
v/c Ratio	0.54	0.11	0.05	0.49	0.49	0.01	0.51	0.29	0.05	0.57	0.56	0.10
Uniform Delay, d1	34.9	31.6	31.1	34.4	34.4	30.9	44.0	11.2	9.6	43.8	13.3	9.6
Progression Factor	1.00	1.00	1.00	0.93	0.93	0.98	1.29	0.39	0.11	1.08	0.72	0.56
Incremental Delay, d2	3.2	0.1	0.1	1.2	0.9	0.0	3.0	0.4	0.1	3.6	0.8	0.2
Delay (s)	38.1	31.7	31.2	33.3	32.9	30.4	60.0	4.8	1.2	51.0	10.4	5.6
Level of Service	D	C	C	C	C	C	E	A	A	D	B	A
Approach Delay (s)		34.5			32.9			9.9			12.5	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	88	57	89	130	308	80	465	381	126	1233	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	88	57	89	130	308	80	465	381	126	1233	70
RTOR Reduction (vph)	0	0	49	0	0	248	0	0	205	0	3	0
Lane Group Flow (vph)	39	88	8	89	130	60	80	465	176	126	1300	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.1	14.4	14.4	8.2	19.5	19.5	5.9	37.9	46.1	21.5	53.5	
Effective Green, g (s)	3.1	14.4	14.4	8.2	19.5	19.5	5.9	37.9	46.1	21.5	53.5	
Actuated g/C Ratio	0.03	0.14	0.14	0.08	0.20	0.20	0.06	0.38	0.46	0.22	0.54	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	55	510	228	282	690	309	104	1341	801	381	1878	
v/s Ratio Prot	c0.02	0.02		c0.03	0.04		c0.05	0.13	0.02	0.07	c0.37	
v/s Ratio Perm			0.01			c0.04			0.09			
v/c Ratio	0.71	0.17	0.04	0.32	0.19	0.19	0.77	0.35	0.22	0.33	0.69	
Uniform Delay, d1	48.0	37.6	36.8	43.3	33.6	33.7	46.4	22.2	16.2	33.2	17.2	
Progression Factor	1.01	0.75	0.70	1.00	1.00	1.00	0.97	0.73	0.31	0.58	0.37	
Incremental Delay, d2	33.8	0.2	0.1	0.6	0.1	0.3	28.0	0.7	0.1	0.5	1.9	
Delay (s)	82.4	28.4	25.8	43.9	33.8	34.0	73.1	16.9	5.1	19.6	8.2	
Level of Service	F	C	C	D	C	C	E	B	A	B	A	
Approach Delay (s)		39.0			35.6			16.9			9.2	
Approach LOS		D			D			B			A	

Intersection Summary

HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕						←←←←	↗
Volume (vph)	1381	107	126	32	269	29	0	0	0	81	4474	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3488						7537	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3488						7537	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1381	107	126	32	269	29	0	0	0	81	4474	383
RTOR Reduction (vph)	0	0	106	0	7	0	0	0	0	0	0	55
Lane Group Flow (vph)	1381	107	20	32	291	0	0	0	0	0	4555	328
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	21.0	21.0	21.0	19.8	19.8						70.7	91.7
Effective Green, g (s)	21.0	21.0	21.0	19.8	19.8						73.7	91.7
Actuated g/C Ratio	0.16	0.16	0.16	0.15	0.15						0.57	0.71
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	806	572	235	270	531						4273	1238
v/s Ratio Prot	c0.28	0.03		0.02	c0.08							0.04
v/s Ratio Perm			0.01								0.60	0.16
v/c Ratio	1.71	0.19	0.09	0.12	0.55						1.07	0.26
Uniform Delay, d1	54.5	47.1	46.3	47.6	51.0						28.1	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00						0.96	2.24
Incremental Delay, d2	326.3	0.3	0.3	0.4	2.0						31.9	0.1
Delay (s)	380.8	47.5	46.7	48.0	53.0						59.0	15.6
Level of Service	F	D	D	D	D						E	B
Approach Delay (s)		332.6			52.5			0.0			55.7	
Approach LOS		F			D			A			E	

Intersection Summary

HCM Average Control Delay	120.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Res) AM Peak (Mitigated)

17: Canal St & 6th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	65	204	76	7	20	211	600	0	83	1174	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1656		1770	3539		1770	3487	
Flt Permitted	0.74	1.00	1.00	0.71	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1378	1863	1583	1331	1656		1770	3539		1770	3487	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	65	204	76	7	20	211	600	0	83	1174	127
RTOR Reduction (vph)	0	0	172	0	17	0	0	0	0	0	7	0
Lane Group Flow (vph)	54	65	32	76	10	0	211	600	0	83	1294	0
Turn Type	Perm		Perm	Perm				Prot			Prot	
Protected Phases	4				8			5	2	1		6
Permitted Phases	4	4		8								
Actuated Green, G (s)	15.6	15.6	15.6	15.6	15.6			16.7	62.9	8.0	54.2	
Effective Green, g (s)	15.6	15.6	15.6	15.6	15.6			16.7	62.9	8.0	54.2	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16			0.17	0.63	0.08	0.54	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	215	291	247	208	258			296	2226	142	1890	
v/s Ratio Prot	0.03				0.01			c0.12	0.17	0.05	c0.37	
v/s Ratio Perm	0.04	0.02		c0.06								
v/c Ratio	0.25	0.22	0.13	0.37	0.04			0.71	0.27	0.58	0.68	
Uniform Delay, d1	37.1	36.9	36.3	37.8	35.8			39.4	8.3	44.4	16.7	
Progression Factor	1.00	1.00	1.00	1.06	1.18			0.72	1.14	1.17	0.44	
Incremental Delay, d2	0.6	0.4	0.2	0.9	0.1			7.2	0.3	5.3	1.8	
Delay (s)	37.7	37.3	36.6	41.1	42.3			35.6	9.7	57.1	9.1	
Level of Service	D	D	D	D	D			D	A	E	A	
Approach Delay (s)	36.9		41.4					16.5		12.0		
Approach LOS	D		D					B		B		

























Intersection Summary

HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	11	46	187	4	5	63	255	0	24	1526	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3525	
Flt Permitted	0.76	1.00	1.00	0.75	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1407	1863	1583	1398	1863	1583	1770	3539		1770	3525	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	11	46	187	4	5	63	255	0	24	1526	42
RTOR Reduction (vph)	0	0	37	0	0	4	0	0	0	0	2	0
Lane Group Flow (vph)	229	11	9	187	4	1	63	255	0	24	1566	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	19.5	19.5	19.5	19.5	19.5	19.5	6.8	65.5		2.0	61.2	
Effective Green, g (s)	19.5	19.5	19.5	19.5	19.5	19.5	6.8	65.5		2.0	61.2	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.07	0.66		0.02	0.61	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	274	363	309	273	363	309	120	2318		35	2157	
v/s Ratio Prot		0.01			0.00		c0.04	0.07		0.01	c0.44	
v/s Ratio Perm	c0.16		0.01	0.13		0.00						
v/c Ratio	0.84	0.03	0.03	0.68	0.01	0.00	0.52	0.11		0.69	0.73	
Uniform Delay, d1	38.7	32.6	32.6	37.4	32.5	32.4	45.0	6.4		48.7	13.5	
Progression Factor	0.77	0.69	0.59	1.00	1.00	1.00	1.01	0.39		1.31	0.18	
Incremental Delay, d2	19.2	0.0	0.0	6.9	0.0	0.0	3.5	0.1		38.3	1.9	
Delay (s)	48.9	22.4	19.2	44.3	32.5	32.4	49.0	2.6		102.2	4.3	
Level of Service	D	C	B	D	C	C	D	A		F	A	
Approach Delay (s)		43.1			43.8			11.8			5.8	
Approach LOS		D			D			B			A	

























Intersection Summary

HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	349	549	788	321	64	402	539	537	366	1005	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.93	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	349	549	788	321	64	402	539	537	366	1005	63
RTOR Reduction (vph)	0	139	167	0	0	40	0	0	364	0	0	30
Lane Group Flow (vph)	151	479	113	394	715	24	402	539	173	366	1005	33
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Effective Green, g (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Actuated g/C Ratio	0.20	0.20	0.20	0.24	0.24	0.24	0.10	0.29	0.29	0.10	0.28	0.28
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	352	631	287	380	779	374	360	1026	459	326	991	443
v/s Ratio Prot	0.09	c0.15		c0.24	0.22		c0.12	0.15		0.11	c0.28	
v/s Ratio Perm			0.08			0.01			0.11			0.02
v/c Ratio	0.43	0.76	0.39	1.04	0.99dl	0.06	1.12	0.53	0.38	1.12	1.01	0.07
Uniform Delay, d1	35.1	37.8	34.8	38.2	37.3	29.6	44.8	29.7	28.3	45.2	36.0	26.5
Progression Factor	1.00	1.00	1.00	0.20	0.20	0.04	1.00	1.00	1.00	0.81	0.88	0.64
Incremental Delay, d2	0.8	5.2	0.9	33.7	5.1	0.0	82.8	1.9	2.4	81.6	28.7	0.3
Delay (s)	35.9	43.0	35.7	41.5	12.6	1.4	127.6	31.7	30.7	118.3	60.3	17.2
Level of Service	D	D	D	D	B	A	F	C	C	F	E	B
Approach Delay (s)		40.1			21.7			57.4			73.3	
Approach LOS		D			C			E			E	

Intersection Summary

HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
































dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 			 	
Volume (vph)	453	647	66	879	807	0	147	259	405	15	1472	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	453	647	66	879	807	0	147	259	405	15	1472	182
RTOR Reduction (vph)	0	0	49	0	0	0	0	0	257	0	0	61
Lane Group Flow (vph)	453	647	17	879	807	0	147	259	148	15	1472	121
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.5	20.5	20.5	16.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Effective Green, g (s)	17.5	20.5	20.5	16.0	19.0		7.4	36.5	36.5	2.0	31.1	31.1
Actuated g/C Ratio	0.18	0.20	0.20	0.16	0.19		0.07	0.36	0.36	0.02	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	601	725	325	549	672		254	1292	578	35	1101	492
v/s Ratio Prot	0.13	c0.18		c0.26	0.23		c0.04	0.07		0.01	c0.42	
v/s Ratio Perm			0.01						0.09			0.08
v/c Ratio	0.75	0.89	0.05	1.60	1.20		0.58	0.20	0.26	0.43	1.34	0.25
Uniform Delay, d1	39.2	38.7	31.9	42.0	40.5		44.8	21.8	22.2	48.4	34.4	25.7
Progression Factor	0.93	0.93	1.17	1.00	1.00		1.00	1.00	1.00	1.23	0.79	0.74
Incremental Delay, d2	2.9	7.9	0.0	279.0	104.3		3.2	0.3	1.1	6.0	156.2	0.9
Delay (s)	39.5	44.0	37.4	321.0	144.8		48.0	22.1	23.3	65.6	183.6	19.8
Level of Service	D	D	D	F	F		D	C	C	E	F	B
Approach Delay (s)		41.9			236.6			27.4			164.6	
Approach LOS		D			F			C			F	

Intersection Summary

HCM Average Control Delay	139.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	51	0	56	174	59	25	359	35	684	1491	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	1.00		1.00	0.96			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1792			3484			3430	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1792			3484			3430	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	74	51	0	56	174	59	25	359	35	684	1491	284
RTOR Reduction (vph)	0	0	0	0	8	0	0	4	0	0	6	0
Lane Group Flow (vph)	74	51	0	56	225	0	0	415	0	0	2453	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	5.0	19.0		5.0	19.0			16.0			94.0	
Effective Green, g (s)	5.0	19.0		5.0	19.0			16.0			94.0	
Actuated g/C Ratio	0.03	0.13		0.03	0.13			0.11			0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	59	236		59	227			372			2149	
v/s Ratio Prot	c0.04	0.03		0.03	c0.13			c0.12			c0.72	
v/s Ratio Perm												
v/c Ratio	1.25	0.22		0.95	0.99			1.11			1.14	
Uniform Delay, d1	72.5	58.8		72.4	65.4			67.0			28.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	200.4	0.5		97.7	57.2			81.3			69.8	
Delay (s)	272.9	59.3		170.1	122.6			148.3			97.8	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		185.7			131.8			148.3			97.8	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	110.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↑	↗	↖	↕		↖	↗	
Volume (vph)	38	168	118	587	456	572	94	1752	105	421	1498	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1846	1583	1770	1863	1583	1770	3509		1770	3483	
Flt Permitted		0.37	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		696	1583	1770	1863	1583	1770	3509		1770	3483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	168	118	587	456	572	94	1752	105	421	1498	178
RTOR Reduction (vph)	0	0	79	0	0	195	0	5	0	0	9	0
Lane Group Flow (vph)	0	206	39	587	456	377	94	1852	0	421	1667	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		20.0	20.0	17.0	41.0	41.0	5.0	34.0		13.0	42.0	
Effective Green, g (s)		20.0	20.0	17.0	41.0	41.0	5.0	34.0		13.0	42.0	
Actuated g/C Ratio		0.20	0.20	0.17	0.41	0.41	0.05	0.34		0.13	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		139	317	301	764	649	89	1193		230	1463	
v/s Ratio Prot				c0.33	0.24		0.05	c0.53		c0.24	0.48	
v/s Ratio Perm		c0.30	0.02			0.24						
v/c Ratio		1.48	0.12	1.95	0.60	0.58	1.06	1.55		1.83	1.14	
Uniform Delay, d1		40.0	32.8	41.5	23.0	22.9	47.5	33.0		43.5	29.0	
Progression Factor		0.77	0.65	0.72	0.57	0.30	0.91	0.88		1.00	1.00	
Incremental Delay, d2		242.9	0.6	434.8	2.1	2.3	44.7	249.1		390.2	71.5	
Delay (s)		273.6	21.9	464.5	15.1	9.1	87.9	278.0		433.7	100.5	
Level of Service		F	C	F	B	A	F	F		F	F	
Approach Delay (s)		182.0			176.3			268.8			167.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	203.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	91	0	257	394	923	336	14	111	0	0	1053	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	0	257	394	923	336	14	111	0	0	1053	719
RTOR Reduction (vph)	0	0	117	0	0	220	0	0	0	0	0	129
Lane Group Flow (vph)	91	0	140	394	923	116	14	111	0	0	1053	590
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					custom
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0		18.0	25.0	35.0	35.0	5.0	45.5			36.5	45.5
Effective Green, g (s)	8.0		18.0	24.5	35.0	34.5	5.0	45.5			36.0	45.5
Actuated g/C Ratio	0.08		0.18	0.24	0.35	0.34	0.05	0.46			0.36	0.46
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	142		285	434	1239	487	89	848			1274	720
v/s Ratio Prot	0.05			c0.22	c0.26		0.01	0.06			0.30	
v/s Ratio Perm			0.09			0.08						c0.37
v/c Ratio	0.64		0.49	0.91	0.74	0.24	0.16	0.13			0.83	0.82
Uniform Delay, d1	44.6		36.9	36.7	28.6	23.4	45.5	15.8			29.2	23.7
Progression Factor	1.45		1.41	0.99	0.86	1.21	0.68	0.86			1.00	1.00
Incremental Delay, d2	2.0		0.5	18.1	2.6	0.7	1.3	0.1			6.2	10.1
Delay (s)	66.8		52.4	54.3	27.1	29.1	32.5	13.8			35.4	33.8
Level of Service	E		D	D	C	C	C	B			D	C
Approach Delay (s)		56.1			34.0			15.9			34.7	
Approach LOS		E			C			B			C	

Intersection Summary

HCM Average Control Delay	35.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	907	105	67	0	0	0	0	1263	539	648	1577	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99						0.95		1.00	1.00	
Flpb, ped/bikes	0.87	0.91						1.00		1.00	1.00	
Frt	1.00	0.98						0.96		1.00	1.00	
Flt Protected	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (prot)	1406	2880						3204		1770	3539	
Flt Permitted	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (perm)	1406	2880						3204		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	907	105	67	0	0	0	0	1263	539	648	1577	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	453	617	0	0	0	0	0	1754	0	648	1577	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)	27.5	27.5						32.5		29.5	65.5	
Effective Green, g (s)	27.5	27.0						32.0		29.0	65.0	
Actuated g/C Ratio	0.28	0.27						0.32		0.29	0.65	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	387	778						1025		513	2300	
v/s Ratio Prot								c0.55		c0.37	0.45	
v/s Ratio Perm	c0.32	0.21										
v/c Ratio	1.17	1.09dl						1.71		1.26	0.69	
Uniform Delay, d1	36.2	33.9						34.0		35.5	11.0	
Progression Factor	0.82	0.82						0.78		1.19	0.45	
Incremental Delay, d2	79.5	0.8						320.6		119.9	0.2	
Delay (s)	109.3	28.7						347.1		162.2	5.1	
Level of Service	F	C						F		F	A	
Approach Delay (s)		62.6			0.0			347.1			50.8	
Approach LOS		E			A			F			D	

Intersection Summary

HCM Average Control Delay	157.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	124.7%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	182	1201	185	0	0	0	0	0	0	512	1052	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3417								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3417								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	1201	185	0	0	0	0	0	0	512	1052	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1558	0	0	0	0	0	0	0	512	1052	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		49.5								35.5	35.5	
Effective Green, g (s)		49.0								35.0	35.0	
Actuated g/C Ratio		0.49								0.35	0.35	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1674								620	1239	
v/s Ratio Prot		c0.46								0.29	c0.30	
v/s Ratio Perm												
v/c Ratio		0.93								0.83	0.85	
Uniform Delay, d1		23.9								29.7	30.1	
Progression Factor		0.82								0.63	0.63	
Incremental Delay, d2		1.2								6.9	4.2	
Delay (s)		20.7								25.7	23.0	
Level of Service		C								C	C	
Approach Delay (s)		20.7			0.0			0.0			23.9	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 26: I Street & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	120	1242	628	54	1259	0	0	404	1235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.95		1.00	1.00			0.92	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6000		1770	3539			1630	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6000		1770	3539			1630	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	120	1242	628	54	1259	0	0	404	1235
RTOR Reduction (vph)	0	0	0	0	167	0	0	0	0	0	79	461
Lane Group Flow (vph)	0	0	0	0	1824	0	54	1259	0	0	770	329
Confl. Peds. (#/hr)						36						
Turn Type				Perm		custom					custom	
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					13.5		19.0	19.0			7.0	7.0
Effective Green, g (s)					13.0		18.5	18.5			6.5	6.5
Actuated g/C Ratio					0.26		0.37	0.37			0.13	0.13
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1560		655	1309			212	196
v/s Ratio Prot							0.03	c0.36			c0.47	0.22
v/s Ratio Perm					0.30							
v/c Ratio					1.17		0.08	0.96			3.63	1.68
Uniform Delay, d1					18.5		10.2	15.4			21.8	21.8
Progression Factor					0.49		0.82	1.25			1.66	3.67
Incremental Delay, d2					77.9		0.1	8.7			1192.4	320.5
Delay (s)					86.9		8.5	28.0			1228.5	400.4
Level of Service					F		A	C			F	F
Approach Delay (s)		0.0			86.9			27.2			829.4	
Approach LOS		A			F			C			F	

Intersection Summary

HCM Average Control Delay	317.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	150.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	298	1697	0	0	0	0	0	977	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.96
Flpb, ped/bikes				0.97	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1479	4799						5085	1520
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1479	4799						5085	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	298	1697	0	0	0	0	0	977	290
RTOR Reduction (vph)	0	0	0	117	3	0	0	0	0	0	0	103
Lane Group Flow (vph)	0	0	0	151	1724	0	0	0	0	0	977	187
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				17.0	17.0						19.0	19.0
Effective Green, g (s)				16.5	16.5						18.5	18.5
Actuated g/C Ratio				0.33	0.33						0.37	0.37
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				488	1584						1881	562
v/s Ratio Prot											c0.19	
v/s Ratio Perm				0.10	0.36							0.12
v/c Ratio				0.31	1.09						0.52	0.33
Uniform Delay, d1				12.5	16.8						12.3	11.3
Progression Factor				1.00	1.00						1.17	1.88
Incremental Delay, d2				1.6	50.7						0.5	0.8
Delay (s)				14.1	67.4						14.9	22.1
Level of Service				B	E						B	C
Approach Delay (s)		0.0			60.3			0.0			16.6	
Approach LOS		A			E			A			B	

Intersection Summary

HCM Average Control Delay	43.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 6 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	1351	2299	0	0	0	0	0	58	29	294	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.89	0.98						1.00		0.90		
Frt	1.00	1.00						0.96		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1349	4676						1706		1591		
Flt Permitted	0.95	0.99						1.00		0.70		
Satd. Flow (perm)	1349	4676						1706		1173		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1351	2299	0	0	0	0	0	58	29	294	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	892	2758	0	0	0	0	0	80	0	294	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						4 8					
Actuated Green, G (s)	67.5						25.5					
Effective Green, g (s)	67.0						25.0					
Actuated g/C Ratio	0.67						0.25					
Clearance Time (s)	3.5						3.5					
Lane Grp Cap (vph)	904		3133				427		293			
v/s Ratio Prot							0.05					
v/s Ratio Perm	c0.66		0.59						c0.25			
v/c Ratio	0.99		0.88				0.19		1.00			
Uniform Delay, d1	16.1		13.3				29.5		37.5			
Progression Factor	0.32		0.32				1.00		0.96			
Incremental Delay, d2	6.4		0.4				1.0		16.6			
Delay (s)	11.6		4.6				30.5		52.6			
Level of Service	B		A				C		D			
Approach Delay (s)			6.3				0.0		30.5		52.6	
Approach LOS			A				A		C		D	

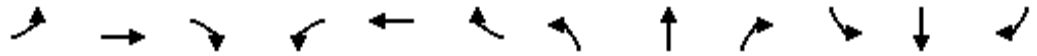
Intersection Summary

HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	150.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 29: J St & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2373	540	0	0	0	0	0	0	323	804	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.91	1.00								0.91	
Frbp, ped/bikes		1.00	0.84								1.00	
Flpb, ped/bikes		1.00	1.00								0.96	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5085	1325								4831	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5085	1325								4831	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2373	540	0	0	0	0	0	0	323	804	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	2373	527	0	0	0	0	0	0	0	1124	0
Confl. Peds. (#/hr)			72							72		
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		61.5	61.5								31.5	
Effective Green, g (s)		61.0	61.5								31.0	
Actuated g/C Ratio		0.61	0.62								0.31	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		3102	815								1498	
v/s Ratio Prot		c0.47										
v/s Ratio Perm			0.40								0.23	
v/c Ratio		0.76	0.65								0.75	
Uniform Delay, d1		14.3	12.3								31.0	
Progression Factor		0.47	0.42								0.84	
Incremental Delay, d2		1.1	2.3								3.0	
Delay (s)		7.7	7.4								29.0	
Level of Service		A	A								C	
Approach Delay (s)		7.7			0.0			0.0			29.0	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1241	186	0	2	0	0	276	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.98	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6283			1863			1833	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6283			1863			1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1241	186	0	2	0	0	276	37
RTOR Reduction (vph)	0	0	0	0	42	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	0	0	0	1385	0	0	2	0	0	306	0
Turn Type				Prot			Perm					
Protected Phases				2				4				8
Permitted Phases					2		4					
Actuated Green, G (s)					28.5			27.5				27.5
Effective Green, g (s)					28.5			27.5				27.5
Actuated g/C Ratio					0.44			0.42				0.42
Clearance Time (s)					4.5			4.5				4.5
Vehicle Extension (s)					3.0			3.0				3.0
Lane Grp Cap (vph)					2755			788				776
v/s Ratio Prot								0.00				c0.17
v/s Ratio Perm					c0.22							
v/c Ratio					0.50			0.00				0.39
Uniform Delay, d1					13.1			10.8				13.0
Progression Factor					0.64			1.00				0.39
Incremental Delay, d2					0.5			0.0				1.3
Delay (s)					8.9			10.8				6.4
Level of Service					A			B				A
Approach Delay (s)		0.0			8.9			10.8				6.4
Approach LOS		A			A			B				A

Intersection Summary

HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Richards Blvd & 12th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	47	699	89	0	2258	0	0	4372	728
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00		0.91			0.81	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583		5085			7544	1583
Flt Permitted				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583		5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	47	699	89	0	2258	0	0	4372	728
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	0	0	0	80
Lane Group Flow (vph)	0	0	0	47	699	43	0	2258	0	0	4372	648
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				33.0	33.0	33.0		89.0			89.0	89.0
Effective Green, g (s)				33.0	33.0	33.0		89.0			89.0	89.0
Actuated g/C Ratio				0.25	0.25	0.25		0.68			0.68	0.68
Clearance Time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)				449	898	402		3481			5165	1084
v/s Ratio Prot					c0.20			0.44			c0.58	
v/s Ratio Perm				0.03		0.03						0.41
v/c Ratio				0.10	0.78	0.11		0.65			0.85	0.60
Uniform Delay, d1				37.2	45.1	37.2		11.6			15.4	10.9
Progression Factor				1.00	1.00	1.00		0.36			1.00	1.00
Incremental Delay, d2				0.5	6.6	0.5		0.8			1.9	2.4
Delay (s)				37.6	51.7	37.8		5.0			17.2	13.4
Level of Service				D	D	D		A			B	B
Approach Delay (s)		0.0			49.4			5.0			16.7	
Approach LOS		A			D			A			B	

Intersection Summary

HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Richards & 12th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↑↑↑	↑	↑					↑↑↑	↑	↑	↑↑↑↑	
Volume (vph)	811	30	549	0	0	0	0	1449	1	32	4388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	811	30	549	0	0	0	0	1449	1	32	4388	0
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	811	30	507	0	0	0	0	1449	1	32	4388	0
Turn Type	custom		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	39.7	39.7	39.7					67.0	67.0	10.3	81.8	
Effective Green, g (s)	39.7	39.7	39.7					67.0	67.0	10.3	81.8	
Actuated g/C Ratio	0.31	0.31	0.31					0.52	0.52	0.08	0.63	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1524	569	483					2621	816	140	4747	
v/s Ratio Prot	0.16	0.02						0.28		0.02	c0.58	
v/s Ratio Perm			c0.32						0.00			
v/c Ratio	0.53	0.05	1.05					0.55	0.00	0.23	0.92	
Uniform Delay, d1	37.4	31.9	45.2					21.3	15.3	56.1	21.4	
Progression Factor	1.00	1.00	1.00					0.38	0.00	0.70	0.30	
Incremental Delay, d2	0.4	0.0	54.8					0.1	0.0	0.4	2.2	
Delay (s)	37.8	31.9	100.0					8.3	0.0	39.5	8.8	
Level of Service	D	C	F					A	A	D	A	
Approach Delay (s)		62.2			0.0			8.2			9.0	
Approach LOS		E			A			A			A	

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 33: Riverfront Dr & 5th Street

2030 +Proj (Res) AM Peak (Mitigated)
 1/10/2007



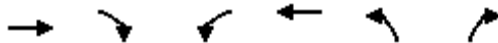
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
34: Riverfront Dr & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)
1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

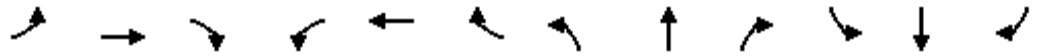
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007

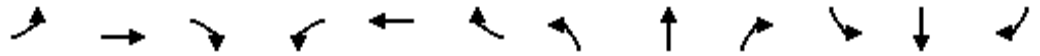


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↖	↖	↖	↖	↖		↕	
Volume (vph)	0	0	211	468	43	15	61	543	454	5	725	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.97	1.00		1.00	1.00	1.00		1.00	
Fr _t		0.85	0.85	1.00	0.96		1.00	1.00	0.85		1.00	
Fl _t Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	3433	1790		1770	1863	1583		1862	
Fl _t Permitted		1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	3433	1790		1770	1863	1583		1857	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	211	468	43	15	61	543	454	5	725	0
RTOR Reduction (vph)	0	89	88	0	12	0	0	0	233	0	0	0
Lane Group Flow (vph)	0	17	17	468	46	0	61	543	221	0	730	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		11.9	11.9	16.1	16.1		3.6	36.5	36.5		29.4	
Effective Green, g (s)		11.9	11.9	16.1	16.1		3.6	36.5	36.5		29.4	
Actuated g/C Ratio		0.16	0.16	0.21	0.21		0.05	0.49	0.49		0.39	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		239	239	737	384		85	907	770		728	
v/s Ratio Prot		c0.01		c0.14	0.03		0.03	c0.29				
v/s Ratio Perm			0.01						0.14		c0.39	
v/c Ratio		0.07	0.07	0.64	0.12		0.72	0.60	0.29		1.00	
Uniform Delay, d ₁		26.8	26.8	26.8	23.7		35.2	13.9	11.5		22.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d ₂		0.1	0.1	1.8	0.1		24.9	2.9	0.9		34.0	
Delay (s)		27.0	27.0	28.6	23.9		60.1	16.9	12.4		56.8	
Level of Service		C	C	C	C		E	B	B		E	
Approach Delay (s)		27.0		28.1			17.4				56.8	
Approach LOS		C		C			B				E	

Intersection Summary

HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

1: Richards Blvd & I-5 SB Off



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖↗	↕						↕	↖↗
Volume (vph)	0	0	0	1140	440	0	0	0	0	0	1796	851
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	1140	440	0	0	0	0	0	1796	851
RTOR Reduction (vph)	0	0	0	17	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	0	0	1123	440	0	0	0	0	0	1796	754
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6						4	
Permitted Phases												4
Actuated Green, G (s)				36.5	36.5						56.0	56.0
Effective Green, g (s)				35.0	36.0						56.0	56.0
Actuated g/C Ratio				0.35	0.36						0.56	0.56
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				1202	1274						1982	786
v/s Ratio Prot				c0.33	0.12						0.51	
v/s Ratio Perm												c0.54
v/c Ratio				0.93	0.35						0.91	0.96
Uniform Delay, d1				31.4	23.4						19.7	20.9
Progression Factor				0.54	0.46						1.00	1.00
Incremental Delay, d2				13.5	0.7						6.8	22.8
Delay (s)				30.3	11.3						26.5	43.7
Level of Service				C	B						C	D
Approach Delay (s)		0.0			25.0			0.0			32.0	
Approach LOS		A			C			A			C	
Intersection Summary												
HCM Average Control Delay			29.4	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				9.0				
Intersection Capacity Utilization			89.7%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

2: Richards Blvd & I-5 NB Off



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	1481	3061	98	602	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1481	3061	98	602	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	21	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1481	3061	77	602	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					65.9	100.0	26.6	26.6				
Effective Green, g (s)					65.9	100.0	26.1	26.1				
Actuated g/C Ratio					0.66	1.00	0.26	0.26				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3351	2708	462	924				
v/s Ratio Prot					0.29		0.04	0.17				
v/s Ratio Perm						c1.13						
v/c Ratio					0.44	1.13	0.17	0.65				
Uniform Delay, d1					8.2	50.0	28.5	32.9				
Progression Factor					0.46	1.00	0.64	0.74				
Incremental Delay, d2					0.1	60.3	0.3	1.9				
Delay (s)					3.9	110.3	18.5	26.1				
Level of Service					A	F	B	C				
Approach Delay (s)		0.0			75.6			25.0			0.0	
Approach LOS		A			E			C			A	

Intersection Summary

HCM Average Control Delay	68.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

3: Richards Blvd & Bercut Dr

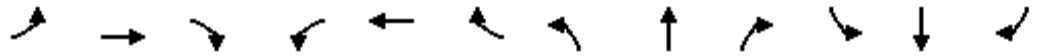


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	13	3501	39	828	221	0	0	215	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	7519		3433	1863			1863	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	7519		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	13	3501	39	828	221	0	0	215	213
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	13	3538	0	828	221	0	0	215	210
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				47.8	47.8		25.6	44.1			14.5	14.5
Effective Green, g (s)				48.4	48.4		25.1	43.6			14.0	14.0
Actuated g/C Ratio				0.48	0.48		0.25	0.44			0.14	0.14
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				742	3639		862	812			261	222
v/s Ratio Prot					c0.47		c0.24	0.12			0.12	
v/s Ratio Perm				0.01								c0.13
v/c Ratio				0.02	0.97		0.96	0.27			0.82	0.94
Uniform Delay, d1				13.4	25.1		37.0	18.0			41.8	42.6
Progression Factor				0.41	0.41		0.42	0.29			1.00	1.00
Incremental Delay, d2				0.0	3.5		17.7	0.0			17.8	44.2
Delay (s)				5.5	13.9		33.3	5.2			59.6	86.8
Level of Service				A	B		C	A			E	F
Approach Delay (s)		0.0			13.9			27.4			73.2	
Approach LOS		A			B			C			E	

Intersection Summary		
HCM Average Control Delay	21.8	HCM Level of Service C
HCM Volume to Capacity ratio	0.96	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 12.5
Intersection Capacity Utilization	88.4%	ICU Level of Service E
Analysis Period (min)	15	

c Critical Lane Group

4: Richards Blvd & 5th Street



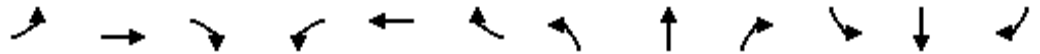
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	252	2434	59	963	645	0	0	178	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1593	6751		3090	1676			1676	1332
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1593	6751		3090	1676			1676	1332
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	252	2434	59	963	645	0	0	178	273
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	4
Lane Group Flow (vph)	0	0	0	252	2489	0	963	645	0	0	178	269
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				40.0	38.7		30.0	53.5			19.5	19.5
Effective Green, g (s)				39.0	39.0		29.5	53.0			19.0	19.5
Actuated g/C Ratio				0.39	0.39		0.29	0.53			0.19	0.20
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				621	2633		912	888			318	260
v/s Ratio Prot				0.16	c0.37		c0.31	0.38			0.11	
v/s Ratio Perm												c0.20
v/c Ratio				0.41	0.95		1.06	0.73			0.56	1.03
Uniform Delay, d1				22.1	29.5		35.2	18.0			36.7	40.2
Progression Factor				0.47	0.60		0.81	0.65			1.00	1.00
Incremental Delay, d2				0.1	6.6		28.2	0.2			1.2	65.1
Delay (s)				10.5	24.3		56.6	11.8			37.9	105.3
Level of Service				B	C		E	B			D	F
Approach Delay (s)		0.0			23.0			38.6			78.7	
Approach LOS		A			C			D			E	

Intersection Summary

HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	123.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

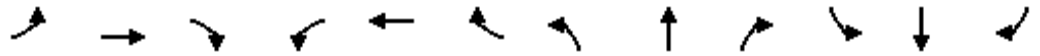
5: Richards Blvd & 7th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	299	1718	110	408	763	0	0	852	891
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6408	1518	1610	3382			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6408	1518	1610	3382			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	299	1718	110	408	763	0	0	852	891
RTOR Reduction (vph)	0	0	0	0	0	69	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	299	1718	41	367	804	0	0	852	891
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				38.7	37.7	37.7	25.4	25.4			25.9	100.0
Effective Green, g (s)				37.7	37.7	37.7	24.9	24.9			25.4	100.0
Actuated g/C Ratio				0.38	0.38	0.38	0.25	0.25			0.25	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				667	2416	572	401	842			899	1583
v/s Ratio Prot				0.17	c0.27		0.23	c0.24			c0.24	
v/s Ratio Perm						0.03						0.56
v/c Ratio				0.45	0.71	0.07	0.92	0.95			0.95	0.56
Uniform Delay, d1				23.4	26.5	20.0	36.5	37.0			36.6	0.0
Progression Factor				0.73	0.71	1.12	0.81	0.81			0.92	1.00
Incremental Delay, d2				0.2	1.7	0.2	22.7	19.0			2.6	0.1
Delay (s)				17.2	20.5	22.5	52.4	49.1			36.2	0.1
Level of Service				B	C	C	D	D			D	A
Approach Delay (s)		0.0			20.1			50.1			17.8	
Approach LOS		A			C			D			B	

Intersection Summary		
HCM Average Control Delay	26.3	HCM Level of Service C
HCM Volume to Capacity ratio	0.85	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service C
Analysis Period (min)	15	
Description: 8 seconds added to lost time to represent LRT.		
c Critical Lane Group		

6: Richards Blvd & 10th Street

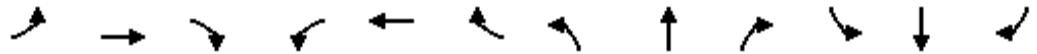


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑↑	↔
Volume (vph)	0	0	0	91	703	28	930	42	0	0	33	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.91
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6371		3433	1863			3539	1434
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6371		3433	1863			3539	1434
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	91	703	28	930	42	0	0	33	169
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	91	726	0	930	42	0	0	33	131
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				42.2	41.2		33.8	50.8			13.0	13.0
Effective Green, g (s)				41.7	41.7		33.3	50.3			12.5	12.5
Actuated g/C Ratio				0.42	0.42		0.33	0.50			0.12	0.12
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				738	2657		1143	937			442	179
v/s Ratio Prot				0.05	c0.11		c0.27	0.02			0.01	
v/s Ratio Perm												c0.09
v/c Ratio				0.12	0.27		0.81	0.04			0.07	0.73
Uniform Delay, d1				17.9	19.2		30.5	12.6			38.6	42.1
Progression Factor				0.78	0.84		1.00	1.00			1.00	1.00
Incremental Delay, d2				0.0	0.2		4.5	0.0			0.0	11.8
Delay (s)				14.1	16.3		35.1	12.6			38.7	54.0
Level of Service				B	B		D	B			D	D
Approach Delay (s)		0.0			16.1			34.1			51.5	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

7: Richard Blvd & Dos Rios St



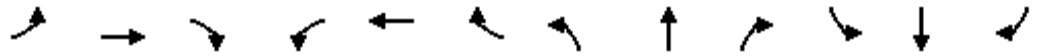
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			1.00			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3514		1770	3455			1846			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			1.00	
Satd. Flow (perm)	1770	3514		1770	3455			1725			1783	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
RTOR Reduction (vph)	0	5	0	0	9	0	0	0	0	0	23	0
Lane Group Flow (vph)	79	792	0	109	1541	0	0	204	0	0	128	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	4.2	28.3		7.3	31.4			20.9			20.9	
Effective Green, g (s)	4.7	28.8		7.8	31.9			20.4			20.4	
Actuated g/C Ratio	0.07	0.41		0.11	0.46			0.29			0.29	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	119	1446		197	1574			503			520	
v/s Ratio Prot	0.04	0.23		c0.06	c0.45						0.07	
v/s Ratio Perm								c0.12				
v/c Ratio	0.66	0.55		0.55	0.98			0.41			0.25	
Uniform Delay, d1	31.9	15.6		29.5	18.7			19.9			18.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	13.1	0.2		3.3	17.6			2.4			1.1	
Delay (s)	45.0	15.9		32.8	36.3			22.3			20.0	
Level of Service	D	B		C	D			C			C	
Approach Delay (s)		18.5			36.1			22.3			20.0	
Approach LOS		B			D			C			C	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

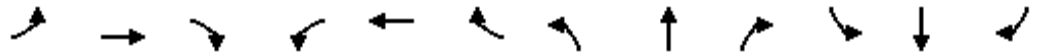
9: Bannon St & I-5 SB Off



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	1022	1066	0	0	0	0	0	0	1426	1511	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1022	1066	0	0	0	0	0	0	1426	1511	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	33	0	0
Lane Group Flow (vph)	0	1022	1066	0	0	0	0	0	0	1393	1511	0
Turn Type			Free							Split		
Protected Phases		4								2	2	
Permitted Phases			Free									
Actuated Green, G (s)		34.4	100.0							56.6	56.6	
Effective Green, g (s)		34.4	100.0							56.6	56.6	
Actuated g/C Ratio		0.34	1.00							0.57	0.57	
Clearance Time (s)		4.5								4.5	4.5	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		1217	1583							2824	2003	
v/s Ratio Prot		c0.29								0.28	c0.43	
v/s Ratio Perm			0.67									
v/c Ratio		0.84	0.67							0.49	0.75	
Uniform Delay, d1		30.3	0.0							13.1	16.4	
Progression Factor		1.00	1.00							0.86	0.86	
Incremental Delay, d2		5.3	2.3							0.2	1.0	
Delay (s)		35.5	2.3							11.5	15.2	
Level of Service		D	A							B	B	
Approach Delay (s)		18.6			0.0			0.0			13.4	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	129.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

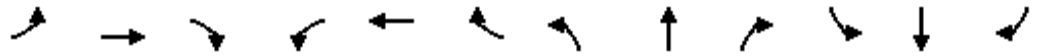
10: Bannon St & I-5 NB Off



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↘	↑↑↑↑						↑	↗↗↗					
Volume (vph)	593	1855	0	0	0	0	0	52	1385	0	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0	4.0						4.0	4.0					
Lane Util. Factor	1.00	0.81						1.00	0.76					
Frt	1.00	1.00						1.00	0.85					
Flt Protected	0.95	1.00						1.00	1.00					
Satd. Flow (prot)	1770	7544						1863	3610					
Flt Permitted	0.95	1.00						1.00	1.00					
Satd. Flow (perm)	1770	7544						1863	3610					
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	593	1855	0	0	0	0	0	52	1385	0	0	0		
RTOR Reduction (vph)	321	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	272	1855	0	0	0	0	0	52	1385	0	0	0		
Turn Type	Split						Prot							
Protected Phases	2		2								1 4		1 4	
Permitted Phases														
Actuated Green, G (s)	33.2		33.2								58.8		58.8	
Effective Green, g (s)	33.2		33.2								58.8		58.8	
Actuated g/C Ratio	0.33		0.33								0.59		0.59	
Clearance Time (s)	4.0		4.0											
Vehicle Extension (s)	3.0		3.0											
Lane Grp Cap (vph)	588		2505								1095		2123	
v/s Ratio Prot	0.15		c0.25								0.03		c0.38	
v/s Ratio Perm														
v/c Ratio	0.46		0.74								0.05		0.65	
Uniform Delay, d1	26.4		29.6								8.7		13.8	
Progression Factor	0.85		0.88								1.00		1.00	
Incremental Delay, d2	2.1		1.6								0.0		0.7	
Delay (s)	24.4		27.6								8.7		14.5	
Level of Service	C		C								A		B	
Approach Delay (s)			26.9		0.0				14.3				0.0	
Approach LOS			C		A				B				A	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

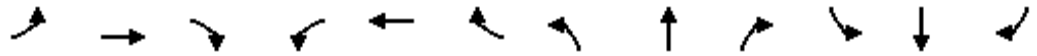
11: Bannon St & Bercut Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	2396	700	0	0	0	0	806	47	126	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00	
Frt	1.00	1.00	0.85					0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	6408	1583					3510		3433	1863	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	6408	1583					3510		3433	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	2396	700	0	0	0	0	806	47	126	22	0
RTOR Reduction (vph)	0	0	321	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	144	2396	379	0	0	0	0	849	0	126	22	0
Turn Type	Split		Perm					Prot				
Protected Phases	6	6						8		7	4	
Permitted Phases			6									
Actuated Green, G (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Effective Green, g (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Actuated g/C Ratio	0.54	0.54	0.54					0.28		0.06	0.38	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	959	3473	858					976		206	704	
v/s Ratio Prot	0.08	c0.37						c0.24		c0.04	0.01	
v/s Ratio Perm			0.24									
v/c Ratio	0.15	0.69	0.44					0.87		0.61	0.03	
Uniform Delay, d1	11.4	16.8	13.8					34.4		45.9	19.6	
Progression Factor	0.71	0.71	0.55					0.72		0.65	1.38	
Incremental Delay, d2	0.2	0.8	1.2					6.9		3.4	0.0	
Delay (s)	8.3	12.8	8.8					31.5		33.5	26.9	
Level of Service	A	B	A					C		C	C	
Approach Delay (s)		11.7			0.0			31.5			32.5	
Approach LOS		B			A			C			C	

Intersection Summary		
HCM Average Control Delay	16.4	HCM Level of Service
HCM Volume to Capacity ratio	0.74	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	72.7%	12.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		C

12: Bannon St & 6th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	629	1498	634	0	0	0	0	1265	665	160	767	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.96						0.99	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6122						3358	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6122						3358	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	629	1498	634	0	0	0	0	1265	665	160	767	0
RTOR Reduction (vph)	0	76	0	0	0	0	0	5	52	0	0	0
Lane Group Flow (vph)	629	2056	0	0	0	0	0	1346	527	160	767	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Effective Green, g (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Actuated g/C Ratio	0.34	0.34						0.40	0.40	0.14	0.57	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	596	2063						1326	569	244	2028	
v/s Ratio Prot		0.34						c0.40		c0.09	0.22	
v/s Ratio Perm	c0.36								0.37			
v/c Ratio	1.06	1.04dr						1.02	0.93	0.66	0.38	
Uniform Delay, d1	33.1	33.1						30.2	28.9	40.8	11.6	
Progression Factor	0.55	0.53						0.46	0.36	1.19	1.05	
Incremental Delay, d2	47.8	16.4						22.3	15.1	6.1	0.1	
Delay (s)	66.0	33.9						36.2	25.5	54.7	12.4	
Level of Service	E	C						D	C	D	B	
Approach Delay (s)		41.2			0.0			33.0			19.7	
Approach LOS		D			A			C			B	

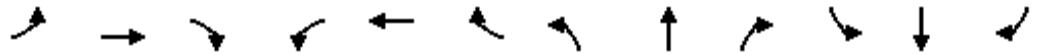
Intersection Summary

HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	123.1%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

13: Bannon St & 7th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	492	1708	163	0	0	0	0	462	1156	230	541	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	1708	163	0	0	0	0	462	1156	230	541	0
RTOR Reduction (vph)	0	0	99	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	492	1708	64	0	0	0	0	462	1156	230	541	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	39.3	39.3	39.3					28.7	100.0	18.5	51.7	
Effective Green, g (s)	39.3	39.3	39.3					28.7	100.0	18.5	51.7	
Actuated g/C Ratio	0.39	0.39	0.39					0.29	1.00	0.18	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	696	1998	622					1016	1583	327	1830	
v/s Ratio Prot		c0.34						0.13		0.13	0.15	
v/s Ratio Perm	0.28		0.04						c0.73			
v/c Ratio	0.71	0.85	0.10					0.45	0.73	0.70	0.30	
Uniform Delay, d1	25.5	27.7	19.2					29.2	0.0	38.2	13.8	
Progression Factor	0.49	0.50	0.07					1.53	1.00	0.86	0.48	
Incremental Delay, d2	1.2	1.4	0.0					0.7	1.5	3.9	0.2	
Delay (s)	13.5	15.1	1.3					45.4	1.5	36.8	6.9	
Level of Service	B	B	A					D	A	D	A	
Approach Delay (s)		13.8			0.0			14.0			15.8	
Approach LOS		B			A			B			B	

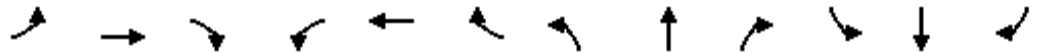
Intersection Summary

HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.5
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

14: N B Street & 6th Street

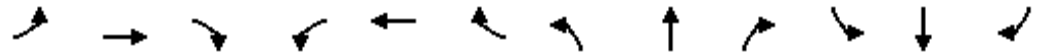


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	144	271	315	132	72	161	1813	167	12	1095	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.64	1.00	1.00	0.62	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1188	1863	1583	1152	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	52	144	271	315	132	72	161	1813	167	12	1095	180
RTOR Reduction (vph)	0	0	142	0	0	50	0	0	42	0	0	89
Lane Group Flow (vph)	52	144	129	315	132	22	161	1813	125	12	1095	91
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	29.9	29.9	29.9	29.9	29.9	29.9	17.8	56.1	56.1	1.0	39.3	39.3
Effective Green, g (s)	29.9	29.9	29.9	29.9	29.9	29.9	17.8	56.1	56.1	1.0	39.3	39.3
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30	0.30	0.18	0.56	0.56	0.01	0.39	0.39
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	355	557	473	344	557	473	315	1985	888	18	1391	622
v/s Ratio Prot		0.08			0.07		c0.09	c0.51		0.01	0.31	
v/s Ratio Perm	0.04		0.08	c0.27		0.01			0.08			0.06
v/c Ratio	0.15	0.26	0.27	0.92	0.24	0.05	0.51	0.91	0.14	0.67	0.79	0.15
Uniform Delay, d1	25.7	26.6	26.7	33.8	26.4	24.9	37.2	19.8	10.5	49.3	26.7	19.5
Progression Factor	1.00	1.00	1.00	0.95	0.89	1.65	0.72	0.26	0.03	0.84	0.80	0.44
Incremental Delay, d2	0.2	0.2	0.3	27.6	0.2	0.0	0.7	4.5	0.2	52.6	3.5	0.4
Delay (s)	25.9	26.9	27.1	59.8	23.7	41.2	27.6	9.6	0.5	94.2	24.7	9.0
Level of Service	C	C	C	E	C	D	C	A	A	F	C	A
Approach Delay (s)		26.9			48.0			10.2			23.1	
Approach LOS		C			D			B			C	

Intersection Summary

HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

15: N B Street & 7th Street

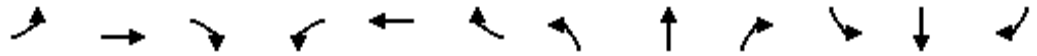


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	100	39	477	284	14	90	1491	591	158	499	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3494	1900
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3494	1900
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	100	39	477	284	14	90	1491	591	158	499	46
RTOR Reduction (vph)	0	0	33	0	0	10	0	0	150	0	6	0
Lane Group Flow (vph)	30	100	6	477	284	4	90	1491	441	158	539	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.6	14.4	14.4	16.0	26.8	26.8	9.1	43.2	59.2	8.4	42.5	
Effective Green, g (s)	3.6	14.4	14.4	16.0	26.8	26.8	9.1	43.2	59.2	8.4	42.5	
Actuated g/C Ratio	0.04	0.14	0.14	0.16	0.27	0.27	0.09	0.43	0.59	0.08	0.42	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	64	510	228	549	948	424	161	1529	1008	149	1485	
v/s Ratio Prot	c0.02	0.03		c0.14	c0.08		0.05	c0.42	0.07	c0.09	0.15	
v/s Ratio Perm			0.00			0.00			0.21			
v/c Ratio	0.47	0.20	0.02	0.87	0.30	0.01	0.56	0.98	0.44	1.06	0.36	
Uniform Delay, d1	47.3	37.7	36.8	41.0	29.1	26.9	43.5	27.9	11.2	45.8	19.5	
Progression Factor	0.76	0.81	0.65	1.00	1.00	1.00	1.07	0.70	0.13	0.60	0.22	
Incremental Delay, d2	5.3	0.2	0.0	13.7	0.2	0.0	3.1	14.9	0.2	89.8	0.7	
Delay (s)	41.0	30.8	23.8	54.7	29.3	26.9	49.6	34.3	1.7	117.3	4.9	
Level of Service	D	C	C	D	C	C	D	C	A	F	A	
Approach Delay (s)		31.0			44.9			26.1			30.2	
Approach LOS		C			D			C			C	

Intersection Summary

HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

16: N B Street & 12th Street

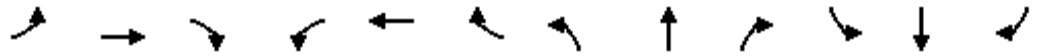


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1428	515	299	58	182	149	0	0	0	111	3248	1150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3300						7532	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3300						7532	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1428	515	299	58	182	149	0	0	0	111	3248	1150
RTOR Reduction (vph)	0	0	203	0	117	0	0	0	0	0	0	121
Lane Group Flow (vph)	1428	515	96	58	214	0	0	0	0	0	3359	1029
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	22.0	22.0	22.0	20.4	20.4						69.1	91.1
Effective Green, g (s)	22.0	22.0	22.0	20.4	20.4						72.1	91.1
Actuated g/C Ratio	0.17	0.17	0.17	0.16	0.16						0.55	0.70
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	844	599	246	278	518						4177	1231
v/s Ratio Prot	c0.29	0.15		0.03	c0.06							c0.14
v/s Ratio Perm			0.07								0.45	0.51
v/c Ratio	1.69	0.86	0.39	0.21	0.41						0.80	0.84
Uniform Delay, d1	54.0	52.5	48.0	47.8	49.4						23.3	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.76	1.22
Incremental Delay, d2	316.5	12.9	2.1	0.8	1.1						0.5	1.8
Delay (s)	370.5	65.4	50.2	48.5	50.5						41.5	18.9
Level of Service	F	E	D	D	D						D	B
Approach Delay (s)		257.7			50.2			0.0			35.8	
Approach LOS		F			D			A			D	

Intersection Summary

HCM Average Control Delay	106.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

17: Canal St & 6th Street

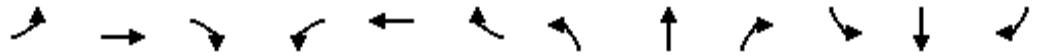


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	119	185	356	37	10	16	194	1889	10	162	1219	156	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95		
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00		1.00	0.98		
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1863	1583	1770	1691		1770	3536		1770	3479		
Flt Permitted	0.74	1.00	1.00	0.44	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (perm)	1379	1863	1583	824	1691		1770	3536		1770	3479		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	119	185	356	37	10	16	194	1889	10	162	1219	156	
RTOR Reduction (vph)	0	0	249	0	13	0	0	0	0	0	9	0	
Lane Group Flow (vph)	119	185	107	37	13	0	194	1899	0	162	1366	0	
Turn Type	Perm		Perm	Perm				Prot			Prot		
Protected Phases			4			8			5	2			
Permitted Phases	4			4	8						1	6	
Actuated Green, G (s)	16.4	16.4	16.4	16.4	16.4			14.1	58.9			11.2	56.0
Effective Green, g (s)	16.4	16.4	16.4	16.4	16.4			14.1	58.9			11.2	56.0
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16			0.14	0.59			0.11	0.56
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	226	306	260	135	277			250	2083			198	1948
v/s Ratio Prot	c0.10				0.01			0.11	c0.54			0.09	c0.39
v/s Ratio Perm	0.09			0.07	0.04								
v/c Ratio	0.53	0.60	0.41	0.27	0.05			0.78	0.91			0.82	0.70
Uniform Delay, d1	38.2	38.8	37.5	36.6	35.2			41.4	18.2			43.4	15.9
Progression Factor	0.83	0.83	0.77	0.56	0.46			1.00	1.00			0.78	0.45
Incremental Delay, d2	2.1	3.2	1.0	1.0	0.1			14.0	7.5			17.1	1.6
Delay (s)	33.7	35.5	30.0	21.5	16.3			55.4	25.7			50.9	8.8
Level of Service	C	D	C	C	B			E	C			D	A
Approach Delay (s)	32.2				19.4			28.5				13.2	
Approach LOS	C				B			C				B	

Intersection Summary

HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

18: Canal St & 7th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	277	40	38	89	3	9	74	1611	0	63	1074	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3527	
Flt Permitted	0.76	1.00	1.00	0.73	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1408	1863	1583	1362	1863	1583	1770	3539		1770	3527	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	277	40	38	89	3	9	74	1611	0	63	1074	26
RTOR Reduction (vph)	0	0	30	0	0	7	0	0	0	0	1	0
Lane Group Flow (vph)	277	40	8	89	3	2	74	1611	0	63	1099	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.4	61.3		4.1	58.5	
Effective Green, g (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.4	61.3		4.1	58.5	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.07	0.61		0.04	0.58	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	304	402	342	294	402	342	131	2169		73	2063	
v/s Ratio Prot		0.02			0.00		0.04	c0.46		0.04	c0.31	
v/s Ratio Perm	c0.20		0.01	0.07		0.00						
v/c Ratio	0.91	0.10	0.02	0.30	0.01	0.01	0.56	0.74		0.86	0.53	
Uniform Delay, d1	38.3	31.4	30.9	32.9	30.8	30.8	44.7	13.7		47.7	12.5	
Progression Factor	0.52	0.34	0.73	1.00	1.00	1.00	1.00	1.00		0.87	0.69	
Incremental Delay, d2	24.0	0.1	0.0	0.6	0.0	0.0	5.5	2.3		54.8	0.9	
Delay (s)	43.8	10.9	22.6	33.5	30.8	30.8	50.2	16.1		96.0	9.5	
Level of Service	D	B	C	C	C	C	D	B		F	A	
Approach Delay (s)		37.8			33.1			17.6			14.2	
Approach LOS		D			C			B			B	































Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

19: Big Four Blvd & 6th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	531	562	403	541	199	598	1755	839	228	1366	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	334	531	562	403	541	199	598	1755	839	228	1366	182
RTOR Reduction (vph)	0	28	213	0	0	95	0	0	152	0	0	43
Lane Group Flow (vph)	334	728	124	306	638	104	598	1755	687	228	1366	139
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	29.5	29.5	29.5	25.5	25.5	25.5	22.5	67.5	67.5	9.5	54.5	54.5
Effective Green, g (s)	29.5	29.5	29.5	25.5	25.5	25.5	22.5	67.5	67.5	9.5	54.5	54.5
Actuated g/C Ratio	0.20	0.20	0.20	0.17	0.17	0.17	0.15	0.45	0.45	0.06	0.36	0.36
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	348	637	283	274	572	269	515	1593	712	217	1286	575
v/s Ratio Prot	0.19	c0.22		c0.19	0.19		0.17	c0.50		0.07	c0.39	
v/s Ratio Perm			0.09			0.07			0.43			0.09
v/c Ratio	0.96	1.14	0.44	1.12	1.12	0.38	1.16	1.10	0.96	1.05	1.06	0.24
Uniform Delay, d1	59.7	60.2	53.0	62.2	62.2	55.3	63.8	41.2	40.1	70.2	47.8	33.3
Progression Factor	1.00	1.00	1.00	0.24	0.24	0.31	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	37.2	81.9	1.1	57.7	54.5	0.1	92.3	55.8	26.1	75.1	43.4	1.0
Delay (s)	96.8	142.2	54.1	72.4	69.5	17.1	156.1	97.1	66.1	145.3	91.2	34.3
Level of Service	F	F	D	E	E	B	F	F	E	F	F	C
Approach Delay (s)		110.8			61.1			100.0			92.3	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM Average Control Delay			94.3									F
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			150.0								13.5	
Intersection Capacity Utilization			108.5%									G
Analysis Period (min)			15									
c Critical Lane Group												

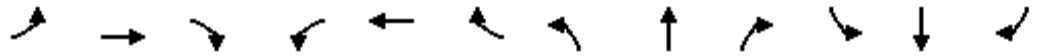
20: Big Four Blvd & 7th Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 			 	
Volume (vph)	1232	915	39	615	606	0	472	931	470	49	962	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1232	915	39	615	606	0	472	931	470	49	962	7
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	162	0	0	2
Lane Group Flow (vph)	1232	915	25	615	606	0	472	931	308	49	962	5
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	47.5	41.6	41.6	27.9	22.0		17.8	49.7	49.7	6.3	38.2	38.2
Effective Green, g (s)	47.5	41.6	41.6	27.9	22.0		17.8	49.7	49.7	6.3	38.2	38.2
Actuated g/C Ratio	0.32	0.28	0.28	0.19	0.15		0.12	0.33	0.33	0.04	0.25	0.25
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1087	981	439	639	519		407	1173	525	74	901	403
v/s Ratio Prot	c0.36	0.26		0.18	c0.17		c0.14	0.26		0.03	c0.27	
v/s Ratio Perm			0.02						0.19			0.00
v/c Ratio	1.13	0.93	0.06	0.96	1.17		1.16	0.79	0.59	0.66	1.07	0.01
Uniform Delay, d1	51.2	52.8	39.8	60.5	64.0		66.1	45.5	41.6	70.8	55.9	41.8
Progression Factor	1.06	0.71	0.53	1.00	1.00		0.84	0.62	0.70	1.00	1.00	1.00
Incremental Delay, d2	67.9	10.6	0.0	26.4	94.7		74.6	0.5	0.4	20.0	49.8	0.1
Delay (s)	122.2	48.0	21.2	86.9	158.7		130.1	28.6	29.5	90.9	105.7	41.8
Level of Service	F	D	C	F	F		F	C	C	F	F	D
Approach Delay (s)		89.4			122.5			54.4			104.5	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	87.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

21: F Street & 7th Street

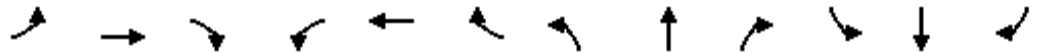


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Volume (vph)	314	200	173	96	221	418	0	823	118	664	979	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.93		1.00	0.90			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1770	1733		1770	1680			3473			3435	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (perm)	1770	1733		1770	1680			3473			3435	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	314	200	173	96	221	418	0	823	118	664	979	133
RTOR Reduction (vph)	0	21	0	0	45	0	0	7	0	0	4	0
Lane Group Flow (vph)	314	352	0	96	594	0	0	934	0	0	1772	0
Turn Type	Prot		Prot		Split			Split				
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	16.0	38.4		10.6	33.0			27.0			58.0	
Effective Green, g (s)	16.0	38.4		10.6	33.0			27.0			58.0	
Actuated g/C Ratio	0.11	0.26		0.07	0.22			0.18			0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	189	444		125	370			625			1328	
v/s Ratio Prot	c0.18	0.20		0.05	c0.35			c0.27			c0.52	
v/s Ratio Perm												
v/c Ratio	1.66	0.79		0.77	1.60			1.49			1.33	
Uniform Delay, d1	67.0	52.1		68.5	58.5			61.5			46.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.36	
Incremental Delay, d2	319.9	9.4		24.2	284.5			230.6			152.8	
Delay (s)	386.9	61.5		92.6	343.0			292.1			169.4	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		210.2			310.3			292.1			169.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	229.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	145.1%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

22: G Street & 6th Street



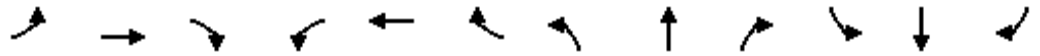
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	104	196	261	831	534	798	39	1871	37	370	2987	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1831	1583	1770	1863	1583	1770	3529		1770	3520	
Flt Permitted		0.68	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1261	1583	1770	1863	1583	1770	3529		1770	3520	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	196	261	831	534	798	39	1871	37	370	2987	113
RTOR Reduction (vph)	0	0	73	0	0	135	0	1	0	0	3	0
Lane Group Flow (vph)	0	300	188	831	534	663	39	1907	0	370	3097	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		20.0	20.0	17.0	41.0	41.0	5.0	38.0		9.0	42.0	
Effective Green, g (s)		20.0	20.0	17.0	41.0	41.0	5.0	38.0		9.0	42.0	
Actuated g/C Ratio		0.20	0.20	0.17	0.41	0.41	0.05	0.38		0.09	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		252	317	301	764	649	89	1341		159	1478	
v/s Ratio Prot				c0.47	0.29		0.02	c0.54		0.21	c0.88	
v/s Ratio Perm		c0.24	0.12			0.42						
v/c Ratio		1.19	0.59	2.76	0.70	1.02	0.44	1.42		2.33	2.10	
Uniform Delay, d1		40.0	36.3	41.5	24.4	29.5	46.1	31.0		45.5	29.0	
Progression Factor		0.91	0.85	1.27	0.75	0.61	1.39	0.14		1.00	1.00	
Incremental Delay, d2		116.7	7.5	797.7	3.1	32.3	1.4	190.3		616.4	495.3	
Delay (s)		153.2	38.4	850.3	21.3	50.3	65.7	194.6		661.9	524.3	
Level of Service		F	D	F	C	D	E	F		F	F	
Approach Delay (s)		99.8			350.5			192.0			539.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	375.6	HCM Level of Service	F
HCM Volume to Capacity ratio	2.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	165.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

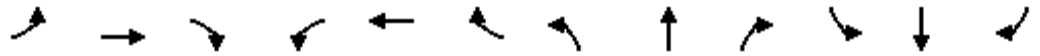
23: G Street & 7th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	0	351	194	1035	503	26	230	0	0	638	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	280	0	351	194	1035	503	26	230	0	0	638	760
RTOR Reduction (vph)	0	0	170	0	0	294	0	0	0	0	0	283
Lane Group Flow (vph)	280	0	181	194	1035	209	26	230	0	0	638	477
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		27.0	19.0	30.0	30.0	5.0	42.5			33.5	33.5
Effective Green, g (s)	16.0		27.0	18.5	30.0	29.5	5.0	42.5			33.0	33.5
Actuated g/C Ratio	0.16		0.27	0.18	0.30	0.29	0.05	0.42			0.33	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		427	327	1062	417	89	792			1168	530
v/s Ratio Prot	c0.16			c0.11	c0.29		0.01	c0.12			0.18	
v/s Ratio Perm			0.11			0.15						c0.30
v/c Ratio	0.99		0.42	0.59	0.97	0.50	0.29	0.29			0.55	0.90
Uniform Delay, d1	41.9		30.1	37.3	34.6	29.2	45.8	18.9			27.4	31.7
Progression Factor	0.97		0.99	1.07	0.91	1.02	1.38	1.03			1.00	1.00
Incremental Delay, d2	13.8		0.3	6.0	18.9	3.3	2.7	0.3			1.8	21.0
Delay (s)	54.3		30.1	45.9	50.4	32.9	65.7	19.7			29.2	52.6
Level of Service	D		C	D	D	C	E	B			C	D
Approach Delay (s)		40.8			44.8			24.3			41.9	
Approach LOS		D			D			C			D	

Intersection Summary		
HCM Average Control Delay	41.9	HCM Level of Service D
HCM Volume to Capacity ratio	0.94	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 19.5
Intersection Capacity Utilization	89.8%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

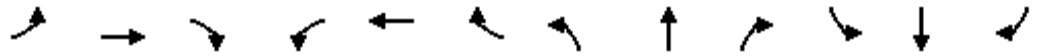
24: H Street & 6th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	442	315	122	0	0	0	0	1617	40	1178	2909	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.97						1.00		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3151						3512		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3151						3512		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	442	315	122	0	0	0	0	1617	40	1178	2909	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	292	583	0	0	0	0	0	1655	0	1178	2909	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	17.0	17.0						32.0		40.5	76.0	
Effective Green, g (s)	17.0	16.5						31.5		40.0	75.5	
Actuated g/C Ratio	0.17	0.16						0.32		0.40	0.76	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	274	520						1106		708	2672	
v/s Ratio Prot	0.18	c0.18						c0.47		c0.67	0.82	
v/s Ratio Perm												
v/c Ratio	1.07	1.12						1.50		1.66	1.09	
Uniform Delay, d1	41.5	41.8						34.2		30.0	12.2	
Progression Factor	0.63	0.63						0.58		0.65	1.14	
Incremental Delay, d2	63.7	71.3						223.8		299.3	40.6	
Delay (s)	89.8	97.5						243.7		318.7	54.6	
Level of Service	F	F						F		F	D	
Approach Delay (s)		94.9			0.0			243.7			130.8	
Approach LOS		F			A			F			F	

Intersection Summary		
HCM Average Control Delay	154.2	HCM Level of Service
HCM Volume to Capacity ratio	1.50	F
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	139.0%	12.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		H

25: H Street & 7th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	259	1206	338	0	0	0	0	0	0	399	604	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.98								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.97								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3353								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3353								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	259	1206	338	0	0	0	0	0	0	399	604	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1783	0	0	0	0	0	0	0	399	604	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		56.5								28.5	28.5	
Effective Green, g (s)		56.0								28.0	28.0	
Actuated g/C Ratio		0.56								0.28	0.28	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1878								496	991	
v/s Ratio Prot		c0.53								c0.23	0.17	
v/s Ratio Perm												
v/c Ratio		0.95								0.80	0.61	
Uniform Delay, d1		20.7								33.5	31.3	
Progression Factor		0.62								1.15	1.16	
Incremental Delay, d2		1.5								11.0	2.3	
Delay (s)		14.4								49.6	38.6	
Level of Service		B								D	D	
Approach Delay (s)		14.4			0.0			0.0			43.0	
Approach LOS		B			A			A			D	

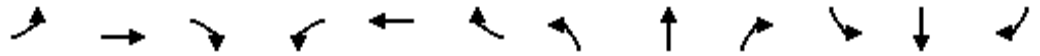
Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 8 seconds lost time added to represent LRT.

c Critical Lane Group

26: I Street & 6th Street



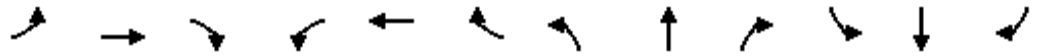
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↖	↑↑			↗	↖
Volume (vph)	0	0	0	368	2062	300	328	1175	0	0	785	2444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.92	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6206		1770	3539			1629	1504
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6206		1770	3539			1629	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	368	2062	300	328	1175	0	0	785	2444
RTOR Reduction (vph)	0	0	0	0	22	0	0	0	0	0	40	48
Lane Group Flow (vph)	0	0	0	0	2708	0	328	1175	0	0	1625	1516
Confl. Peds. (#/hr)							36					
Turn Type					Perm		Split					Prot
Protected Phases						4	1	1			2	2
Permitted Phases					4							
Actuated Green, G (s)					26.5		23.5	23.5			39.5	39.5
Effective Green, g (s)					26.0		23.0	23.0			39.0	39.0
Actuated g/C Ratio					0.26		0.23	0.23			0.39	0.39
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1614		407	814			635	587
v/s Ratio Prot							0.19	c0.33			1.00	c1.01
v/s Ratio Perm					0.44							
v/c Ratio					1.68		0.81	1.44			2.56	2.58
Uniform Delay, d1					37.0		36.4	38.5			30.5	30.5
Progression Factor					0.71		1.18	1.18			0.80	0.79
Incremental Delay, d2					306.4		6.7	202.4			701.8	712.5
Delay (s)					332.6		49.6	247.6			726.1	736.6
Level of Service					F		D	F			F	F
Approach Delay (s)		0.0			332.6			204.4			731.2	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	479.3	HCM Level of Service	F
HCM Volume to Capacity ratio	2.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	214.9%	ICU Level of Service	H
Analysis Period (min)	15		

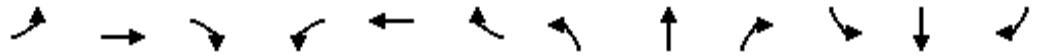
c Critical Lane Group

27: I Street & 7th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	108	2387	0	0	0	0	0	1308	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.93
Flpb, ped/bikes				0.94	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1435	4804						5085	1476
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1435	4804						5085	1476
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	108	2387	0	0	0	0	0	1308	370
RTOR Reduction (vph)	0	0	0	2	0	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	95	2398	0	0	0	0	0	1308	367
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				58.5	58.5						34.5	34.5
Effective Green, g (s)				58.0	58.0						34.0	34.0
Actuated g/C Ratio				0.58	0.58						0.34	0.34
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				832	2786						1729	502
v/s Ratio Prot											c0.26	
v/s Ratio Perm				0.07	0.50							0.25
v/c Ratio				0.11	0.86						0.76	0.73
Uniform Delay, d1				9.4	17.6						29.3	29.0
Progression Factor				1.00	1.00						0.78	0.78
Incremental Delay, d2				0.3	3.8						2.9	8.5
Delay (s)				9.7	21.4						25.8	31.0
Level of Service				A	C						C	C
Approach Delay (s)		0.0			20.9			0.0			26.9	
Approach LOS		A			C			A			C	
Intersection Summary												
HCM Average Control Delay			23.3		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			72.3%		ICU Level of Service			C				
Analysis Period (min)			15									
c Critical Lane Group												

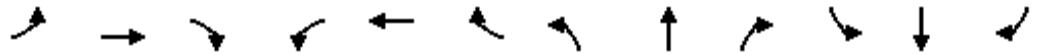
28: J St & 6th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	1035	1743	0	0	0	0	0	244	290	760	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.94	0.99						1.00		0.98		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1435	4718						1663		1732		
Flt Permitted	0.95	0.99						1.00		0.30		
Satd. Flow (perm)	1435	4718						1663		547		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1035	1743	0	0	0	0	0	244	290	760	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	673	2105	0	0	0	0	0	533	0	760	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	20.5	20.5						22.5		22.5		
Effective Green, g (s)	20.0	20.0						22.0		22.0		
Actuated g/C Ratio	0.40	0.40						0.44		0.44		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	574	1887						732		241		
v/s Ratio Prot								0.32				
v/s Ratio Perm	c0.47	0.45								c1.39		
v/c Ratio	1.17	1.12						0.73		3.15		
Uniform Delay, d1	15.0	15.0						11.5		14.0		
Progression Factor	1.35	1.36						1.00		0.94		
Incremental Delay, d2	79.5	52.8						6.3		970.1		
Delay (s)	99.8	73.3						17.8		983.2		
Level of Service	F	E						B		F		
Approach Delay (s)		79.7			0.0			17.8			983.2	
Approach LOS		E			A			B			F	

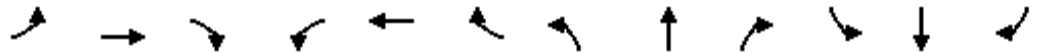
Intersection Summary			
HCM Average Control Delay	240.2	HCM Level of Service	F
HCM Volume to Capacity ratio	2.21		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	214.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

29: J St & 7th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2191	780	0	0	0	0	0	0	261	1026	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.91	1.00								0.91	
Frbp, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5085	1445								4969	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5085	1445								4969	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2191	780	0	0	0	0	0	0	261	1026	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2191	772	0	0	0	0	0	0	0	1285	0
Confl. Peds. (#/hr)			72								72	
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		26.0	26.0								17.0	
Effective Green, g (s)		25.5	26.0								16.5	
Actuated g/C Ratio		0.51	0.52								0.33	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		2593	751								1640	
v/s Ratio Prot		0.43										
v/s Ratio Perm			c0.53								0.26	
v/c Ratio		0.84	1.03								0.78	
Uniform Delay, d1		10.5	12.0								15.1	
Progression Factor		0.59	0.57								0.82	
Incremental Delay, d2		0.3	18.2								2.7	
Delay (s)		6.5	25.0								15.1	
Level of Service		A	C								B	
Approach Delay (s)		11.4			0.0			0.0			15.1	
Approach LOS		B			A			A			B	
Intersection Summary												
HCM Average Control Delay			12.5								HCM Level of Service	B
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			50.0								Sum of lost time (s)	7.5
Intersection Capacity Utilization			85.1%								ICU Level of Service	E
Analysis Period (min)			15									
c Critical Lane Group												

30: Richards Blvd & Dos Rios St

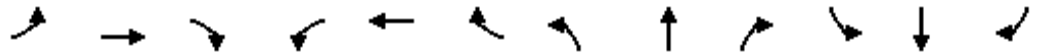


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↑↑↑			↗			↘	↙
Volume (vph)	0	0	0	0	1000	187	0	12	0	0	248	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.99	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6256			1863			1850	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6256			1863			1850	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1000	187	0	12	0	0	248	13
RTOR Reduction (vph)	0	0	0	0	67	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	1120	0	0	12	0	0	257	0
Turn Type				Prot			Perm					
Protected Phases				2				4			8	
Permitted Phases					2		4					
Actuated Green, G (s)					20.5			20.5			20.5	
Effective Green, g (s)					20.5			20.5			20.5	
Actuated g/C Ratio					0.41			0.41			0.41	
Clearance Time (s)					4.5			4.5			4.5	
Lane Grp Cap (vph)					2565			764			759	
v/s Ratio Prot								0.01			c0.14	
v/s Ratio Perm					c0.18							
v/c Ratio					0.44			0.02			0.34	
Uniform Delay, d1					10.6			8.8			10.1	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.5			0.0			1.2	
Delay (s)					11.1			8.8			11.3	
Level of Service					B			A			B	
Approach Delay (s)		0.0			11.1			8.8			11.3	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

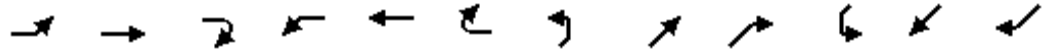
31: Richards Blvd & 12th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	148	367	155	4	4231	0	0	3675	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00	0.97	0.91			0.81	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583	3433	5085			7544	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583	3433	5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	148	367	155	4	4231	0	0	3675	815
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	126
Lane Group Flow (vph)	0	0	0	148	367	113	4	4231	0	0	3675	689
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Effective Green, g (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Actuated g/C Ratio				0.25	0.25	0.25	0.01	0.69			0.65	0.65
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				447	893	399	32	3489			4875	1023
v/s Ratio Prot					c0.10		0.00	c0.83			0.49	
v/s Ratio Perm				0.08		0.07						0.43
v/c Ratio				0.33	0.41	0.28	0.12	1.21			0.75	0.67
Uniform Delay, d1				39.7	40.5	39.1	63.9	20.4			15.9	14.4
Progression Factor				1.00	1.00	1.00	1.04	1.01			1.00	1.00
Incremental Delay, d2				2.0	1.4	1.8	0.5	96.5			1.1	3.5
Delay (s)				41.6	41.9	40.9	67.0	117.0			17.0	17.9
Level of Service				D	D	D	E	F			B	B
Approach Delay (s)		0.0			41.6			117.0			17.2	
Approach LOS		A			D			F			B	

Intersection Summary			
HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	145.3%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

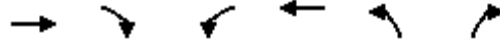
32: Bannon St & 12th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↑↑↑	↑	↑					↑↑↑	↑	↑	↑↑↑↑	
Volume (vph)	2164	92	717	0	0	0	0	2072	21	45	3780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2164	92	717	0	0	0	0	2072	21	45	3780	0
RTOR Reduction (vph)	0	0	43	0	0	0	0	0	5	0	0	0
Lane Group Flow (vph)	2164	92	674	0	0	0	0	2072	16	45	3780	0
Turn Type	Split		Perm					Perm		Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	52.5	52.5	52.5					60.5	60.5	4.0	69.0	
Effective Green, g (s)	52.5	52.5	52.5					60.5	60.5	4.0	69.0	
Actuated g/C Ratio	0.40	0.40	0.40					0.47	0.47	0.03	0.53	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2015	752	639					2366	737	54	4004	
v/s Ratio Prot	c0.43	0.05						0.41		0.03	c0.50	
v/s Ratio Perm			0.43						0.01			
v/c Ratio	1.07	0.12	1.05					0.88	0.02	0.83	0.94	
Uniform Delay, d1	38.8	24.3	38.8					31.4	18.8	62.7	28.7	
Progression Factor	1.00	1.00	1.00					1.33	0.64	0.75	0.51	
Incremental Delay, d2	43.3	0.1	50.9					0.5	0.0	48.5	4.3	
Delay (s)	82.0	24.4	89.7					42.1	12.0	95.5	18.9	
Level of Service	F	C	F					D	B	F	B	
Approach Delay (s)		82.1			0.0			41.8			19.8	
Approach LOS		F			A			D			B	

Intersection Summary		
HCM Average Control Delay	45.8	HCM Level of Service
HCM Volume to Capacity ratio	1.00	D
Actuated Cycle Length (s)	130.0	Sum of lost time (s)
Intersection Capacity Utilization	145.3%	8.5
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		H

33: Riverfront Dr & 5th Street



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	100	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			105		212	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		212	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		773	953
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	105	105	15			
Volume Left	0	5	5			
Volume Right	5	0	10			
cSH	1700	1486	884			
Volume to Capacity	0.06	0.00	0.02			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	0.0	0.4	9.1			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.4	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			19.3%		ICU Level of Service	A
Analysis Period (min)			15			

34: Riverfront Dr & 7th Street

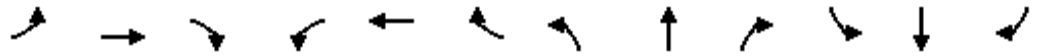


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	100	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			105		212	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		212	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		773	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	884
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		19.3%	ICU Level of Service A
Analysis Period (min)		15	

36: Signature & 7th Street

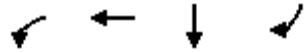


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↖		↖	↖	↗		↕	
Volume (vph)	0	0	177	1106	112	15	153	750	505	5	1304	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.97	1.00		1.00	1.00	1.00		1.00	
Frt		0.85	0.85	1.00	0.98		1.00	1.00	0.85		1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	3433	1830		1770	1863	1583		1862	
Flt Permitted		1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.89	
Satd. Flow (perm)		1504	1504	3433	1830		1770	1863	1583		1654	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	177	1106	112	15	153	750	505	5	1304	0
RTOR Reduction (vph)	0	75	74	0	5	0	0	0	255	0	0	0
Lane Group Flow (vph)	0	14	14	1106	122	0	153	750	250	0	1309	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		15.5	15.5	24.5	24.5		5.5	49.5	49.5		40.5	
Effective Green, g (s)		15.5	15.5	24.5	24.5		5.5	49.5	49.5		40.5	
Actuated g/C Ratio		0.16	0.16	0.24	0.24		0.06	0.50	0.50		0.40	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		233	233	841	448		97	922	784		670	
v/s Ratio Prot		c0.01		c0.32	0.07		c0.09	0.40				
v/s Ratio Perm			0.01						0.16		c0.79	
v/c Ratio		0.06	0.06	1.32	0.27		1.58	0.81	0.32		1.95	
Uniform Delay, d1		36.0	36.0	37.8	30.5		47.2	21.3	15.1		29.8	
Progression Factor		1.00	1.00	1.00	1.00		0.65	0.48	0.18		1.00	
Incremental Delay, d2		0.1	0.1	150.2	0.3		297.8	6.8	0.9		434.6	
Delay (s)		36.1	36.1	188.0	30.9		328.4	16.9	3.6		464.4	
Level of Service		D	D	F	C		F	B	A		F	
Approach Delay (s)		36.1			171.8			46.0			464.4	
Approach LOS		D			F			D			F	

Intersection Summary		
HCM Average Control Delay	215.9	HCM Level of Service
HCM Volume to Capacity ratio	1.41	F
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	156.6%	14.0
Analysis Period (min)	15	ICU Level of Service
		H
c Critical Lane Group		

Queues

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	448	303	2444	795
v/c Ratio	0.79	0.50	0.92	0.74
Control Delay	42.0	33.5	17.6	11.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.0	33.5	17.6	11.0
Queue Length 50th (ft)	143	102	548	201
Queue Length 95th (ft)	#209	143	723	352
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	569	602	2654	1079
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.50	0.92	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues

2030 +Proj (Res) AM Peak (Mitigated)

2: Richards Blvd & I-5 NB Off

1/10/2007



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	676	1448	74	240
v/c Ratio	0.17	0.53	0.22	0.44
Control Delay	4.3	2.4	7.6	36.4
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	4.6	2.4	7.6	36.4
Queue Length 50th (ft)	53	42	7	76
Queue Length 95th (ft)	63	57	33	104
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)			300	
Base Capacity (vph)	3892	2708	718	1345
Starvation Cap Reductn	2406	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.53	0.10	0.18

Intersection Summary

Queues

3: Richards Blvd & Bercut Dr



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	23	1631	466	249	90	91
v/c Ratio	0.02	0.35	0.73	0.44	0.66	0.53
Control Delay	4.8	4.9	28.0	17.2	67.4	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	4.9	28.0	17.2	67.4	30.0
Queue Length 50th (ft)	3	58	70	65	57	19
Queue Length 95th (ft)	m7	69	140	m89	105	66
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	946	4602	1013	932	298	304
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.35	0.46	0.27	0.30	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) AM Peak (Mitigated)

4: Richards Blvd & 5th Street

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	224	1009	433	329	232	388
v/c Ratio	0.36	0.39	0.79	0.37	0.45	0.89
Control Delay	18.2	15.6	41.2	11.0	29.3	52.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	18.2	15.6	41.2	11.0	29.3	52.3
Queue Length 50th (ft)	105	116	123	68	116	215
Queue Length 95th (ft)	m196	m161	184	87	169	313
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	619	2620	610	1039	637	530
Starvation Cap Reductn	0	0	0	0	0	9
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.39	0.71	0.32	0.36	0.74

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	304	880	219	229	863	1044	360
v/c Ratio	0.54	0.43	0.34	0.54	0.97	0.99	0.23
Control Delay	20.5	16.5	3.9	34.7	57.9	61.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	26.7	0.0
Total Delay	20.5	16.5	3.9	34.7	57.9	87.8	0.3
Queue Length 50th (ft)	129	96	27	124	256	347	0
Queue Length 95th (ft)	181	103	10	m182	#430	#491	0
Internal Link Dist (ft)		1150			540	348	
Turn Bay Length (ft)	200		300	200			
Base Capacity (vph)	566	2051	635	422	887	1055	1583
Starvation Cap Reductn	0	0	0	0	0	82	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.43	0.34	0.54	0.97	1.07	0.23

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) AM Peak (Mitigated)

6: Richards Blvd & 10th Street

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	211	496	1092	34	24	36
v/c Ratio	0.27	0.18	0.80	0.04	0.13	0.35
Control Delay	21.5	16.8	31.0	11.0	46.2	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	16.8	31.0	11.0	46.2	24.1
Queue Length 50th (ft)	85	49	308	11	7	0
Queue Length 95th (ft)	164	79	341	21	21	31
Internal Link Dist (ft)		1064		248	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	782	2787	1665	1155	319	157
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.18	0.66	0.03	0.08	0.23

Intersection Summary

Queues

2030 +Proj (Res) AM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	538	237	1350	249	163
v/c Ratio	0.28	0.72	0.56	0.93	0.41	0.26
Control Delay	33.0	28.7	27.1	31.1	8.4	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	28.7	27.1	31.1	8.4	13.4
Queue Length 50th (ft)	16	97	78	245	55	33
Queue Length 95th (ft)	44	140	144	#389	100	77
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	152	946	463	1480	604	618
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.57	0.51	0.91	0.41	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

9: Bannan St & I-5 SB Off



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	628	164	2130	762
v/c Ratio	0.74	0.34	0.63	0.32
Control Delay	40.3	10.3	6.4	5.6
Queue Delay	0.7	0.0	1.7	0.6
Total Delay	41.0	10.3	8.1	6.2
Queue Length 50th (ft)	195	18	132	56
Queue Length 95th (ft)	236	64	m253	m103
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1079	572	3407	2371
Starvation Cap Reductn	0	0	1040	1150
Spillback Cap Reductn	178	0	844	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.29	0.90	0.62

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) AM Peak (Mitigated)

10: Bannon St & I-5 NB Off

1/10/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	240	2518	52	1730
v/c Ratio	0.33	0.92	0.05	0.86
Control Delay	6.7	31.7	10.2	24.3
Queue Delay	1.1	76.5	0.0	64.7
Total Delay	7.8	108.2	10.2	89.0
Queue Length 50th (ft)	17	379	14	384
Queue Length 95th (ft)	55	369	31	478
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	737	2730	1043	2022
Starvation Cap Reductn	292	580	0	0
Spillback Cap Reductn	0	175	0	506
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	1.17	0.05	1.14

Intersection Summary

Queues

2030 +Proj (Res) AM Peak (Mitigated)

11: Bannon St & Bercut Dr

1/10/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	217	3153	878	446	146	6
v/c Ratio	0.19	0.74	0.65	0.79	0.74	0.01
Control Delay	4.7	9.0	1.5	51.1	52.2	11.7
Queue Delay	4.4	45.5	1.8	0.0	0.0	0.0
Total Delay	9.2	54.5	3.3	51.1	52.2	11.7
Queue Length 50th (ft)	31	230	0	142	51	2
Queue Length 95th (ft)	m38	400	m7	198	#108	m5
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	1171	4241	1344	596	197	484
Starvation Cap Reductn	871	1368	292	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	1.10	0.83	0.75	0.74	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	601	2746	576	112	69	574
v/c Ratio	0.66	1.11dr	0.70	0.26	0.30	0.41
Control Delay	10.6	10.5	23.9	2.8	41.0	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	10.5	23.9	2.8	41.0	18.9
Queue Length 50th (ft)	89	100	102	1	39	110
Queue Length 95th (ft)	121	86	118	5	66	125
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	916	3219	838	441	267	1469
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.85	0.69	0.25	0.26	0.39

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	563	1311	28	321	341	216	1069
v/c Ratio	0.82	0.66	0.04	0.30	0.22	0.71	0.58
Control Delay	17.0	10.1	1.5	20.1	0.4	49.6	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	10.1	1.5	20.1	0.4	49.6	4.1
Queue Length 50th (ft)	54	46	0	46	1	86	18
Queue Length 95th (ft)	m210	119	m0	83	3	m96	m58
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	735	2110	673	1075	1583	348	1845
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.62	0.04	0.30	0.22	0.62	0.58

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

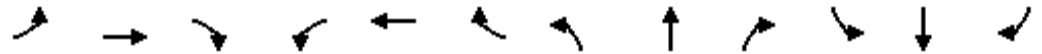
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) AM Peak (Mitigated)

14: N B Street & 6th Street

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	46	72	142	195	17	73	583	79	89	1129	143
v/c Ratio	0.54	0.11	0.18	0.49	0.49	0.05	0.45	0.29	0.08	0.50	0.55	0.15
Control Delay	44.9	30.1	8.4	36.7	35.2	12.9	63.3	5.4	0.5	52.6	11.6	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	30.1	8.4	36.7	35.2	12.9	63.3	5.4	0.5	52.6	11.6	2.3
Queue Length 50th (ft)	57	23	0	87	120	0	48	41	0	54	194	4
Queue Length 95th (ft)	110	51	34	m144	m186	m16	97	49	1	m74	340	m22
Internal Link Dist (ft)		435			1023			498			815	
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	229	484	465	352	484	424	206	2038	945	223	2063	973
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.10	0.15	0.40	0.40	0.04	0.35	0.29	0.08	0.40	0.55	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	88	57	89	130	308	80	465	381	126	1303
v/c Ratio	0.41	0.16	0.19	0.36	0.19	0.55	0.63	0.32	0.38	0.35	0.66
Control Delay	59.1	27.0	8.4	48.3	33.5	8.2	66.7	17.9	1.7	21.1	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.1	27.0	8.4	48.3	33.5	8.2	66.7	17.9	1.7	21.1	8.2
Queue Length 50th (ft)	15	17	2	28	36	0	53	108	0	64	96
Queue Length 95th (ft)	#64	35	10	53	62	71	m#105	140	m6	114	106
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	96	637	332	257	787	591	128	1481	992	390	1979
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.14	0.17	0.35	0.17	0.52	0.63	0.31	0.38	0.32	0.66

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1381	107	126	32	298	4555	383
v/c Ratio	1.71	0.19	0.37	0.12	0.55	1.07	0.30
Control Delay	359.4	48.1	11.2	46.8	53.2	52.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	359.4	48.1	11.2	46.8	53.2	52.4	5.2
Queue Length 50th (ft)	~607	41	0	23	116	~678	92
Queue Length 95th (ft)	#701	70	57	53	164	m#699	m101
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	806	572	341	313	623	4245	1274
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.71	0.19	0.37	0.10	0.48	1.07	0.30

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

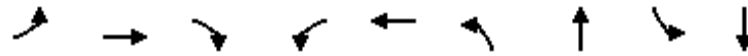
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	65	204	76	27	211	600	83	1301
v/c Ratio	0.25	0.22	0.49	0.37	0.10	0.71	0.27	0.51	0.69
Control Delay	38.5	37.2	9.5	43.1	21.7	40.5	11.0	59.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	37.2	9.5	43.1	21.7	40.5	11.0	59.7	9.9
Queue Length 50th (ft)	30	36	0	49	0	81	148	57	66
Queue Length 95th (ft)	66	74	61	m83	m3	197	196	m104	100
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	456	244	319	374	2257	188	1895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	11
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.19	0.45	0.31	0.08	0.56	0.27	0.44	0.69

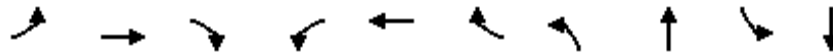
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	229	11	46	187	4	5	63	255	24	1568
v/c Ratio	0.84	0.03	0.13	0.69	0.01	0.02	0.55	0.11	0.27	0.70
Control Delay	55.6	21.6	6.6	50.7	31.0	19.2	62.2	2.6	67.0	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Total Delay	55.6	21.6	6.6	50.7	31.0	19.2	62.2	2.6	67.0	6.0
Queue Length 50th (ft)	149	6	0	109	2	0	42	0	15	42
Queue Length 95th (ft)	#258	m14	19	184	11	10	m68	m41	m28	49
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	302	401	376	300	401	344	117	2404	89	2245
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	6
Spillback Cap Reductn	0	0	6	0	0	0	0	0	0	499
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.03	0.12	0.62	0.01	0.01	0.54	0.11	0.27	0.90

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

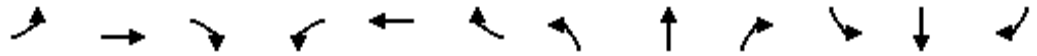
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	151	618	280	394	715	64	402	539	537	366	1005	63
v/c Ratio	0.43	0.80	0.62	1.04	0.99dl	0.15	1.12	0.53	0.65	1.12	1.01	0.13
Control Delay	38.8	35.9	16.6	49.6	16.9	0.7	125.0	32.0	7.6	117.8	61.5	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	35.9	16.6	49.6	16.9	0.7	125.0	32.0	7.6	117.8	61.5	8.6
Queue Length 50th (ft)	84	148	41	~282	79	0	~152	151	11	~136	~364	17
Queue Length 95th (ft)	144	217	135	m#102	m76	m0	#247	204	104	#228	#485	m20
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	372	802	468	379	778	414	360	1026	823	326	991	473
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.77	0.60	1.04	0.92	0.15	1.12	0.53	0.65	1.12	1.01	0.13

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	453	647	66	879	807	147	259	405	15	1472	182
v/c Ratio	0.75	0.89	0.18	1.60	1.20	0.85	0.19	0.47	0.17	1.24	0.31
Control Delay	41.5	45.9	12.0	309.4	140.9	87.2	21.6	4.5	59.5	140.5	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	45.9	12.0	309.4	140.9	87.2	21.6	4.5	59.5	140.5	10.5
Queue Length 50th (ft)	143	219	5	~415	-330	48	52	0	9	-607	16
Queue Length 95th (ft)	m169	m246	m12	#536	#450	#106	93	64	m14	#745	m41
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	618	743	381	549	672	172	1377	864	89	1186	589
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.87	0.17	1.60	1.20	0.85	0.19	0.47	0.17	1.24	0.31

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	74	51	56	233	419	2459
v/c Ratio	1.25	0.22	0.95	0.99	1.11	1.14
Control Delay	254.8	61.5	172.9	118.2	139.3	97.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	254.8	61.5	172.9	118.2	139.3	97.5
Queue Length 50th (ft)	~90	46	56	223	~244	~1475
Queue Length 95th (ft)	#202	90	#151	#405	#360	#1598
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	59	236	59	235	376	2155
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.22	0.95	0.99	1.11	1.14

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	118	587	456	572	94	1857	421	1676
v/c Ratio	1.48	0.30	1.95	0.60	0.68	1.06	1.55	1.83	1.14
Control Delay	270.7	7.9	457.6	15.5	5.6	89.5	273.6	418.1	99.8
Queue Delay	0.0	2.2	243.8	1.0	0.6	0.0	99.0	0.0	27.7
Total Delay	270.7	10.1	701.4	16.5	6.1	89.5	372.6	418.1	127.5
Queue Length 50th (ft)	~176	6	~588	138	44	~65	~871	~408	~659
Queue Length 95th (ft)	m#297	m15	m#756	m182	m63	m45	m#551	#596	#800
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	139	396	301	764	844	89	1198	230	1472
Starvation Cap Reductn	0	0	0	125	67	0	149	0	0
Spillback Cap Reductn	0	175	122	24	0	0	0	0	77
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	0.53	3.28	0.71	0.74	1.06	1.77	1.83	1.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	257	394	923	336	14	111	1053	719
v/c Ratio	0.64	0.64	0.91	0.74	0.48	0.16	0.13	0.83	0.85
Control Delay	67.2	25.0	55.7	27.4	4.9	32.8	14.0	35.9	27.0
Queue Delay	0.0	0.0	10.4	3.7	0.3	0.0	0.0	6.4	9.0
Total Delay	67.2	25.0	66.1	31.1	5.2	32.8	14.0	42.3	36.0
Queue Length 50th (ft)	63	95	266	228	23	8	53	317	280
Queue Length 95th (ft)	m38	m43	m#399	317	m47	m8	m52	402	#527
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	142	402	434	1239	707	89	848	1274	849
Starvation Cap Reductn	0	0	32	228	87	0	0	179	108
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.64	0.98	0.91	0.54	0.16	0.13	0.96	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	453	626	1802	648	1577
v/c Ratio	1.17	1.09dl	1.68	1.26	0.69
Control Delay	109.6	28.8	329.3	156.3	5.2
Queue Delay	36.3	1.6	368.0	93.2	4.4
Total Delay	145.8	30.4	697.4	249.6	9.6
Queue Length 50th (ft)	~374	167	~872	~525	97
Queue Length 95th (ft)	m234	m126	m#846	m#330	m79
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	387	786	1073	513	2300
Starvation Cap Reductn	0	0	0	63	636
Spillback Cap Reductn	26	56	481	73	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.25	0.86	3.04	1.47	0.95

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
25: H Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1568	512	1052
v/c Ratio	0.93	0.83	0.85
Control Delay	21.4	27.0	23.6
Queue Delay	58.1	5.7	4.9
Total Delay	79.5	32.7	28.5
Queue Length 50th (ft)	301	144	156
Queue Length 95th (ft)	m233	m303	m311
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1684	620	1239
Starvation Cap Reductn	297	68	134
Spillback Cap Reductn	0	53	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.13	0.93	0.95

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)
1/10/2007



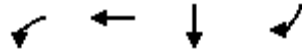
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1990	54	1259	849	790
v/c Ratio	1.15	0.08	0.96	2.92	1.20
Control Delay	83.5	8.6	29.5	886.0	120.2
Queue Delay	91.8	0.0	13.7	0.0	162.5
Total Delay	175.3	8.6	43.2	886.0	282.8
Queue Length 50th (ft)	~252	14	305	~950	~435
Queue Length 95th (ft)	m#209	m16	m#340	#1226	#824
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1727	655	1309	291	657
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	262	87	81	98	153
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.36	0.10	1.03	4.40	1.57

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	268	1727	977	290
v/c Ratio	0.44	1.09	0.52	0.44
Control Delay	7.8	70.6	15.0	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.8	70.6	15.0	10.6
Queue Length 50th (ft)	22	-232	195	116
Queue Length 95th (ft)	74	#322	m242	m135
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	605	1587	1881	666
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	1.09	0.52	0.44

Intersection Summary

Description: 6 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
28: J St & 6th Street

2030 +Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	892	2758	87	294
v/c Ratio	0.99	0.88	0.20	1.00
Control Delay	14.9	4.9	27.6	53.9
Queue Delay	8.9	5.5	0.0	0.0
Total Delay	23.8	10.4	27.6	53.9
Queue Length 50th (ft)	150	150	39	~162
Queue Length 95th (ft)	m143	m139	80	m70
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	904	3134	434	294
Starvation Cap Reductn	31	339	0	0
Spillback Cap Reductn	0	71	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.02	0.99	0.20	1.00

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)
1/10/2007



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2373	540	1127
v/c Ratio	0.76	0.65	0.75
Control Delay	7.8	7.4	29.1
Queue Delay	1.9	1.4	0.2
Total Delay	9.8	8.8	29.4
Queue Length 50th (ft)	247	101	254
Queue Length 95th (ft)	m251	m120	m269
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	3102	828	1501
Starvation Cap Reductn	542	133	55
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	0.78	0.78

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) AM Peak (Mitigated)

30: Richards Blvd & Dos Rios St

1/10/2007



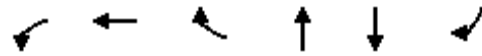
Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1427	2	313
v/c Ratio	0.51	0.00	0.40
Control Delay	8.5	11.0	6.4
Queue Delay	0.0	0.0	0.0
Total Delay	8.5	11.0	6.4
Queue Length 50th (ft)	86	1	25
Queue Length 95th (ft)	104	4	53
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2795	788	783
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.00	0.40

Intersection Summary

Queues
31: Richards Blvd & 12th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	47	699	89	2258	4372	728
v/c Ratio	0.10	0.78	0.20	0.65	0.85	0.63
Control Delay	38.1	52.1	16.0	5.0	17.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	38.1	52.1	16.0	5.1	18.3	9.5
Queue Length 50th (ft)	31	289	18	236	624	194
Queue Length 95th (ft)	64	363	63	256	652	305
Internal Link Dist (ft)		258		468	518	
Turn Bay Length (ft)	150					300
Base Capacity (vph)	449	898	447	3481	5165	1164
Starvation Cap Reductn	0	0	0	42	0	0
Spillback Cap Reductn	0	0	0	0	437	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.78	0.20	0.66	0.92	0.63

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

Queues
32: Richards & 12th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	811	30	549	1449	1	32	4388
v/c Ratio	0.53	0.05	1.05	0.54	0.00	0.18	0.92
Control Delay	39.0	32.4	90.9	8.4	0.0	37.5	9.0
Queue Delay	0.0	0.0	0.7	0.3	0.0	0.0	0.6
Total Delay	39.0	32.4	91.6	8.7	0.0	37.5	9.7
Queue Length 50th (ft)	201	18	~465	189	0	24	765
Queue Length 95th (ft)	244	42	#692	m9	m0	m30	290
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	1524	569	525	2763	860	177	4747
Starvation Cap Reductn	0	0	0	558	0	0	15
Spillback Cap Reductn	0	0	1	0	0	0	120
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.05	1.05	0.66	0.00	0.18	0.95

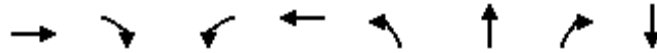
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj (Res) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	106	105	468	58	61	543	454	730
v/c Ratio	0.25	0.25	0.63	0.15	0.43	0.59	0.45	0.94
Control Delay	1.8	1.8	30.5	18.7	42.7	21.1	3.5	51.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	1.8	1.8	30.5	18.7	42.7	21.2	3.5	51.5
Queue Length 50th (ft)	0	0	98	16	27	216	0	~494
Queue Length 95th (ft)	5	4	141	43	#69	#381	56	#696
Internal Link Dist (ft)	331			1127		348		286
Turn Bay Length (ft)		150	350		100			
Base Capacity (vph)	513	513	852	456	142	923	1014	780
Starvation Cap Reductn	0	0	0	0	0	51	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.20	0.55	0.13	0.43	0.62	0.45	0.94

Intersection Summary

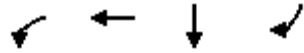
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1140	440	1796	851
v/c Ratio	0.94	0.35	0.91	0.96
Control Delay	31.4	11.4	27.8	39.8
Queue Delay	19.0	0.0	41.9	0.0
Total Delay	50.4	11.4	69.7	39.8
Queue Length 50th (ft)	293	68	506	399
Queue Length 95th (ft)	#108	80	#642	#714
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	1218	1274	1982	883
Starvation Cap Reductn	18	0	0	0
Spillback Cap Reductn	115	0	335	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.03	0.35	1.09	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2: Richards Blvd & I-5 NB Off



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1481	3061	98	602
v/c Ratio	0.44	1.13	0.20	0.65
Control Delay	4.2	79.3	12.9	26.8
Queue Delay	0.8	0.0	0.0	0.0
Total Delay	5.0	79.3	12.9	26.8
Queue Length 50th (ft)	60	-863	21	134
Queue Length 95th (ft)	m79	m#921	m32	135
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)			300	
Base Capacity (vph)	3350	2708	673	1309
Starvation Cap Reductn	1434	0	0	0
Spillback Cap Reductn	280	0	1	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	1.13	0.15	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

3: Richards Blvd & Bercut Dr



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	3540	828	221	215	213
v/c Ratio	0.02	0.97	0.96	0.27	0.83	0.95
Control Delay	5.5	14.9	36.8	5.9	68.0	91.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	14.9	36.8	5.9	68.0	91.7
Queue Length 50th (ft)	2	256	229	23	134	133
Queue Length 95th (ft)	m2	m262	m#379	m32	#251	#272
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	743	3643	863	812	272	235
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.97	0.96	0.27	0.79	0.91

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Richards Blvd & 5th Street



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	252	2493	963	645	178	273
v/c Ratio	0.41	0.95	1.06	0.73	0.56	1.03
Control Delay	12.0	25.1	57.7	12.6	44.4	105.0
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	12.0	25.1	57.7	14.2	44.4	105.0
Queue Length 50th (ft)	66	364	~350	265	104	~186
Queue Length 95th (ft)	m89	m#453	m#331	m243	174	#348
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	621	2635	912	888	318	264
Starvation Cap Reductn	0	0	0	107	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.95	1.06	0.83	0.56	1.03

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	299	1718	110	367	804	852	891
v/c Ratio	0.45	0.71	0.17	0.92	0.95	0.95	0.56
Control Delay	19.6	20.7	5.4	57.4	51.7	37.2	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	20.7	5.4	57.4	51.7	37.2	1.6
Queue Length 50th (ft)	95	213	2	260	289	218	28
Queue Length 95th (ft)	174	255	m12	#453	#419	m116	m0
Internal Link Dist (ft)		1155			540	348	
Turn Bay Length (ft)	200		300	200			
Base Capacity (vph)	667	2413	640	403	845	920	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.71	0.17	0.91	0.95	0.93	0.56

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) PM Peak (Mitigated)

6: Richards Blvd & 10th Street

1/18/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	731	930	42	33	169
v/c Ratio	0.12	0.27	0.81	0.05	0.07	0.76
Control Delay	17.5	17.7	36.5	9.9	36.2	51.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	17.7	36.5	9.9	36.2	51.4
Queue Length 50th (ft)	37	91	276	13	10	78
Queue Length 95th (ft)	63	98	319	22	22	140
Internal Link Dist (ft)		1064		356	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	742	2675	1329	1159	672	317
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.70	0.04	0.05	0.53

Intersection Summary

Queues

2030 +Proj (Res) PM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	797	109	1550	204	151
v/c Ratio	0.54	0.55	0.48	0.98	0.39	0.27
Control Delay	45.8	17.5	35.4	38.2	23.2	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	17.5	35.4	38.2	23.2	17.1
Queue Length 50th (ft)	33	134	44	323	72	39
Queue Length 95th (ft)	#85	186	89	#491	130	84
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	147	1453	253	1593	524	564
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.55	0.43	0.97	0.39	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 +Proj (Res) PM Peak (Mitigated)

9: Bannon St & I-5 SB Off

1/18/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	1022	1066	1426	1511
v/c Ratio	0.84	0.67	0.50	0.75
Control Delay	37.1	2.3	11.3	16.1
Queue Delay	0.0	0.0	1.0	32.8
Total Delay	37.2	2.3	12.3	48.8
Queue Length 50th (ft)	305	0	150	296
Queue Length 95th (ft)	376	0	m187	m426
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1327	1583	2857	2003
Starvation Cap Reductn	0	0	1073	581
Spillback Cap Reductn	3	0	661	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.67	0.80	1.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) PM Peak (Mitigated)

10: Bannon St & I-5 NB Off

1/18/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	593	1855	52	1385
v/c Ratio	0.65	0.74	0.05	0.65
Control Delay	8.0	28.0	8.5	15.4
Queue Delay	1.1	4.7	0.0	7.1
Total Delay	9.1	32.7	8.5	22.6
Queue Length 50th (ft)	71	281	13	232
Queue Length 95th (ft)	107	291	28	290
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	909	2508	1118	2166
Starvation Cap Reductn	131	579	0	0
Spillback Cap Reductn	0	175	0	736
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.96	0.05	0.97

Intersection Summary

Queues
11: Bannon St & Bercut Dr

2030 +Proj (Res) PM Peak (Mitigated)
1/18/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	144	2396	700	853	126	22
v/c Ratio	0.15	0.69	0.59	0.87	0.61	0.03
Control Delay	8.7	13.0	2.2	33.6	39.0	26.3
Queue Delay	2.2	4.7	0.5	0.0	0.0	0.0
Total Delay	10.9	17.8	2.7	33.6	39.0	26.3
Queue Length 50th (ft)	27	198	6	189	44	15
Queue Length 95th (ft)	m43	295	22	#242	m58	m19
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	960	3476	1179	1022	206	727
Starvation Cap Reductn	693	1005	167	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.97	0.69	0.83	0.61	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj (Res) PM Peak (Mitigated)
1/18/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	629	2132	1351	579	160	767
v/c Ratio	1.06	1.04dr	1.02	0.93	0.66	0.38
Control Delay	69.3	34.5	39.3	27.1	61.3	12.9
Queue Delay	8.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.4	34.5	39.3	27.1	61.3	12.9
Queue Length 50th (ft)	~452	277	~510	232	98	111
Queue Length 95th (ft)	m#637	#454	#641	m#496	166	145
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	596	2138	1331	622	266	2028
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	12	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.08	1.00	1.02	0.93	0.60	0.38

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	492	1708	163	462	1156	230	541
v/c Ratio	0.71	0.85	0.23	0.46	0.73	0.70	0.30
Control Delay	14.8	15.7	0.5	46.0	15.6	40.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	15.7	0.5	46.0	15.6	40.9	7.0
Queue Length 50th (ft)	126	176	0	135	676	160	46
Queue Length 95th (ft)	m133	m190	m0	m151	m756	m190	m55
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	699	2009	724	1015	1583	327	1829
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.85	0.23	0.46	0.73	0.70	0.30

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

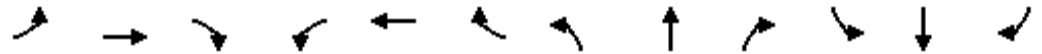
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) PM Peak (Mitigated)

14: N B Street & 6th Street

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	52	144	271	315	132	72	161	1813	167	12	1095	180
v/c Ratio	0.15	0.26	0.44	0.91	0.24	0.14	0.64	0.86	0.17	0.13	0.72	0.24
Control Delay	27.8	28.6	10.7	64.9	25.2	11.9	37.9	8.3	0.3	40.9	21.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0
Total Delay	27.8	28.6	10.7	64.9	25.2	11.9	37.9	10.7	0.3	40.9	21.0	2.5
Queue Length 50th (ft)	24	69	32	209	68	3	104	52	1	8	221	2
Queue Length 95th (ft)	56	124	103	#382	136	45	m126	m#710	m0	m14	m227	m7
Internal Link Dist (ft)		435			1023			498				815
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	356	558	616	345	558	524	251	2111	983	91	1639	812
Starvation Cap Reductn	0	0	0	0	0	0	0	185	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.26	0.44	0.91	0.24	0.14	0.64	0.94	0.17	0.13	0.67	0.22

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	100	39	477	284	14	90	1491	591	158	545
v/c Ratio	0.29	0.18	0.14	0.92	0.30	0.03	0.49	0.92	0.51	1.19	0.34
Control Delay	41.1	29.4	8.5	69.5	31.1	14.4	51.2	26.5	1.7	166.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.2	0.0	0.0
Total Delay	41.1	29.4	8.5	69.5	31.1	14.4	51.2	29.5	1.9	166.9	4.7
Queue Length 50th (ft)	19	31	1	~192	79	0	49	478	7	~127	31
Queue Length 95th (ft)	42	47	13	#293	117	16	m68	#612	m13	#260	45
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	106	637	317	518	948	434	216	1625	1164	133	1585
Starvation Cap Reductn	0	0	0	0	0	0	0	75	139	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.16	0.12	0.92	0.30	0.03	0.42	0.96	0.58	1.19	0.34

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1428	515	299	58	331	3359	1150
v/c Ratio	1.69	0.86	0.67	0.21	0.52	0.81	0.87
Control Delay	349.9	67.6	18.9	48.1	31.1	22.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Total Delay	349.9	67.6	18.9	48.1	31.1	22.3	14.9
Queue Length 50th (ft)	~624	224	41	42	75	545	210
Queue Length 95th (ft)	#718	#313	143	84	124	m566	m181
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	844	599	449	313	698	4144	1316
Starvation Cap Reductn	0	0	0	0	0	0	86
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.69	0.86	0.67	0.19	0.47	0.81	0.93

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

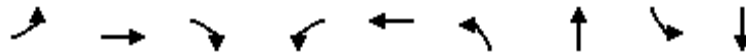
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	185	356	37	26	194	1899	162	1375
v/c Ratio	0.53	0.60	0.70	0.27	0.09	0.78	0.91	0.81	0.70
Control Delay	39.4	40.2	13.7	24.7	9.9	62.5	27.3	58.4	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	26.1	0.0	0.3
Total Delay	39.4	40.2	13.7	24.7	9.9	62.5	53.5	58.4	9.5
Queue Length 50th (ft)	58	91	28	22	12	119	554	102	142
Queue Length 95th (ft)	m88	m128	m45	m52	m20	#218	#768	m#173	m220
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	533	151	323	270	2082	204	1955
Starvation Cap Reductn	0	0	0	0	0	0	278	0	142
Spillback Cap Reductn	0	0	0	0	0	0	82	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.54	0.67	0.25	0.08	0.72	1.05	0.79	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

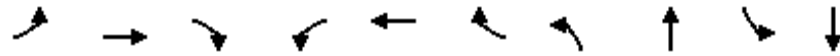
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	277	40	38	89	3	9	74	1611	63	1100
v/c Ratio	0.91	0.10	0.10	0.30	0.01	0.03	0.49	0.73	0.71	0.53
Control Delay	49.0	11.1	7.9	35.6	30.3	16.7	54.2	16.5	76.4	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.1
Total Delay	49.0	11.1	7.9	35.6	30.3	16.7	54.2	19.2	76.4	10.1
Queue Length 50th (ft)	191	14	4	47	2	0	45	373	40	245
Queue Length 95th (ft)	m#298	m25	m9	93	9	13	91	465	m#78	m277
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	317	419	386	306	419	363	173	2201	89	2094
Starvation Cap Reductn	0	0	0	0	0	0	0	454	0	208
Spillback Cap Reductn	0	0	0	0	0	0	0	274	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.10	0.10	0.29	0.01	0.02	0.43	0.92	0.71	0.58

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

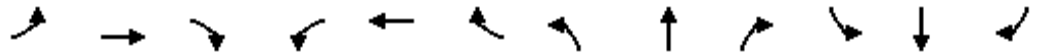
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	756	337	306	638	199	598	1755	839	228	1366	182
v/c Ratio	0.96	1.14	0.68	1.12	1.12	0.55	1.16	1.10	0.97	1.05	1.06	0.29
Control Delay	98.1	129.4	20.4	77.4	73.2	8.0	146.5	94.7	51.1	140.2	88.8	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.2	6.5	0.0	95.5	0.0
Total Delay	98.1	129.4	20.4	77.4	73.2	8.0	146.5	141.9	57.6	140.2	184.3	22.5
Queue Length 50th (ft)	327	-457	65	-383	-400	73	-356	-1023	611	-124	-772	78
Queue Length 95th (ft)	#525	#597	198	m245	m249	m61	#479	#1161	#925	#215	#913	142
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	348	665	496	274	572	365	515	1593	865	217	1286	618
Starvation Cap Reductn	0	0	0	0	0	0	0	142	28	0	221	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	1.14	0.68	1.12	1.12	0.55	1.16	1.21	1.00	1.05	1.28	0.29

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1232	915	39	615	606	472	931	470	49	962	7
v/c Ratio	1.13	0.93	0.09	0.96	1.17	1.21	0.78	0.68	0.55	1.05	0.02
Control Delay	116.2	49.3	13.1	87.6	148.7	144.8	28.6	14.8	91.4	95.1	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
Total Delay	116.2	49.3	13.1	87.6	148.7	144.8	28.6	14.8	91.4	131.9	33.3
Queue Length 50th (ft)	~731	415	8	313	~370	~296	401	225	48	~535	3
Queue Length 95th (ft)	m#741	m427	m14	#444	#495	m188	m264	m136	#121	#673	16
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	1087	1003	462	639	519	389	1227	707	89	920	414
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	74	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.91	0.08	0.96	1.17	1.21	0.76	0.66	0.55	1.14	0.02

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	314	373	96	639	941	1776
v/c Ratio	1.66	0.80	0.77	1.54	1.49	1.33
Control Delay	358.5	62.5	103.6	289.6	268.9	172.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	358.5	62.5	103.6	289.6	268.9	172.3
Queue Length 50th (ft)	~445	322	94	~834	~667	~1206
Queue Length 95th (ft)	#642	#478	#189	#1081	#805	m#1204
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	189	465	130	415	632	1333
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.66	0.80	0.74	1.54	1.49	1.33

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	300	261	831	534	798	39	1908	370	3100
v/c Ratio	1.19	0.67	2.76	0.70	1.02	0.44	1.42	2.33	2.09
Control Delay	151.3	29.1	818.5	21.8	44.6	66.6	204.8	639.5	515.2
Queue Delay	0.0	0.4	0.0	5.2	0.0	0.0	48.1	0.0	183.0
Total Delay	151.3	29.5	818.5	27.0	44.6	66.6	252.9	639.5	698.2
Queue Length 50th (ft)	~237	118	~934	200	~234	25	~858	~387	~1678
Queue Length 95th (ft)	m#404	m200	m#1008	m218	m#505	m18	m#122	#566	#1811
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	252	389	301	764	784	89	1342	159	1482
Starvation Cap Reductn	0	0	0	121	0	0	94	0	0
Spillback Cap Reductn	0	12	11	168	0	0	0	0	491
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.69	2.87	0.90	1.02	0.44	1.53	2.33	3.13

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	280	351	194	1035	503	26	230	638	760
v/c Ratio	0.99	0.59	0.59	0.97	0.71	0.29	0.29	0.55	0.93
Control Delay	56.2	11.2	46.7	51.5	11.0	66.5	20.0	29.5	34.4
Queue Delay	0.0	1.2	0.0	31.9	0.7	0.0	0.0	0.0	3.8
Total Delay	56.2	12.4	46.7	83.4	11.8	66.5	20.0	29.5	38.2
Queue Length 50th (ft)	191	130	124	317	23	18	65	173	237
Queue Length 95th (ft)	m117	m74	m195	#474	127	m19	m68	230	#504
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	283	598	327	1062	711	89	792	1168	813
Starvation Cap Reductn	0	97	0	103	49	0	0	0	13
Spillback Cap Reductn	0	70	0	11	0	0	0	0	27
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.70	0.59	1.08	0.76	0.29	0.29	0.55	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	292	587	1657	1178	2909
v/c Ratio	1.07	1.12	1.50	1.66	1.09
Control Delay	93.1	98.6	245.6	320.7	57.1
Queue Delay	0.0	144.0	130.4	278.6	180.2
Total Delay	93.1	242.6	376.0	599.3	237.3
Queue Length 50th (ft)	~228	~234	~729	~1104	~602
Queue Length 95th (ft)	m#260	m#230	m#413	m298	m76
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	274	524	1108	708	2672
Starvation Cap Reductn	0	0	0	192	723
Spillback Cap Reductn	0	119	180	0	453
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.07	1.45	1.79	2.28	1.49

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1803	399	604
v/c Ratio	0.95	0.80	0.61
Control Delay	15.3	50.6	38.9
Queue Delay	78.4	5.2	0.4
Total Delay	93.7	55.9	39.4
Queue Length 50th (ft)	224	256	202
Queue Length 95th (ft)	m156	#391	260
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1898	496	991
Starvation Cap Reductn	369	49	105
Spillback Cap Reductn	239	55	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.18	0.90	0.68

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2030 +Proj (Res) PM Peak (Mitigated)
1/18/2007



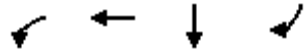
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2730	328	1175	1665	1564
v/c Ratio	1.67	0.81	1.44	2.46	2.46
Control Delay	326.0	50.5	236.8	676.8	676.7
Queue Delay	64.8	0.0	18.8	15.3	15.2
Total Delay	390.8	50.5	255.7	692.1	691.9
Queue Length 50th (ft)	~719	219	~556	~1850	~1730
Queue Length 95th (ft)	#818	m222	m#520	m#1684	m#1575
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1636	407	814	676	635
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	130	0	23	269	249
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.81	0.81	1.49	4.09	4.05

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)
1/18/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	97	2398	1308	370
v/c Ratio	0.12	0.86	0.76	0.73
Control Delay	9.4	21.8	26.0	31.7
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	9.4	21.8	26.3	31.7
Queue Length 50th (ft)	29	463	299	227
Queue Length 95th (ft)	55	546	m330	m315
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	834	2787	1729	504
Starvation Cap Reductn	0	0	94	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.86	0.80	0.73

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
28: J St & 6th Street

2030 +Proj (Res) PM Peak (Mitigated)
1/18/2007



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	673	2105	534	760
v/c Ratio	1.17	1.12	0.73	3.15
Control Delay	102.5	75.4	19.3	984.4
Queue Delay	103.8	44.7	49.9	0.0
Total Delay	206.4	120.1	69.2	984.4
Queue Length 50th (ft)	~393	~363	120	~802
Queue Length 95th (ft)	m#336	m#310	#259	m#310
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	574	1886	733	241
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	96	157	244	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.41	1.22	1.09	3.15

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2191	780	1287
v/c Ratio	0.84	1.03	0.78
Control Delay	6.6	29.0	15.2
Queue Delay	0.0	0.0	0.0
Total Delay	6.6	29.0	15.2
Queue Length 50th (ft)	113	~143	115
Queue Length 95th (ft)	m80	m81	164
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	2593	759	1642
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	1.03	0.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) PM Peak (Mitigated)

30: Richards Blvd & Dos Rios St

1/18/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1187	12	261
v/c Ratio	0.45	0.02	0.34
Control Delay	10.2	8.9	11.5
Queue Delay	0.0	0.0	0.0
Total Delay	10.2	8.9	11.5
Queue Length 50th (ft)	61	2	48
Queue Length 95th (ft)	84	9	92
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2631	764	762
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.02	0.34

Intersection Summary

Queues
31: Richards Blvd & 12th Street

2030 +Proj (Res) PM Peak (Mitigated)
1/18/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	148	367	155	4	4231	3675	815
v/c Ratio	0.30	0.37	0.32	0.03	1.26	0.75	0.71
Control Delay	39.2	39.3	25.6	62.0	140.5	17.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	4.4	0.7	0.0
Total Delay	39.2	39.3	25.6	62.0	144.9	18.3	12.2
Queue Length 50th (ft)	99	131	65	1	~1634	467	219
Queue Length 95th (ft)	160	178	128	m1	m#1569	625	468
Internal Link Dist (ft)		258			468	518	
Turn Bay Length (ft)	150			200			300
Base Capacity (vph)	490	980	479	150	3364	4874	1149
Starvation Cap Reductn	0	0	0	0	26	0	0
Spillback Cap Reductn	0	0	0	0	0	742	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.37	0.32	0.03	1.27	0.89	0.71

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
32: Bannon St & 12th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	2164	92	717	2072	21	45	3780
v/c Ratio	1.07	0.12	1.05	0.86	0.03	0.66	0.94
Control Delay	80.7	24.9	83.0	41.9	8.6	76.5	19.3
Queue Delay	235.6	0.0	0.0	0.5	0.0	0.0	0.2
Total Delay	316.3	24.9	83.0	42.4	8.6	76.5	19.5
Queue Length 50th (ft)	~718	48	~620	430	0	38	724
Queue Length 95th (ft)	#808	86	#864	m245	m1	m52	147
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	2015	752	682	2401	752	68	4004
Starvation Cap Reductn	0	0	0	0	0	0	18
Spillback Cap Reductn	665	0	0	86	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.60	0.12	1.05	0.90	0.03	0.66	0.95

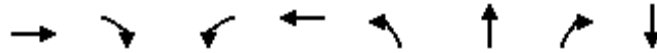
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj (Res) PM Peak (Mitigated)

1/18/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	89	88	1106	127	153	750	505	1309
v/c Ratio	0.28	0.28	1.32	0.28	1.58	0.81	0.49	1.95
Control Delay	9.1	8.9	183.6	32.6	324.9	17.7	1.7	457.4
Queue Delay	0.0	0.0	37.1	0.0	0.0	1.7	0.4	58.8
Total Delay	9.1	8.9	220.7	32.6	324.9	19.4	2.0	516.2
Queue Length 50th (ft)	0	0	~501	65	~142	135	0	~1299
Queue Length 95th (ft)	38	37	#627	118	m#208	m179	m0	#1553
Internal Link Dist (ft)	331			1127		348		107
Turn Bay Length (ft)					100			
Base Capacity (vph)	357	357	841	453	97	922	1039	670
Starvation Cap Reductn	0	0	0	0	0	66	167	42
Spillback Cap Reductn	2	2	50	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.25	1.40	0.28	1.58	0.88	0.58	2.08

Intersection Summary

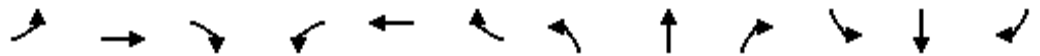
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Off) AM Peak (Mitigated)

1: Richards Blvd & I-5 SB Off

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↕↕						↕↕	↔↔
Volume (vph)	0	0	0	448	303	0	0	0	0	0	2632	795
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	448	303	0	0	0	0	0	2632	795
RTOR Reduction (vph)	0	0	0	15	0	0	0	0	0	0	0	21
Lane Group Flow (vph)	0	0	0	433	303	0	0	0	0	0	2632	774
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6							4
Permitted Phases												4
Actuated Green, G (s)				16.5	16.5						76.0	76.0
Effective Green, g (s)				15.0	16.0						76.0	76.0
Actuated g/C Ratio				0.15	0.16						0.76	0.76
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				515	566						2690	1067
v/s Ratio Prot				c0.13	0.09						c0.74	
v/s Ratio Perm												0.55
v/c Ratio				0.84	0.54						0.98	0.73
Uniform Delay, d1				41.3	38.6						11.2	6.4
Progression Factor				0.76	0.75						1.00	1.00
Incremental Delay, d2				15.1	3.6						12.7	3.0
Delay (s)				46.5	32.4						24.0	9.5
Level of Service				D	C						C	A
Approach Delay (s)		0.0			40.8			0.0			20.6	
Approach LOS		A			D			A			C	

Intersection Summary

HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richards Blvd & I-5 NB Off

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	676	1441	74	240	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	676	1441	74	240	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	63	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	676	1441	11	240	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					76.5	100.0	16.0	16.0				
Effective Green, g (s)					76.5	100.0	15.5	15.5				
Actuated g/C Ratio					0.76	1.00	0.16	0.16				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3890	2708	274	549				
v/s Ratio Prot					0.13		0.01	0.07				
v/s Ratio Perm						c0.53						
v/c Ratio					0.17	0.53	0.04	0.44				
Uniform Delay, d1					3.2	0.0	35.9	38.3				
Progression Factor					1.20	1.00	0.79	0.90				
Incremental Delay, d2					0.1	0.7	0.1	1.1				
Delay (s)					3.9	0.7	28.5	35.6				
Level of Service					A	A	C	D				
Approach Delay (s)		0.0			1.7			33.9			0.0	
Approach LOS		A			A			C			A	

Intersection Summary

HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richards Blvd & Bercut Dr

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↑↑↑↑		↖↖	↑			↑	↗
Volume (vph)	0	0	0	23	1559	65	466	249	0	0	90	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	7454		3433	1863			1863	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	7454		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	23	1559	65	466	249	0	0	90	91
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	56
Lane Group Flow (vph)	0	0	0	23	1619	0	466	249	0	0	90	35
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				61.1	61.1		19.0	30.8			7.8	7.8
Effective Green, g (s)				61.7	61.7		18.5	30.3			7.3	7.3
Actuated g/C Ratio				0.62	0.62		0.18	0.30			0.07	0.07
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				946	4599		635	564			136	116
v/s Ratio Prot					c0.22		c0.14	0.13			c0.05	
v/s Ratio Perm				0.01								0.02
v/c Ratio				0.02	0.35		0.73	0.44			0.66	0.31
Uniform Delay, d1				7.4	9.4		38.4	28.0			45.1	43.9
Progression Factor				0.46	0.41		0.58	0.57			1.00	1.00
Incremental Delay, d2				0.0	0.2		3.9	0.2			9.0	0.5
Delay (s)				3.5	4.1		26.3	16.1			54.1	44.5
Level of Service				A	A		C	B			D	D
Approach Delay (s)		0.0			4.0			22.7			49.3	
Approach LOS		A			A			C			D	

Intersection Summary

HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Off) AM Peak (Mitigated)

4: Richards Blvd & 6th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	207	959	39	433	697	0	0	245	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	7474		3433	1863			1863	1480
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	7474		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	207	959	39	433	697	0	0	245	393
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	20
Lane Group Flow (vph)	0	0	0	207	992	0	433	697	0	0	245	373
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				42.4	41.1		17.3	51.1			29.8	29.8
Effective Green, g (s)				41.4	41.4		16.8	50.6			29.3	29.8
Actuated g/C Ratio				0.41	0.41		0.17	0.51			0.29	0.30
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				733	3094		577	943			546	441
v/s Ratio Prot				0.12	c0.13		0.13	c0.37			0.13	
v/s Ratio Perm												c0.25
v/c Ratio				0.28	0.32		0.75	0.74			0.45	0.85
Uniform Delay, d1				19.4	19.8		39.6	19.5			28.8	33.0
Progression Factor				0.73	0.73		0.91	0.83			1.00	1.00
Incremental Delay, d2				0.1	0.2		2.6	1.3			0.2	13.4
Delay (s)				14.3	14.6		38.8	17.4			29.0	46.4
Level of Service				B	B		D	B			C	D
Approach Delay (s)		0.0			14.6			25.6			39.7	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	304	1089	263	277	977	0	0	1013	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.93	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Fr t				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Fl t Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6408	1474	1610	3385			3539	1583
Fl t Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6408	1474	1610	3385			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	304	1089	263	277	977	0	0	1013	364
RTOR Reduction (vph)	0	0	0	0	0	176	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	304	1089	87	249	1005	0	0	1013	364
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				34.0	33.0	33.0	28.5	28.5			27.5	100.0
Effective Green, g (s)				33.0	33.0	33.0	28.0	28.0			27.0	100.0
Actuated g/C Ratio				0.33	0.33	0.33	0.28	0.28			0.27	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				584	2115	486	451	948			956	1583
v/s Ratio Prot				c0.17	0.17		0.15	c0.30			c0.29	
v/s Ratio Perm						0.06						0.23
v/c Ratio				0.52	0.51	0.18	0.55	1.06			1.06	0.23
Uniform Delay, d1				27.1	27.0	23.9	30.7	36.0			36.5	0.0
Progression Factor				0.75	0.73	1.29	0.95	0.96			1.00	1.00
Incremental Delay, d2				0.3	0.8	0.7	0.7	44.7			46.2	0.3
Delay (s)				20.6	20.6	31.4	29.8	79.1			82.7	0.3
Level of Service				C	C	C	C	E			F	A
Approach Delay (s)		0.0			22.3			69.3			61.0	
Approach LOS		A			C			E			E	

Intersection Summary			
HCM Average Control Delay	48.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↵	↑↑↑		↵↵	↑			↑↑	↵
Volume (vph)	0	0	0	211	662	87	1092	34	0	0	24	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.74
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	0.98		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6296		3433	1863			3539	1176
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6296		3433	1863			3539	1176
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	211	662	87	1092	34	0	0	24	36
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	0	0	211	730	0	1092	34	0	0	24	2
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				43.9	42.9		40.4	49.1			4.7	4.7
Effective Green, g (s)				43.4	43.4		39.9	48.6			4.2	4.2
Actuated g/C Ratio				0.43	0.43		0.40	0.49			0.04	0.04
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				768	2732		1370	905			149	49
v/s Ratio Prot				c0.12	0.12		c0.32	0.02			c0.01	
v/s Ratio Perm												0.00
v/c Ratio				0.27	0.27		0.80	0.04			0.16	0.03
Uniform Delay, d1				18.2	18.1		26.5	13.5			46.2	45.9
Progression Factor				1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.2		3.3	0.0			0.2	0.1
Delay (s)				18.3	18.4		29.8	13.5			46.4	46.0
Level of Service				B	B		C	B			D	D
Approach Delay (s)		0.0			18.3			29.3			46.2	
Approach LOS		A			B			C			D	

Intersection Summary

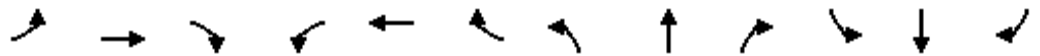
HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	488	50	237	1216	199	35	150	64	21	75	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.97			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3490		1770	3393			1751			1739	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.94	
Satd. Flow (perm)	1770	3490		1770	3393			1661			1654	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	488	50	237	1216	199	35	150	64	21	75	67
RTOR Reduction (vph)	0	13	0	0	20	0	0	18	0	0	37	0
Lane Group Flow (vph)	43	525	0	237	1395	0	0	231	0	0	126	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	3.1	13.1		17.3	27.3			21.1			21.1	
Effective Green, g (s)	3.6	13.6		17.8	27.8			20.6			20.6	
Actuated g/C Ratio	0.06	0.21		0.27	0.43			0.32			0.32	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	98	730		485	1451			526			524	
v/s Ratio Prot	0.02	c0.15		0.13	c0.41							
v/s Ratio Perm								c0.14			0.08	
v/c Ratio	0.44	0.72		0.49	0.96			0.44			0.24	
Uniform Delay, d1	29.7	23.9		19.8	18.1			17.6			16.4	
Progression Factor	1.00	1.00		1.00	1.00			0.46			1.00	
Incremental Delay, d2	3.1	2.8		0.8	15.3			2.4			1.1	
Delay (s)	32.8	26.8		20.6	33.3			10.5			17.5	
Level of Service	C	C		C	C			B			B	
Approach Delay (s)		27.2			31.5			10.5			17.5	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	628	164	0	0	0	0	0	0	2318	762	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	628	164	0	0	0	0	0	0	2318	762	0
RTOR Reduction (vph)	0	0	96	0	0	0	0	0	0	52	0	0
Lane Group Flow (vph)	0	628	69	0	0	0	0	0	0	2266	762	0
Turn Type			Perm								Split	
Protected Phases		4								2	2	
Permitted Phases			4									
Actuated Green, G (s)		23.6	23.6							67.4	67.4	
Effective Green, g (s)		23.6	23.6							67.4	67.4	
Actuated g/C Ratio		0.24	0.24							0.67	0.67	
Clearance Time (s)		4.5	4.5							4.5	4.5	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		835	374							3363	2385	
v/s Ratio Prot		c0.18								c0.45	0.22	
v/s Ratio Perm			0.04									
v/c Ratio		0.75	0.18							0.67	0.32	
Uniform Delay, d1		35.5	30.5							9.7	6.8	
Progression Factor		1.00	1.00							0.67	0.71	
Incremental Delay, d2		3.9	0.2							0.3	0.1	
Delay (s)		39.3	30.7							6.9	4.9	
Level of Service		D	C							A	A	
Approach Delay (s)		37.6			0.0			0.0			6.4	
Approach LOS		D			A			A			A	

Intersection Summary

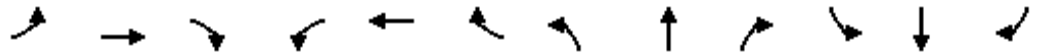
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

2030 +Proj (Off) AM Peak (Mitigated)

10: Bannon St & I-5 NB Off

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	2706	0	0	0	0	0	52	1730	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	2706	0	0	0	0	0	52	1730	0	0	0
RTOR Reduction (vph)	90	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	150	2706	0	0	0	0	0	52	1730	0	0	0
Turn Type	Split						Prot					
Protected Phases	2	2						1	4			
Permitted Phases												
Actuated Green, G (s)	38.2	38.2						53.8	53.8			
Effective Green, g (s)	38.2	38.2						53.8	53.8			
Actuated g/C Ratio	0.38	0.38						0.54	0.54			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	676	2882						1002	1942			
v/s Ratio Prot	0.08	c0.36						0.03	c0.48			
v/s Ratio Perm												
v/c Ratio	0.22	0.94						0.05	0.89			
Uniform Delay, d1	20.9	29.8						11.0	20.5			
Progression Factor	0.64	0.85						1.00	1.00			
Incremental Delay, d2	0.6	5.8						0.0	5.6			
Delay (s)	14.0	31.2						11.0	26.1			
Level of Service	B	C						B	C			
Approach Delay (s)		29.8			0.0			25.6			0.0	
Approach LOS		C			A			C			A	























Intersection Summary

HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: Bannon St & Bercut Dr

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						 		 			
Volume (vph)	217	3341	878	0	0	0	0	404	42	146	6	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0		
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00		
Frt	1.00	1.00	0.85					0.99		1.00	1.00		
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1770	6408	1583					3489		3433	1863		
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00		
Satd. Flow (perm)	1770	6408	1583					3489		3433	1863		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	217	3341	878	0	0	0	0	404	42	146	6	0	
RTOR Reduction (vph)	0	0	297	0	0	0	0	2	0	0	0	0	
Lane Group Flow (vph)	217	3341	581	0	0	0	0	444	0	146	6	0	
Turn Type	Split		Perm					Prot					
Protected Phases	6	6						8		7	4		
Permitted Phases			6										
Actuated Green, G (s)	66.2	66.2	66.2					16.1		5.7	25.8		
Effective Green, g (s)	66.2	66.2	66.2					16.1		5.7	25.8		
Actuated g/C Ratio	0.66	0.66	0.66					0.16		0.06	0.26		
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	1172	4242	1048					562		196	481		
v/s Ratio Prot	0.12	c0.52						c0.13		c0.04	0.00		
v/s Ratio Perm			0.37										
v/c Ratio	0.19	0.79	0.55					0.79		0.74	0.01		
Uniform Delay, d1	6.5	11.9	9.0					40.3		46.4	27.6		
Progression Factor	0.69	0.77	0.61					1.00		0.60	0.42		
Incremental Delay, d2	0.1	0.6	0.8					7.5		14.1	0.0		
Delay (s)	4.6	9.8	6.3					47.8		41.9	11.5		
Level of Service	A	A	A					D		D	B		
Approach Delay (s)		8.9			0.0			47.8			40.7		
Approach LOS		A			A			D			D		
Intersection Summary													
HCM Average Control Delay			13.3									HCM Level of Service	B
HCM Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			75.1%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	786	1740	1009	0	0	0	0	747	124	69	570	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6055						3382	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6055						3382	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	786	1740	1009	0	0	0	0	747	124	69	570	0
RTOR Reduction (vph)	0	101	0	0	0	0	0	1	68	0	0	0
Lane Group Flow (vph)	786	2648	0	0	0	0	0	758	44	69	570	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	48.4	48.4						26.6	26.6	12.0	42.6	
Effective Green, g (s)	48.4	48.4						26.6	26.6	12.0	42.6	
Actuated g/C Ratio	0.48	0.48						0.27	0.27	0.12	0.43	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	857	2931						900	383	212	1508	
v/s Ratio Prot		0.44						c0.22		0.04	c0.16	
v/s Ratio Perm	c0.44								0.03			
v/c Ratio	0.92	1.16dr						0.84	0.12	0.33	0.38	
Uniform Delay, d1	23.9	23.7						34.7	27.8	40.3	19.6	
Progression Factor	0.48	0.44						0.42	0.13	1.03	1.20	
Incremental Delay, d2	9.5	2.7						8.9	0.6	0.9	0.2	
Delay (s)	21.0	13.2						23.5	4.3	42.4	23.7	
Level of Service	C	B						C	A	D	C	
Approach Delay (s)		14.9			0.0			21.0			25.7	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: Bannon St & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗					↑↑	↗	↘	↑↑	
Volume (vph)	566	1311	28	0	0	0	0	480	341	199	1055	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	566	1311	28	0	0	0	0	480	341	199	1055	0
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	566	1311	11	0	0	0	0	480	341	199	1055	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	38.9	38.9	38.9					31.3	100.0	16.3	52.1	
Effective Green, g (s)	38.9	38.9	38.9					31.3	100.0	16.3	52.1	
Actuated g/C Ratio	0.39	0.39	0.39					0.31	1.00	0.16	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	689	1978	616					1108	1583	289	1844	
v/s Ratio Prot		0.26						0.14		c0.11	c0.30	
v/s Ratio Perm	c0.32		0.01						0.22			
v/c Ratio	0.82	0.66	0.02					0.43	0.22	0.69	0.57	
Uniform Delay, d1	27.4	25.2	18.8					27.3	0.0	39.5	16.3	
Progression Factor	0.44	0.43	0.26					0.65	1.00	1.02	0.16	
Incremental Delay, d2	4.2	0.4	0.0					1.1	0.3	2.4	0.5	
Delay (s)	16.1	11.2	5.0					18.8	0.3	42.7	3.0	
Level of Service	B	B	A					B	A	D	A	
Approach Delay (s)		12.6			0.0			11.1			9.3	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

























Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	46	72	142	195	17	73	766	79	89	1125	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.47	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	878	1863	1583	1354	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	103	46	72	142	195	17	73	766	79	89	1125	143
RTOR Reduction (vph)	0	0	57	0	0	13	0	0	40	0	0	51
Lane Group Flow (vph)	103	46	15	142	195	4	73	766	39	89	1125	92
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.0	49.1	49.1	16.4	57.5	57.5
Effective Green, g (s)	21.5	21.5	21.5	21.5	21.5	21.5	8.0	49.1	49.1	16.4	57.5	57.5
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.08	0.49	0.49	0.16	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	189	401	340	291	401	340	142	1738	777	290	2035	910
v/s Ratio Prot		0.02			0.10		c0.04	0.22		0.05	c0.32	
v/s Ratio Perm	c0.12		0.01	0.10		0.00			0.02			0.06
v/c Ratio	0.54	0.11	0.05	0.49	0.49	0.01	0.51	0.44	0.05	0.31	0.55	0.10
Uniform Delay, d1	34.9	31.6	31.1	34.4	34.4	30.9	44.1	16.5	13.3	36.8	13.2	9.6
Progression Factor	1.00	1.00	1.00	1.14	1.13	1.62	0.97	0.21	0.04	1.07	0.61	0.58
Incremental Delay, d2	3.2	0.1	0.1	1.3	0.9	0.0	3.0	0.8	0.1	0.4	0.7	0.2
Delay (s)	38.1	31.7	31.2	40.4	39.8	50.2	45.7	4.3	0.7	39.8	8.8	5.7
Level of Service	D	C	C	D	D	D	D	A	A	D	A	A
Approach Delay (s)		34.5			40.5			7.3			10.5	
Approach LOS		C			D			A			B	

Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: N B Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	88	57	89	130	308	80	624	381	117	1228	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3511	3511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	88	57	89	130	308	80	624	381	117	1228	70
RTOR Reduction (vph)	0	0	49	0	0	248	0	0	205	0	3	0
Lane Group Flow (vph)	39	88	8	89	130	60	80	624	176	117	1295	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.1	14.4	14.4	8.2	19.5	19.5	8.8	37.9	46.1	21.5	50.6	
Effective Green, g (s)	3.1	14.4	14.4	8.2	19.5	19.5	8.8	37.9	46.1	21.5	50.6	
Actuated g/C Ratio	0.03	0.14	0.14	0.08	0.20	0.20	0.09	0.38	0.46	0.22	0.51	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	55	510	228	282	690	309	156	1341	801	381	1777	
v/s Ratio Prot	c0.02	0.02		c0.03	0.04		0.05	c0.18	0.02	0.07	c0.37	
v/s Ratio Perm			0.01			c0.04			0.09			
v/c Ratio	0.71	0.17	0.04	0.32	0.19	0.19	0.51	0.47	0.22	0.31	0.73	
Uniform Delay, d1	48.0	37.6	36.8	43.3	33.6	33.7	43.6	23.4	16.2	33.0	19.3	
Progression Factor	0.80	0.78	1.06	1.00	1.00	1.00	1.00	0.71	0.72	0.59	0.48	
Incremental Delay, d2	34.0	0.2	0.1	0.6	0.1	0.3	2.8	1.1	0.1	0.4	2.5	
Delay (s)	72.3	29.4	39.0	43.9	33.8	34.0	46.5	17.8	11.8	20.0	11.8	
Level of Service	E	C	D	D	C	C	D	B	B	C	B	
Approach Delay (s)		41.5			35.6			17.8			12.5	
Approach LOS		D			D			B			B	

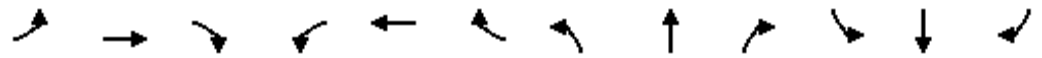
Intersection Summary

HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕↕						↔↔↔↔	↗
Volume (vph)	1381	107	117	32	269	29	0	0	0	81	4474	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3488						7537	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3488						7537	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1381	107	117	32	269	29	0	0	0	81	4474	383
RTOR Reduction (vph)	0	0	98	0	7	0	0	0	0	0	0	55
Lane Group Flow (vph)	1381	107	19	32	291	0	0	0	0	0	4555	328
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	21.0	21.0	21.0	19.8	19.8						70.7	91.7
Effective Green, g (s)	21.0	21.0	21.0	19.8	19.8						73.7	91.7
Actuated g/C Ratio	0.16	0.16	0.16	0.15	0.15						0.57	0.71
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	806	572	235	270	531						4273	1238
v/s Ratio Prot	c0.28	0.03		0.02	c0.08							0.04
v/s Ratio Perm			0.01								0.60	0.16
v/c Ratio	1.71	0.19	0.08	0.12	0.55						1.07	0.26
Uniform Delay, d1	54.5	47.1	46.3	47.6	51.0						28.1	6.9
Progression Factor	0.84	0.83	1.15	1.00	1.00						0.96	2.24
Incremental Delay, d2	325.3	0.3	0.3	0.4	2.0						31.9	0.1
Delay (s)	371.3	39.3	53.6	48.0	53.0						59.0	15.6
Level of Service	F	D	D	D	D						E	B
Approach Delay (s)		326.0			52.5			0.0			55.7	
Approach LOS		F			D			A			E	























Intersection Summary

HCM Average Control Delay	118.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
17: Canal St & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	65	204	76	7	20	211	783	0	83	1170	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1656		1770	3539		1770	3487	
Flt Permitted	0.74	1.00	1.00	0.71	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1378	1863	1583	1331	1656		1770	3539		1770	3487	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	65	204	76	7	20	211	783	0	83	1170	127
RTOR Reduction (vph)	0	0	172	0	17	0	0	0	0	0	7	0
Lane Group Flow (vph)	54	65	32	76	10	0	211	783	0	83	1290	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4			8			5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	15.6	15.6	15.6	15.6	15.6		16.7	45.5		25.4	54.2	
Effective Green, g (s)	15.6	15.6	15.6	15.6	15.6		16.7	45.5		25.4	54.2	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.17	0.46		0.25	0.54	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	215	291	247	208	258		296	1610		450	1890	
v/s Ratio Prot		0.03			0.01		c0.12	0.22		0.05	c0.37	
v/s Ratio Perm	0.04		0.02	c0.06								
v/c Ratio	0.25	0.22	0.13	0.37	0.04		0.71	0.49		0.18	0.68	
Uniform Delay, d1	37.1	36.9	36.3	37.8	35.8		39.4	19.1		29.2	16.6	
Progression Factor	1.00	1.00	1.00	1.40	1.82		0.68	0.41		0.58	0.56	
Incremental Delay, d2	0.6	0.4	0.2	0.9	0.1		6.5	0.9		0.2	1.8	
Delay (s)	37.7	37.3	36.6	53.9	65.2		33.3	8.6		17.2	11.1	
Level of Service	D	D	D	D	E		C	A		B	B	
Approach Delay (s)		36.9			56.9			13.9			11.5	
Approach LOS		D			E			B			B	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	11	46	187	4	5	63	414	0	24	1521	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3525	
Flt Permitted	0.76	1.00	1.00	0.75	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1407	1863	1583	1398	1863	1583	1770	3539		1770	3525	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	229	11	46	187	4	5	63	414	0	24	1521	42
RTOR Reduction (vph)	0	0	37	0	0	4	0	0	0	0	2	0
Lane Group Flow (vph)	229	11	9	187	4	1	63	414	0	24	1561	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	19.5	19.5	19.5	19.5	19.5	19.5	6.8	65.5		2.0	61.2	
Effective Green, g (s)	19.5	19.5	19.5	19.5	19.5	19.5	6.8	65.5		2.0	61.2	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.07	0.66		0.02	0.61	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	274	363	309	273	363	309	120	2318		35	2157	
v/s Ratio Prot		0.01			0.00		c0.04	0.12		0.01	c0.44	
v/s Ratio Perm	c0.16		0.01	0.13		0.00						
v/c Ratio	0.84	0.03	0.03	0.68	0.01	0.00	0.52	0.18		0.69	0.72	
Uniform Delay, d1	38.7	32.6	32.6	37.4	32.5	32.4	45.0	6.7		48.7	13.5	
Progression Factor	0.80	0.71	0.61	1.00	1.00	1.00	1.02	1.23		1.01	0.93	
Incremental Delay, d2	19.3	0.0	0.0	6.9	0.0	0.0	3.5	0.1		37.6	1.8	
Delay (s)	50.3	23.0	19.8	44.3	32.5	32.4	49.5	8.4		86.7	14.3	
Level of Service	D	C	B	D	C	C	D	A		F	B	
Approach Delay (s)		44.3			43.8			13.9			15.4	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	349	549	788	321	64	402	722	537	366	1001	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.93	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3169	1441	1610	3299	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	349	549	788	321	64	402	722	537	366	1001	63
RTOR Reduction (vph)	0	139	167	0	0	40	0	0	356	0	0	30
Lane Group Flow (vph)	151	479	113	394	715	24	402	722	181	366	1001	33
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Effective Green, g (s)	19.9	19.9	19.9	23.6	23.6	23.6	10.5	29.0	29.0	9.5	28.0	28.0
Actuated g/C Ratio	0.20	0.20	0.20	0.24	0.24	0.24	0.10	0.29	0.29	0.10	0.28	0.28
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	352	631	287	380	779	374	360	1026	459	326	991	443
v/s Ratio Prot	0.09	c0.15		c0.24	0.22		c0.12	0.20		0.11	c0.28	
v/s Ratio Perm			0.08			0.01			0.11			0.02
v/c Ratio	0.43	0.76	0.39	1.04	0.99dl	0.06	1.12	0.70	0.39	1.12	1.01	0.07
Uniform Delay, d1	35.1	37.8	34.8	38.2	37.3	29.6	44.8	31.7	28.5	45.2	36.0	26.5
Progression Factor	1.00	1.00	1.00	0.45	0.45	0.28	1.00	1.00	1.00	0.75	0.90	0.72
Incremental Delay, d2	0.8	5.2	0.9	37.5	6.7	0.0	82.8	4.0	2.5	81.6	27.6	0.3
Delay (s)	35.9	43.0	35.7	54.8	23.5	8.2	127.6	35.7	31.0	115.5	59.9	19.2
Level of Service	D	D	D	D	C	A	F	D	C	F	E	B
Approach Delay (s)		40.1			33.2			56.4			72.3	
Approach LOS		D			C			E			E	

Intersection Summary

HCM Average Control Delay	52.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

























dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	453	647	66	879	807	0	147	418	405	15	1467	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	453	647	66	879	807	0	147	418	405	15	1467	182
RTOR Reduction (vph)	0	0	49	0	0	0	0	0	257	0	0	59
Lane Group Flow (vph)	453	647	17	879	807	0	147	418	148	15	1467	123
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	16.8	19.9	19.9	17.1	20.2		5.0	36.5	36.5	2.0	33.5	33.5
Effective Green, g (s)	16.8	19.9	19.9	17.1	20.2		5.0	36.5	36.5	2.0	33.5	33.5
Actuated g/C Ratio	0.17	0.20	0.20	0.17	0.20		0.05	0.36	0.36	0.02	0.34	0.34
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	577	704	315	587	715		172	1292	578	35	1186	530
v/s Ratio Prot	0.13	c0.18		c0.26	c0.23		c0.04	c0.12		0.01	c0.41	
v/s Ratio Perm			0.01						0.09			0.08
v/c Ratio	0.79	0.92	0.05	1.50	1.13		0.85	0.32	0.26	0.43	1.24	0.23
Uniform Delay, d1	39.9	39.3	32.4	41.4	39.9		47.1	22.9	22.2	48.4	33.2	24.0
Progression Factor	0.85	0.87	0.73	1.00	1.00		1.00	1.00	1.00	1.00	0.80	0.55
Incremental Delay, d2	3.8	10.4	0.0	232.7	75.0		31.5	0.7	1.1	6.1	112.1	0.7
Delay (s)	37.6	44.6	23.7	274.2	114.9		78.7	23.5	23.3	54.5	138.7	13.8
Level of Service	D	D	C	F	F		E	C	C	D	F	B
Approach Delay (s)		40.7			197.9			31.8			124.3	
Approach LOS		D			F			C			F	

Intersection Summary

HCM Average Control Delay	112.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	32.5
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Volume (vph)	74	51	0	56	174	59	25	518	35	684	1486	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	1.00		1.00	0.96			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863		1770	1792			3500			3430	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (perm)	1770	1863		1770	1792			3500			3430	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	74	51	0	56	174	59	25	518	35	684	1486	284
RTOR Reduction (vph)	0	0	0	0	8	0	0	3	0	0	6	0
Lane Group Flow (vph)	74	51	0	56	225	0	0	575	0	0	2448	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	5.0	19.0		5.0	19.0			20.0			90.0	
Effective Green, g (s)	5.0	19.0		5.0	19.0			20.0			90.0	
Actuated g/C Ratio	0.03	0.13		0.03	0.13			0.13			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	59	236		59	227			467			2058	
v/s Ratio Prot	c0.04	0.03		0.03	c0.13			c0.16			c0.71	
v/s Ratio Perm												
v/c Ratio	1.25	0.22		0.95	0.99			1.23			1.19	
Uniform Delay, d1	72.5	58.8		72.4	65.4			65.0			30.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	200.4	0.5		97.7	57.2			121.2			90.5	
Delay (s)	272.9	59.3		170.1	122.6			186.2			120.5	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		185.7			131.8			186.2			120.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	134.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: G Street & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	38	168	118	587	456	572	94	1935	105	421	1494	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1846	1583	1770	1863	1583	1770	3512		1770	3483	
Flt Permitted		0.40	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		747	1583	1770	1863	1583	1770	3512		1770	3483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	168	118	587	456	572	94	1935	105	421	1494	178
RTOR Reduction (vph)	0	0	79	0	0	179	0	4	0	0	9	0
Lane Group Flow (vph)	0	206	39	587	456	393	94	2036	0	421	1663	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		21.0	21.0	15.0	40.0	40.0	5.0	36.0		12.0	43.0	
Effective Green, g (s)		21.0	21.0	15.0	40.0	40.0	5.0	36.0		12.0	43.0	
Actuated g/C Ratio		0.21	0.21	0.15	0.40	0.40	0.05	0.36		0.12	0.43	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		157	332	266	745	633	89	1264		212	1498	
v/s Ratio Prot				c0.33	0.24		0.05	c0.58		c0.24	0.48	
v/s Ratio Perm		c0.28	0.02			0.25						
v/c Ratio		1.31	0.12	2.21	0.61	0.62	1.06	1.61		1.99	1.11	
Uniform Delay, d1		39.5	32.0	42.5	23.8	24.0	47.5	32.0		44.0	28.5	
Progression Factor		0.59	0.37	0.72	0.51	0.36	0.94	0.92		1.00	1.00	
Incremental Delay, d2		169.6	0.5	550.3	2.2	2.7	44.7	275.2		460.1	59.6	
Delay (s)		192.9	12.3	580.7	14.3	11.4	89.3	304.6		504.1	88.1	
Level of Service		F	B	F	B	B	F	F		F	F	
Approach Delay (s)		127.1			219.2			295.1			171.8	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	224.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	137.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↕	↗	↖	↕			↕	↗
Volume (vph)	91	0	257	394	923	402	14	203	0	0	1048	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	0	257	394	923	402	14	203	0	0	1048	719
RTOR Reduction (vph)	0	0	117	0	0	263	0	0	0	0	0	129
Lane Group Flow (vph)	91	0	140	394	923	139	14	203	0	0	1048	590
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					custom
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0		18.0	25.0	35.0	35.0	5.0	45.5			36.5	45.5
Effective Green, g (s)	8.0		18.0	24.5	35.0	34.5	5.0	45.5			36.0	45.5
Actuated g/C Ratio	0.08		0.18	0.24	0.35	0.34	0.05	0.46			0.36	0.46
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	142		285	434	1239	487	89	848			1274	720
v/s Ratio Prot	0.05			c0.22	c0.26		0.01	0.11			0.30	
v/s Ratio Perm			c0.09			0.10						c0.37
v/c Ratio	0.64		0.49	0.91	0.74	0.28	0.16	0.24			0.82	0.82
Uniform Delay, d1	44.6		36.9	36.7	28.6	23.8	45.5	16.7			29.1	23.7
Progression Factor	1.34		2.13	0.97	0.89	1.37	0.86	0.57			1.00	1.00
Incremental Delay, d2	2.0		0.5	18.1	2.6	0.9	1.1	0.2			6.1	10.1
Delay (s)	61.9		79.0	53.5	28.1	33.6	40.0	9.7			35.2	33.8
Level of Service	E		E	D	C	C	D	A			D	C
Approach Delay (s)		74.6			35.2			11.6			34.6	
Approach LOS		E			D			B			C	

Intersection Summary

HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1077	189	67	0	0	0	0	1276	547	652	1569	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99						0.95		1.00	1.00	
Flpb, ped/bikes	0.87	0.91						1.00		1.00	1.00	
Frt	1.00	0.99						0.95		1.00	1.00	
Flt Protected	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (prot)	1406	2925						3203		1770	3539	
Flt Permitted	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (perm)	1406	2925						3203		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1077	189	67	0	0	0	0	1276	547	652	1569	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	538	789	0	0	0	0	0	1775	0	652	1569	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)	29.5	29.5						30.5		29.5	63.5	
Effective Green, g (s)	29.5	29.0						30.0		29.0	63.0	
Actuated g/C Ratio	0.30	0.29						0.30		0.29	0.63	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	415	848						961		513	2230	
v/s Ratio Prot								c0.55		c0.37	0.44	
v/s Ratio Perm	c0.38	0.27										
v/c Ratio	1.30	1.21dl						1.85		1.27	0.70	
Uniform Delay, d1	35.2	34.5						35.0		35.5	12.3	
Progression Factor	0.59	0.59						1.03		1.23	0.47	
Incremental Delay, d2	135.1	2.4						381.7		123.4	0.2	
Delay (s)	155.9	22.6						417.6		167.1	6.0	
Level of Service	F	C						F		F	A	
Approach Delay (s)		76.4			0.0			417.6			53.3	
Approach LOS		E			A			F			D	

Intersection Summary

HCM Average Control Delay	182.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	130.2%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	274	1205	185	0	0	0	0	0	0	512	1047	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3415								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3415								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	274	1205	185	0	0	0	0	0	0	512	1047	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1655	0	0	0	0	0	0	0	512	1047	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		50.5								34.5	34.5	
Effective Green, g (s)		50.0								34.0	34.0	
Actuated g/C Ratio		0.50								0.34	0.34	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1708								602	1203	
v/s Ratio Prot		c0.48								0.29	c0.30	
v/s Ratio Perm												
v/c Ratio		0.97								0.85	0.87	
Uniform Delay, d1		24.2								30.6	30.9	
Progression Factor		0.83								0.70	0.70	
Incremental Delay, d2		2.5								8.3	5.1	
Delay (s)		22.6								29.7	26.8	
Level of Service		C								C	C	
Approach Delay (s)		22.6			0.0			0.0			27.7	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↖	↑↑			↗	↖
Volume (vph)	0	0	0	120	1240	630	54	1279	0	0	402	1230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.95		1.00	1.00			0.92	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					5998		1770	3539			1630	1504
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					5998		1770	3539			1630	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	120	1240	630	54	1279	0	0	402	1230
RTOR Reduction (vph)	0	0	0	0	167	0	0	0	0	0	79	461
Lane Group Flow (vph)	0	0	0	0	1824	0	54	1279	0	0	766	326
Confl. Peds. (#/hr)						36						
Turn Type				Perm		custom						custom
Protected Phases					4		1	1			2	2
Permitted Phases				4			1					2
Actuated Green, G (s)					13.5		19.0	19.0			7.0	7.0
Effective Green, g (s)					13.0		18.5	18.5			6.5	6.5
Actuated g/C Ratio					0.26		0.37	0.37			0.13	0.13
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1559		655	1309			212	196
v/s Ratio Prot							0.03	c0.36			c0.47	0.22
v/s Ratio Perm					0.30							
v/c Ratio					1.17		0.08	0.98			3.61	1.66
Uniform Delay, d1					18.5		10.2	15.5			21.8	21.8
Progression Factor					0.61		0.82	1.21			1.88	5.17
Incremental Delay, d2					78.9		0.1	11.1			1183.6	313.3
Delay (s)					90.2		8.5	29.9			1224.5	425.7
Level of Service					F		A	C			F	F
Approach Delay (s)		0.0			90.2			29.0			839.3	
Approach LOS		A			F			C			F	

Intersection Summary

HCM Average Control Delay	320.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	151.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: I Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	298	1699	0	0	0	0	0	973	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.96
Flpb, ped/bikes				0.97	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1479	4799						5085	1520
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1479	4799						5085	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	298	1699	0	0	0	0	0	973	288
RTOR Reduction (vph)	0	0	0	86	3	0	0	0	0	0	0	69
Lane Group Flow (vph)	0	0	0	182	1726	0	0	0	0	0	973	219
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				18.0	18.0						19.0	19.0
Effective Green, g (s)				17.5	17.5						18.5	18.5
Actuated g/C Ratio				0.35	0.35						0.37	0.37
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				518	1680						1881	562
v/s Ratio Prot											c0.19	
v/s Ratio Perm				0.12	0.36							0.14
v/c Ratio				0.35	1.03						0.52	0.39
Uniform Delay, d1				12.0	16.2						12.3	11.6
Progression Factor				1.00	1.00						0.63	0.55
Incremental Delay, d2				1.9	29.2						0.5	1.0
Delay (s)				13.9	45.5						8.2	7.4
Level of Service				B	D						A	A
Approach Delay (s)		0.0			41.2			0.0			8.0	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 6 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↕↕						↕		↘		
Volume (vph)	1371	2299	0	0	0	0	0	58	29	292	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.89	0.98						1.00		0.90		
Frt	1.00	1.00						0.96		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1349	4671						1706		1591		
Flt Permitted	0.95	0.99						1.00		0.70		
Satd. Flow (perm)	1349	4671						1706		1173		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1371	2299	0	0	0	0	0	58	29	292	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	891	2779	0	0	0	0	0	79	0	292	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						4 8					
Actuated Green, G (s)	68.1	68.1						24.9		24.9		
Effective Green, g (s)	67.6	67.6						24.4		24.4		
Actuated g/C Ratio	0.68	0.68						0.24		0.24		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	912	3158						416		286		
v/s Ratio Prot								0.05				
v/s Ratio Perm	c0.66	0.59								c0.25		
v/c Ratio	0.98	0.88						0.19		1.02		
Uniform Delay, d1	15.5	13.0						30.0		37.8		
Progression Factor	0.29	0.30						1.00		1.12		
Incremental Delay, d2	5.1	0.4						1.0		21.5		
Delay (s)	9.6	4.2						31.0		63.9		
Level of Service	A	A						C		E		
Approach Delay (s)		5.5			0.0			31.0			63.9	
Approach LOS		A			A			C			E	

Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	151.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2373	537	0	0	0	0	0	0	320	803	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.91	1.00								0.91	
Frbp, ped/bikes		1.00	0.84								1.00	
Flpb, ped/bikes		1.00	1.00								0.96	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5085	1325								4832	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5085	1325								4832	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2373	537	0	0	0	0	0	0	320	803	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	2373	524	0	0	0	0	0	0	0	1120	0
Confl. Peds. (#/hr)			72								72	
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1								2	
Actuated Green, G (s)		61.5	61.5								31.5	
Effective Green, g (s)		61.0	61.5								31.0	
Actuated g/C Ratio		0.61	0.62								0.31	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		3102	815								1498	
v/s Ratio Prot		c0.47										
v/s Ratio Perm			0.40								0.23	
v/c Ratio		0.76	0.64								0.75	
Uniform Delay, d1		14.3	12.3								31.0	
Progression Factor		0.49	0.42								0.81	
Incremental Delay, d2		1.1	2.3								3.0	
Delay (s)		8.0	7.5								28.1	
Level of Service		A	A								C	
Approach Delay (s)		7.9			0.0			0.0			28.1	
Approach LOS		A			A			A			C	

Intersection Summary

HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↑↑↑			↗			↘	↙
Volume (vph)	0	0	0	0	1494	186	0	2	0	0	276	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.98	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6301			1863			1833	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6301			1863			1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1494	186	0	2	0	0	276	37
RTOR Reduction (vph)	0	0	0	0	34	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	1646	0	0	2	0	0	306	0
Turn Type				Prot			Perm					
Protected Phases				2				4			8	
Permitted Phases					2		4					
Actuated Green, G (s)					30.5			25.5			25.5	
Effective Green, g (s)					30.5			25.5			25.5	
Actuated g/C Ratio					0.47			0.39			0.39	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2957			731			719	
v/s Ratio Prot								0.00			c0.17	
v/s Ratio Perm					c0.26							
v/c Ratio					0.56			0.00			0.43	
Uniform Delay, d1					12.4			12.0			14.4	
Progression Factor					0.61			1.00			0.45	
Incremental Delay, d2					0.4			0.0			1.7	
Delay (s)					8.0			12.0			8.2	
Level of Service					A			B			A	
Approach Delay (s)		0.0			8.0			12.0			8.2	
Approach LOS		A			A			B			A	

Intersection Summary

HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Richards Blvd & 12th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	47	827	89	0	2241	0	0	4372	853
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00		0.91			0.81	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583		5085			7544	1583
Flt Permitted				0.95	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583		5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	47	827	89	0	2241	0	0	4372	853
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	0	0	0	77
Lane Group Flow (vph)	0	0	0	47	827	43	0	2241	0	0	4372	776
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				33.0	33.0	33.0		89.0			89.0	89.0
Effective Green, g (s)				33.0	33.0	33.0		89.0			89.0	89.0
Actuated g/C Ratio				0.25	0.25	0.25		0.68			0.68	0.68
Clearance Time (s)				4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)				449	898	402		3481			5165	1084
v/s Ratio Prot					c0.23			0.44			c0.58	
v/s Ratio Perm				0.03		0.03						0.49
v/c Ratio				0.10	0.92	0.11		0.64			0.85	0.72
Uniform Delay, d1				37.2	47.2	37.2		11.6			15.4	12.7
Progression Factor				1.00	1.00	1.00		0.35			1.00	1.00
Incremental Delay, d2				0.5	16.1	0.5		0.8			1.9	4.1
Delay (s)				37.6	63.3	37.8		4.9			17.2	16.7
Level of Service				D	E	D		A			B	B
Approach Delay (s)		0.0			59.7			4.9			17.2	
Approach LOS		A			E			A			B	

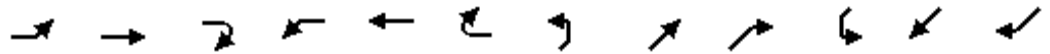
Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Richards & 12th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔↔	↑	↔					↔↔↔	↔	↔	↑↑↑↑	
Volume (vph)	794	30	549	0	0	0	0	1449	1	32	4388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	794	30	549	0	0	0	0	1449	1	32	4388	0
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	794	30	507	0	0	0	0	1449	1	32	4388	0
Turn Type	custom		Perm						Perm	Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	39.7	39.7	39.7					67.0	67.0	10.3	81.8	
Effective Green, g (s)	39.7	39.7	39.7					67.0	67.0	10.3	81.8	
Actuated g/C Ratio	0.31	0.31	0.31					0.52	0.52	0.08	0.63	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1524	569	483					2621	816	140	4747	
v/s Ratio Prot	0.16	0.02						0.28		0.02	c0.58	
v/s Ratio Perm			c0.32						0.00			
v/c Ratio	0.52	0.05	1.05					0.55	0.00	0.23	0.92	
Uniform Delay, d1	37.3	31.9	45.2					21.3	15.3	56.1	21.4	
Progression Factor	1.00	1.00	1.00					0.38	0.00	0.70	0.30	
Incremental Delay, d2	0.3	0.0	54.8					0.1	0.0	0.4	2.2	
Delay (s)	37.6	31.9	100.0					8.2	0.0	39.5	8.8	
Level of Service	D	C	F					A	A	D	A	
Approach Delay (s)		62.4			0.0			8.2			9.0	
Approach LOS		E			A			A			A	

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
33: Riverfront Dr & 5th Street

2030 +Proj (Off) AM Peak (Mitigated)
1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
34: Riverfront Dr & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)
1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↶	↷
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: Signature & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↗	↖↗	↖		↖	↑	↗		↔	
Volume (vph)	0	0	165	468	108	15	231	556	454	5	744	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.97	1.00		1.00	1.00	1.00		1.00	
Fr _t		0.85	0.85	1.00	0.98		1.00	1.00	0.85		1.00	
Fl _t Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	3433	1829		1770	1863	1583		1862	
Fl _t Permitted		1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	3433	1829		1770	1863	1583		1857	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	165	468	108	15	231	556	454	5	744	0
RTOR Reduction (vph)	0	79	79	0	3	0	0	0	145	0	0	0
Lane Group Flow (vph)	0	4	3	468	120	0	231	556	309	0	749	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		5.5	5.5	25.5	25.5		19.8	88.5	88.5		65.2	
Effective Green, g (s)		5.5	5.5	25.5	25.5		19.8	88.5	88.5		65.2	
Actuated g/C Ratio		0.04	0.04	0.20	0.20		0.15	0.68	0.68		0.50	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		64	64	673	359		270	1268	1078		931	
v/s Ratio Prot		c0.00		c0.14	0.07		c0.13	0.30				
v/s Ratio Perm			0.00						0.20		c0.40	
v/c Ratio		0.05	0.05	0.70	0.33		0.86	0.44	0.29		0.80	
Uniform Delay, d ₁		59.8	59.8	48.6	44.9		53.7	9.4	8.2		27.1	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d ₂		0.4	0.4	3.1	0.6		22.3	1.1	0.7		7.3	
Delay (s)		60.1	60.1	51.8	45.5		76.0	10.5	8.9		34.4	
Level of Service		E	E	D	D		E	B	A		C	
Approach Delay (s)		60.1		50.5			22.1				34.4	
Approach LOS		E		D			C				C	

Intersection Summary

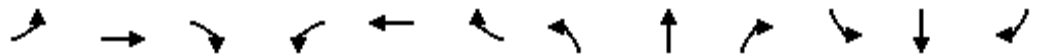
HCM Average Control Delay	33.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak (Mitigated)

1: Richards Blvd & I-5 SB Off

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↕↕						↕↕	↔↔
Volume (vph)	0	0	0	1140	440	0	0	0	0	0	1798	851
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.95						0.95	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3433	3539						3539	1404
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3433	3539						3539	1404
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	1140	440	0	0	0	0	0	1798	851
RTOR Reduction (vph)	0	0	0	17	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	0	0	1123	440	0	0	0	0	0	1798	754
Confl. Peds. (#/hr)			55									55
Turn Type				Split								Perm
Protected Phases				6	6						4	
Permitted Phases												4
Actuated Green, G (s)				36.5	36.5						56.0	56.0
Effective Green, g (s)				35.0	36.0						56.0	56.0
Actuated g/C Ratio				0.35	0.36						0.56	0.56
Clearance Time (s)				3.5	3.5						4.0	4.0
Vehicle Extension (s)				5.0	5.0						5.0	5.0
Lane Grp Cap (vph)				1202	1274						1982	786
v/s Ratio Prot				c0.33	0.12						0.51	
v/s Ratio Perm												c0.54
v/c Ratio				0.93	0.35						0.91	0.96
Uniform Delay, d1				31.4	23.4						19.7	20.9
Progression Factor				0.54	0.46						1.00	1.00
Incremental Delay, d2				13.5	0.7						6.9	22.8
Delay (s)				30.5	11.5						26.5	43.7
Level of Service				C	B						C	D
Approach Delay (s)		0.0			25.2			0.0			32.0	
Approach LOS		A			C			A			C	

Intersection Summary

HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Richards Blvd & I-5 NB Off

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑↑	↑	↑↑				
Volume (vph)	0	0	0	0	1481	3221	98	602	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					0.91	0.88	1.00	0.95				
Frbp, ped/bikes					1.00	0.97	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					5085	2708	1770	3539				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					5085	2708	1770	3539				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1481	3221	98	602	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	21	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1481	3221	77	602	0	0	0	0
Confl. Peds. (#/hr)						55	55					
Turn Type						Free	Split					
Protected Phases					6		8	8				
Permitted Phases						Free						
Actuated Green, G (s)					65.9	100.0	26.6	26.6				
Effective Green, g (s)					65.9	100.0	26.1	26.1				
Actuated g/C Ratio					0.66	1.00	0.26	0.26				
Clearance Time (s)					4.0		3.5	3.5				
Vehicle Extension (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)					3351	2708	462	924				
v/s Ratio Prot					0.29		0.04	0.17				
v/s Ratio Perm						c1.19						
v/c Ratio					0.44	1.19	0.17	0.65				
Uniform Delay, d1					8.2	50.0	28.5	32.9				
Progression Factor					0.49	1.00	0.63	0.73				
Incremental Delay, d2					0.1	86.3	0.3	1.9				
Delay (s)					4.1	136.3	18.3	25.8				
Level of Service					A	F	B	C				
Approach Delay (s)		0.0			94.7			24.7			0.0	
Approach LOS		A			F			C			A	

Intersection Summary

HCM Average Control Delay	85.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Richards Blvd & Bercut Dr

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	13	3661	39	828	221	0	0	215	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.87	1.00		1.00	1.00			1.00	1.00
Fr _t				1.00	1.00		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1534	7520		3433	1863			1863	1583
Fl _t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1534	7520		3433	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	13	3661	39	828	221	0	0	215	213
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	13	3699	0	828	221	0	0	215	210
Confl. Peds. (#/hr)	40		40	40		40			40	40		
Turn Type				Perm			Prot					Perm
Protected Phases					6		3	8			4	
Permitted Phases				6								4
Actuated Green, G (s)				49.6	49.6		24.0	42.3			14.3	14.3
Effective Green, g (s)				50.2	50.2		23.5	41.8			13.8	13.8
Actuated g/C Ratio				0.50	0.50		0.24	0.42			0.14	0.14
Clearance Time (s)				4.6	4.6		4.0	3.5			3.5	3.5
Vehicle Extension (s)				0.2	0.2		3.0	0.2			0.2	0.2
Lane Grp Cap (vph)				770	3775		807	779			257	218
v/s Ratio Prot					c0.49		c0.24	0.12			0.12	
v/s Ratio Perm				0.01								c0.13
v/c Ratio				0.02	0.98		1.03	0.28			0.84	0.97
Uniform Delay, d ₁				12.5	24.4		38.2	19.2			42.0	42.9
Progression Factor				0.42	0.37		0.42	0.30			1.00	1.00
Incremental Delay, d ₂				0.0	5.3		34.1	0.1			19.6	50.4
Delay (s)				5.3	14.3		50.1	5.7			61.6	93.3
Level of Service				A	B		D	A			E	F
Approach Delay (s)		0.0			14.3			40.8			77.4	
Approach LOS		A			B			D			E	

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

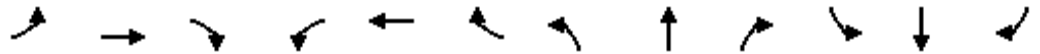
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak (Mitigated)

4: Richards Blvd & 6th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑↑		↔	↑			↑	↔
Volume (vph)	0	0	0	416	2587	61	963	650	0	0	197	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	3.5
Lane Util. Factor				1.00	0.81		0.97	1.00			1.00	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.93
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	7502		3433	1863			1863	1480
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	7502		3433	1863			1863	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	416	2587	61	963	650	0	0	197	281
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	4
Lane Group Flow (vph)	0	0	0	416	2644	0	963	650	0	0	197	277
Confl. Peds. (#/hr)			40			40	40		40	40		40
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		3	8			4	
Permitted Phases					2							4
Actuated Green, G (s)				39.1	37.8		29.7	54.4			20.7	20.7
Effective Green, g (s)				38.1	38.1		29.2	53.9			20.2	20.7
Actuated g/C Ratio				0.38	0.38		0.29	0.54			0.20	0.21
Clearance Time (s)				3.0	4.3		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	2.0			2.0	2.0
Lane Grp Cap (vph)				674	2858		1002	1004			376	306
v/s Ratio Prot				0.24	c0.35		c0.28	0.35			0.11	
v/s Ratio Perm												c0.19
v/c Ratio				0.62	0.93		0.96	0.65			0.52	0.91
Uniform Delay, d1				25.0	29.6		34.8	16.3			35.6	38.7
Progression Factor				0.38	0.40		0.80	0.60			1.00	1.00
Incremental Delay, d2				0.8	4.5		3.2	0.1			0.6	27.9
Delay (s)				10.2	16.4		31.2	9.9			36.2	66.6
Level of Service				B	B		C	A			D	E
Approach Delay (s)		0.0			15.6			22.6			54.1	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak (Mitigated)

5: Richards Blvd & 7th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	299	1720	109	408	764	0	0	1225	896
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.93	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6408	1474	1610	3382			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6408	1474	1610	3382			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	299	1720	109	408	764	0	0	1225	896
RTOR Reduction (vph)	0	0	0	0	0	72	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	299	1720	37	367	805	0	0	1225	896
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				34.5	33.5	33.5	24.0	24.0			31.5	100.0
Effective Green, g (s)				33.5	33.5	33.5	23.5	23.5			31.0	100.0
Actuated g/C Ratio				0.34	0.34	0.34	0.24	0.24			0.31	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				593	2147	494	378	795			1097	1583
v/s Ratio Prot				0.17	c0.27		0.23	c0.24			c0.35	
v/s Ratio Perm						0.02						0.57
v/c Ratio				0.50	0.80	0.07	0.97	1.01			1.12	0.57
Uniform Delay, d1				26.6	30.2	22.7	37.9	38.2			34.5	0.0
Progression Factor				0.74	0.74	1.07	1.23	1.22			0.81	1.00
Incremental Delay, d2				0.2	3.0	0.3	34.6	32.4			53.9	0.1
Delay (s)				19.8	25.3	24.4	81.4	79.1			81.8	0.1
Level of Service				B	C	C	F	E			F	A
Approach Delay (s)		0.0			24.5			79.8			47.3	
Approach LOS		A			C			E			D	

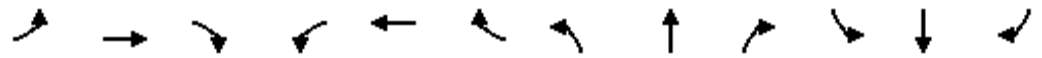
Intersection Summary

HCM Average Control Delay	45.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Richards Blvd & 10th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑		↔	↑			↑↑	↔
Volume (vph)	0	0	0	91	705	28	930	42	0	0	33	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.5	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86		0.97	1.00			0.95	1.00
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	0.91
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Fr t				1.00	0.99		1.00	1.00			1.00	0.85
Fl t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6371		3433	1863			3539	1434
Fl t Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6371		3433	1863			3539	1434
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	91	705	28	930	42	0	0	33	169
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	91	728	0	930	42	0	0	33	131
Confl. Peds. (#/hr)			35				35					35
Turn Type				Prot			Prot					Perm
Protected Phases				5	2		7	4			8	
Permitted Phases												8
Actuated Green, G (s)				42.2	41.2		33.8	50.8			13.0	13.0
Effective Green, g (s)				41.7	41.7		33.3	50.3			12.5	12.5
Actuated g/C Ratio				0.42	0.42		0.33	0.50			0.12	0.12
Clearance Time (s)				3.5	4.5		4.0	3.5			3.5	3.5
Vehicle Extension (s)				2.0	2.0		3.0	0.2			2.0	2.0
Lane Grp Cap (vph)				738	2657		1143	937			442	179
v/s Ratio Prot				0.05	c0.11		c0.27	0.02			0.01	
v/s Ratio Perm												c0.09
v/c Ratio				0.12	0.27		0.81	0.04			0.07	0.73
Uniform Delay, d1				17.9	19.2		30.5	12.6			38.6	42.1
Progression Factor				0.96	1.05		1.00	1.00			1.00	1.00
Incremental Delay, d2				0.0	0.2		4.5	0.0			0.0	11.8
Delay (s)				17.2	20.3		35.1	12.6			38.7	54.0
Level of Service				B	C		D	B			D	D
Approach Delay (s)		0.0			20.0			34.1			51.5	
Approach LOS		A			B			C			D	

Intersection Summary

HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Richard Blvd & Dos Rios St

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			1.00			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3514		1770	3455			1846			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			1.00	
Satd. Flow (perm)	1770	3514		1770	3455			1725			1783	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	759	38	109	1429	121	37	167	0	0	103	48
RTOR Reduction (vph)	0	5	0	0	9	0	0	0	0	0	23	0
Lane Group Flow (vph)	79	792	0	109	1541	0	0	204	0	0	128	0
Confl. Peds. (#/hr)				60		60			60	60		
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	4.2	28.3		7.3	31.4			20.9			20.9	
Effective Green, g (s)	4.7	28.8		7.8	31.9			20.4			20.4	
Actuated g/C Ratio	0.07	0.41		0.11	0.46			0.29			0.29	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	0.2		3.0	0.2			2.0			2.0	
Lane Grp Cap (vph)	119	1446		197	1574			503			520	
v/s Ratio Prot	0.04	0.23		c0.06	c0.45						0.07	
v/s Ratio Perm								c0.12				
v/c Ratio	0.66	0.55		0.55	0.98			0.41			0.25	
Uniform Delay, d1	31.9	15.6		29.5	18.7			19.9			18.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	13.1	0.2		3.3	17.6			2.4			1.1	
Delay (s)	45.0	15.9		32.8	36.3			22.3			20.0	
Level of Service	D	B		C	D			C			C	
Approach Delay (s)		18.5			36.1			22.3			20.0	
Approach LOS		B			D			C			C	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: Bannon St & I-5 SB Off

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑							↑↑↑	↑↑	
Volume (vph)	0	1022	1066	0	0	0	0	0	0	1428	1511	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.94	0.95	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3539	1583							4990	3539	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3539	1583							4990	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1022	1066	0	0	0	0	0	0	1428	1511	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	33	0	0
Lane Group Flow (vph)	0	1022	1066	0	0	0	0	0	0	1395	1511	0
Turn Type			Free							Split		
Protected Phases		4								2	2	
Permitted Phases			Free									
Actuated Green, G (s)		34.4	100.0							56.6	56.6	
Effective Green, g (s)		34.4	100.0							56.6	56.6	
Actuated g/C Ratio		0.34	1.00							0.57	0.57	
Clearance Time (s)		4.5								4.5	4.5	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		1217	1583							2824	2003	
v/s Ratio Prot		c0.29								0.28	c0.43	
v/s Ratio Perm			0.67									
v/c Ratio		0.84	0.67							0.49	0.75	
Uniform Delay, d1		30.3	0.0							13.1	16.4	
Progression Factor		1.00	1.00							0.86	0.86	
Incremental Delay, d2		5.3	2.3							0.2	1.0	
Delay (s)		35.5	2.3							11.5	15.1	
Level of Service		D	A							B	B	
Approach Delay (s)		18.6			0.0			0.0			13.4	
Approach LOS		B			A			A			B	

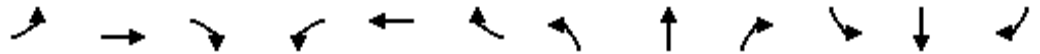
Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	129.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: Bannon St & I-5 NB Off

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑↑						↑	↗↗↗			
Volume (vph)	593	1857	0	0	0	0	0	52	1385	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0			
Lane Util. Factor	1.00	0.81						1.00	0.76			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1770	7544						1863	3610			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1770	7544						1863	3610			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	593	1857	0	0	0	0	0	52	1385	0	0	0
RTOR Reduction (vph)	320	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	273	1857	0	0	0	0	0	52	1385	0	0	0
Turn Type	Split						Prot					
Protected Phases	2	2						1	4			1
Permitted Phases												
Actuated Green, G (s)	33.2	33.2						58.8	58.8			
Effective Green, g (s)	33.2	33.2						58.8	58.8			
Actuated g/C Ratio	0.33	0.33						0.59	0.59			
Clearance Time (s)	4.0	4.0										
Vehicle Extension (s)	3.0	3.0										
Lane Grp Cap (vph)	588	2505						1095	2123			
v/s Ratio Prot	0.15	c0.25						0.03	c0.38			
v/s Ratio Perm												
v/c Ratio	0.46	0.74						0.05	0.65			
Uniform Delay, d1	26.4	29.6						8.7	13.8			
Progression Factor	0.89	0.89						1.00	1.00			
Incremental Delay, d2	2.1	1.6						0.0	0.7			
Delay (s)	25.5	27.9						8.7	14.5			
Level of Service	C	C						A	B			
Approach Delay (s)		27.3			0.0			14.3			0.0	
Approach LOS		C			A			B			A	

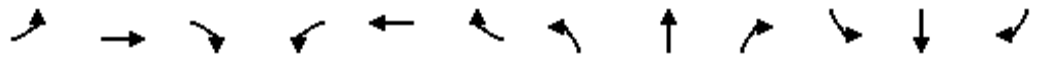
Intersection Summary		
HCM Average Control Delay	22.5	HCM Level of Service C
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	60.5%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak (Mitigated)

11: Bannon St & Bercut Dr

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	2398	700	0	0	0	0	806	47	126	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	1.00	0.86	1.00					0.95		0.97	1.00	
Frt	1.00	1.00	0.85					0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	6408	1583					3510		3433	1863	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	6408	1583					3510		3433	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	2398	700	0	0	0	0	806	47	126	22	0
RTOR Reduction (vph)	0	0	321	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	144	2398	379	0	0	0	0	849	0	126	22	0
Turn Type	Split		Perm							Prot		
Protected Phases	6	6						8		7	4	
Permitted Phases			6									
Actuated Green, G (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Effective Green, g (s)	54.2	54.2	54.2					27.8		6.0	37.8	
Actuated g/C Ratio	0.54	0.54	0.54					0.28		0.06	0.38	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	959	3473	858					976		206	704	
v/s Ratio Prot	0.08	c0.37						c0.24		c0.04	0.01	
v/s Ratio Perm			0.24									
v/c Ratio	0.15	0.69	0.44					0.87		0.61	0.03	
Uniform Delay, d1	11.4	16.8	13.8					34.4		45.9	19.6	
Progression Factor	0.71	0.71	0.55					0.73		0.68	1.43	
Incremental Delay, d2	0.2	0.8	1.2					6.9		3.2	0.0	
Delay (s)	8.3	12.8	8.7					31.8		34.4	28.0	
Level of Service	A	B	A					C		C	C	
Approach Delay (s)		11.7			0.0			31.8			33.4	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
12: Bannon St & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	630	1500	634	0	0	0	0	1269	665	160	948	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.86						0.91	0.91	1.00	0.95	
Frt	1.00	0.96						0.99	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6122						3358	1441	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6122						3358	1441	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	630	1500	634	0	0	0	0	1269	665	160	948	0
RTOR Reduction (vph)	0	76	0	0	0	0	0	5	52	0	0	0
Lane Group Flow (vph)	630	2058	0	0	0	0	0	1350	527	160	948	0
Turn Type	Perm						Perm			Prot		
Protected Phases	4						2			1 6		
Permitted Phases	4						2					
Actuated Green, G (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Effective Green, g (s)	33.7	33.7						39.5	39.5	13.8	57.3	
Actuated g/C Ratio	0.34	0.34						0.40	0.40	0.14	0.57	
Clearance Time (s)	4.5	4.5						4.0	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	596	2063						1326	569	244	2028	
v/s Ratio Prot		0.34						c0.40		c0.09	0.27	
v/s Ratio Perm	c0.36								0.37			
v/c Ratio	1.06	1.04dr						1.02	0.93	0.66	0.47	
Uniform Delay, d1	33.1	33.1						30.2	28.9	40.8	12.5	
Progression Factor	0.55	0.53						0.45	0.35	1.31	1.01	
Incremental Delay, d2	48.4	16.6						23.4	15.4	6.0	0.2	
Delay (s)	66.6	34.1						36.9	25.4	59.5	12.7	
Level of Service	E	C						D	C	E	B	
Approach Delay (s)		41.5			0.0			33.5			19.5	
Approach LOS		D			A			C			B	

Intersection Summary

HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: Bannon St & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	494	1708	163	0	0	0	0	462	1156	384	760	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	494	1708	163	0	0	0	0	462	1156	384	760	0
RTOR Reduction (vph)	0	0	103	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	494	1708	60	0	0	0	0	462	1156	384	760	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	35.5	35.5	35.5					23.0	100.0	28.0	55.5	
Effective Green, g (s)	35.5	35.5	35.5					23.0	100.0	28.0	55.5	
Actuated g/C Ratio	0.36	0.36	0.36					0.23	1.00	0.28	0.56	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	628	1805	562					814	1583	496	1964	
v/s Ratio Prot		c0.34						0.13		0.22	0.21	
v/s Ratio Perm	0.28		0.04						c0.73			
v/c Ratio	0.79	0.95	0.11					0.57	0.73	0.77	0.39	
Uniform Delay, d1	28.9	31.3	21.6					34.1	0.0	33.1	12.6	
Progression Factor	0.52	0.54	0.08					0.52	1.00	0.79	0.30	
Incremental Delay, d2	2.3	4.6	0.0					1.2	1.2	1.8	0.1	
Delay (s)	17.4	21.5	1.7					19.0	1.2	27.8	3.9	
Level of Service	B	C	A					B	A	C	A	
Approach Delay (s)		19.3			0.0			6.3			11.9	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.5
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

























Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: N B Street & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	144	271	315	132	72	161	1817	167	12	1276	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.63	1.00	1.00	0.62	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1183	1863	1583	1146	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	52	144	271	315	132	72	161	1817	167	12	1276	180
RTOR Reduction (vph)	0	0	130	0	0	51	0	0	41	0	0	73
Lane Group Flow (vph)	52	144	141	315	132	21	161	1817	126	12	1276	107
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2			1	6
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	29.0	29.0	29.0	29.0	29.0	29.0	16.3	57.0	57.0	1.0	41.7	41.7
Effective Green, g (s)	29.0	29.0	29.0	29.0	29.0	29.0	16.3	57.0	57.0	1.0	41.7	41.7
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.29	0.16	0.57	0.57	0.01	0.42	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	343	540	459	332	540	459	289	2017	902	18	1476	660
v/s Ratio Prot		0.08			0.07		c0.09	c0.51		0.01	0.36	
v/s Ratio Perm	0.04		0.09	c0.27		0.01			0.08			0.07
v/c Ratio	0.15	0.27	0.31	0.95	0.24	0.05	0.56	0.90	0.14	0.67	0.86	0.16
Uniform Delay, d1	26.4	27.3	27.7	34.8	27.1	25.5	38.5	19.0	10.0	49.3	26.6	18.2
Progression Factor	1.00	1.00	1.00	0.93	0.86	1.51	0.75	0.28	0.03	0.87	0.89	0.80
Incremental Delay, d2	0.2	0.3	0.4	35.1	0.2	0.0	1.2	3.9	0.2	51.3	5.2	0.4
Delay (s)	26.6	27.6	28.1	67.6	23.7	38.5	30.2	9.2	0.5	94.4	28.8	14.9
Level of Service	C	C	C	E	C	D	C	A	A	F	C	B
Approach Delay (s)		27.7			52.4			10.1			27.6	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM Average Control Delay			22.2				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)				8.5	
Intersection Capacity Utilization			93.6%				ICU Level of Service				F	
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
15: N B Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	100	39	477	284	14	90	1491	591	263	612	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3502	3502
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	1770	3502	3502
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	100	39	477	284	14	90	1491	591	263	612	46
RTOR Reduction (vph)	0	0	33	0	0	10	0	0	152	0	5	0
Lane Group Flow (vph)	30	100	6	477	284	4	90	1491	439	263	653	0
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	3.6	14.4	14.4	15.9	26.7	26.7	9.1	40.3	56.2	11.4	42.6	42.6
Effective Green, g (s)	3.6	14.4	14.4	15.9	26.7	26.7	9.1	40.3	56.2	11.4	42.6	42.6
Actuated g/C Ratio	0.04	0.14	0.14	0.16	0.27	0.27	0.09	0.40	0.56	0.11	0.43	0.43
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	64	510	228	546	945	423	161	1426	961	202	1492	1492
v/s Ratio Prot	c0.02	0.03		c0.14	c0.08		0.05	c0.42	0.07	c0.15	0.19	0.19
v/s Ratio Perm			0.00			0.00			0.20			
v/c Ratio	0.47	0.20	0.02	0.87	0.30	0.01	0.56	1.05	0.46	1.30	0.44	0.44
Uniform Delay, d1	47.3	37.7	36.8	41.1	29.2	26.9	43.5	29.9	12.9	44.3	20.3	20.3
Progression Factor	0.77	0.85	0.73	1.00	1.00	1.00	1.04	0.73	0.15	0.49	0.20	0.20
Incremental Delay, d2	5.3	0.2	0.0	14.4	0.2	0.0	3.1	33.7	0.3	165.8	0.9	0.9
Delay (s)	41.5	32.2	27.1	55.5	29.4	26.9	48.3	55.4	2.1	187.3	5.0	5.0
Level of Service	D	C	C	E	C	C	D	E	A	F	A	A
Approach Delay (s)		32.6			45.4			40.6			57.0	
Approach LOS		C			D			D			E	

Intersection Summary

HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: N B Street & 12th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↑↑	↗	↖	↕↕						↔↔↔↔	↗
Volume (vph)	1428	515	404	58	182	149	0	0	0	111	3248	1150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0						3.5	5.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95						0.81	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93						1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	4990	3539	1455	1770	3300						7532	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	4990	3539	1455	1770	3300						7532	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1428	515	404	58	182	149	0	0	0	111	3248	1150
RTOR Reduction (vph)	0	0	203	0	117	0	0	0	0	0	0	121
Lane Group Flow (vph)	1428	515	201	58	214	0	0	0	0	0	3359	1029
Confl. Peds. (#/hr)			36	36								
Turn Type	Split		Perm	Split						Perm		pm+ov
Protected Phases	3	3		4	4						2 10	3
Permitted Phases			3							2 10		2 10
Actuated Green, G (s)	22.0	22.0	22.0	20.4	20.4						69.1	91.1
Effective Green, g (s)	22.0	22.0	22.0	20.4	20.4						72.1	91.1
Actuated g/C Ratio	0.17	0.17	0.17	0.16	0.16						0.55	0.70
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0							5.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0							5.0
Lane Grp Cap (vph)	844	599	246	278	518						4177	1231
v/s Ratio Prot	c0.29	0.15		0.03	c0.06							c0.14
v/s Ratio Perm			0.14								0.45	0.51
v/c Ratio	1.69	0.86	0.82	0.21	0.41						0.80	0.84
Uniform Delay, d1	54.0	52.5	52.1	47.8	49.4						23.3	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.84	1.30
Incremental Delay, d2	316.5	12.9	20.8	0.8	1.1						0.5	1.6
Delay (s)	370.5	65.4	72.9	48.5	50.5						43.2	19.9
Level of Service	F	E	E	D	D						D	B
Approach Delay (s)		252.3			50.2			0.0			37.3	
Approach LOS		F			D			A			D	

Intersection Summary

HCM Average Control Delay	107.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak (Mitigated)

17: Canal St & 6th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	185	356	37	10	16	194	1893	10	162	1400	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1691		1770	3536		1770	3486	
Flt Permitted	0.74	1.00	1.00	0.44	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1379	1863	1583	824	1691		1770	3536		1770	3486	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	185	356	37	10	16	194	1893	10	162	1400	156
RTOR Reduction (vph)	0	0	237	0	13	0	0	0	0	0	8	0
Lane Group Flow (vph)	119	185	119	37	13	0	194	1903	0	162	1548	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4			8			5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	16.4	16.4	16.4	16.4	16.4		14.1	58.9		11.2	56.0	
Effective Green, g (s)	16.4	16.4	16.4	16.4	16.4		14.1	58.9		11.2	56.0	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.14	0.59		0.11	0.56	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	306	260	135	277		250	2083		198	1952	
v/s Ratio Prot	c0.10			0.01			0.11	c0.54		0.09	c0.44	
v/s Ratio Perm	0.09		0.07	0.04								
v/c Ratio	0.53	0.60	0.46	0.27	0.05		0.78	0.91		0.82	0.79	
Uniform Delay, d1	38.2	38.8	37.8	36.6	35.2		41.4	18.3		43.4	17.4	
Progression Factor	0.82	0.83	0.72	0.58	0.47		1.00	1.00		0.71	0.39	
Incremental Delay, d2	2.1	3.2	1.2	1.0	0.1		14.0	7.6		15.1	2.2	
Delay (s)	33.5	35.4	28.6	22.0	16.7		55.4	25.9		46.1	8.9	
Level of Service	C	D	C	C	B		E	C		D	A	
Approach Delay (s)	31.4			19.8			28.6			12.4		
Approach LOS	C			B			C			B		

























Intersection Summary

HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Canal St & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	277	40	38	89	3	9	74	1611	0	63	1187	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539		1770	3528	
Flt Permitted	0.76	1.00	1.00	0.73	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1408	1863	1583	1362	1863	1583	1770	3539		1770	3528	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	277	40	38	89	3	9	74	1611	0	63	1187	26
RTOR Reduction (vph)	0	0	30	0	0	7	0	0	0	0	1	0
Lane Group Flow (vph)	277	40	8	89	3	2	74	1611	0	63	1212	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.2	61.3		4.1	58.7	
Effective Green, g (s)	21.6	21.6	21.6	21.6	21.6	21.6	7.2	61.3		4.1	58.7	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.07	0.61		0.04	0.59	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	304	402	342	294	402	342	127	2169		73	2071	
v/s Ratio Prot		0.02			0.00		0.04	c0.46		0.04	c0.34	
v/s Ratio Perm	c0.20		0.01	0.07		0.00						
v/c Ratio	0.91	0.10	0.02	0.30	0.01	0.01	0.58	0.74		0.86	0.59	
Uniform Delay, d1	38.3	31.4	30.9	32.9	30.8	30.8	44.9	13.7		47.7	13.0	
Progression Factor	0.50	0.34	0.73	1.00	1.00	1.00	1.00	1.00		0.97	0.92	
Incremental Delay, d2	24.0	0.1	0.0	0.6	0.0	0.0	6.7	2.3		54.2	1.0	
Delay (s)	43.1	10.9	22.6	33.5	30.8	30.8	51.6	16.1		100.3	13.0	
Level of Service	D	B	C	C	C	C	D	B		F	B	
Approach Delay (s)		37.3			33.1			17.7			17.3	
Approach LOS		D			C			B			B	

























Intersection Summary

HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Big Four Blvd & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	334	531	562	403	541	199	598	1759	839	228	1547	182	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00	
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	3239	1441	1610	3365	1583	3433	3539	1583	3433	3539	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	334	531	562	403	541	199	598	1759	839	228	1547	182	
RTOR Reduction (vph)	0	28	203	0	0	95	0	0	152	0	0	37	
Lane Group Flow (vph)	334	728	135	306	638	104	598	1759	687	228	1547	145	
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm	
Protected Phases	4	4		8	8		5	2		1	6		
Permitted Phases			4			8			2			6	
Actuated Green, G (s)	28.5	28.5	28.5	25.5	25.5	25.5	21.5	69.5	69.5	8.5	56.5	56.5	
Effective Green, g (s)	28.5	28.5	28.5	25.5	25.5	25.5	21.5	69.5	69.5	8.5	56.5	56.5	
Actuated g/C Ratio	0.19	0.19	0.19	0.17	0.17	0.17	0.14	0.46	0.46	0.06	0.38	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	336	615	274	274	572	269	492	1640	733	195	1333	596	
v/s Ratio Prot	0.19	c0.22		c0.19	0.19		c0.17	0.50		0.07	c0.44		
v/s Ratio Perm			0.09			0.07			0.43			0.09	
v/c Ratio	0.99	1.18	0.49	1.12	1.12	0.38	1.22	1.07	0.94	1.17	1.16	0.24	
Uniform Delay, d1	60.7	60.8	54.3	62.2	62.2	55.3	64.2	40.2	38.2	70.8	46.8	32.1	
Progression Factor	1.00	1.00	1.00	0.53	0.53	0.70	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	47.2	98.3	1.4	57.7	54.5	0.1	114.4	44.5	20.9	117.5	81.0	1.0	
Delay (s)	107.9	159.0	55.7	90.6	87.5	39.0	178.7	84.8	59.1	188.2	127.7	33.0	
Level of Service	F	F	E	F	F	D	F	F	E	F	F	C	
Approach Delay (s)		122.7			79.9			95.6			126.0		
Approach LOS		F			E			F			F		
Intersection Summary													
HCM Average Control Delay			106.0			HCM Level of Service							F
HCM Volume to Capacity ratio			1.17										
Actuated Cycle Length (s)			150.0			Sum of lost time (s)							18.0
Intersection Capacity Utilization			113.3%			ICU Level of Service							H
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
20: Big Four Blvd & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↖	↖↗	↕	↖	↖↗	↕	↖	↖	↕	↖
Volume (vph)	1232	915	39	615	606	0	472	931	470	49	1075	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539		3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1232	915	39	615	606	0	472	931	470	49	1075	7
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	163	0	0	2
Lane Group Flow (vph)	1232	915	25	615	606	0	472	931	307	49	1075	5
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	45.5	40.9	40.9	26.6	22.0		17.8	51.0	51.0	7.0	40.2	40.2
Effective Green, g (s)	45.5	40.9	40.9	26.6	22.0		17.8	51.0	51.0	7.0	40.2	40.2
Actuated g/C Ratio	0.30	0.27	0.27	0.18	0.15		0.12	0.34	0.34	0.05	0.27	0.27
Clearance Time (s)	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1041	965	432	609	519		407	1203	538	83	948	424
v/s Ratio Prot	c0.36	0.26		0.18	c0.17		c0.14	0.26		0.03	c0.30	
v/s Ratio Perm			0.02						0.19			0.00
v/c Ratio	1.18	0.95	0.06	1.01	1.17		1.16	0.77	0.57	0.59	1.13	0.01
Uniform Delay, d1	52.2	53.5	40.3	61.7	64.0		66.1	44.3	40.5	70.1	54.9	40.3
Progression Factor	1.04	1.03	1.08	1.00	1.00		0.67	0.42	0.20	1.00	1.00	1.00
Incremental Delay, d2	88.9	12.4	0.0	38.9	94.7		74.6	0.5	0.4	10.7	73.5	0.0
Delay (s)	143.3	67.3	43.5	100.6	158.7		118.7	18.9	8.7	80.8	128.4	40.4
Level of Service	F	E	D	F	F		F	B	A	F	F	D
Approach Delay (s)		109.7			129.4			41.5			125.8	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	96.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	108.8%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: F Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	314	200	173	96	221	418	0	823	118	664	1092	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.93		1.00	0.90			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1770	1733		1770	1680			3473			3441	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (perm)	1770	1733		1770	1680			3473			3441	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	314	200	173	96	221	418	0	823	118	664	1092	133
RTOR Reduction (vph)	0	21	0	0	45	0	0	7	0	0	4	0
Lane Group Flow (vph)	314	352	0	96	594	0	0	934	0	0	1885	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	3	8		7	4		1	1		2	2	
Permitted Phases												
Actuated Green, G (s)	15.0	37.4		10.6	33.0			34.0			52.0	
Effective Green, g (s)	15.0	37.4		10.6	33.0			34.0			52.0	
Actuated g/C Ratio	0.10	0.25		0.07	0.22			0.23			0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	177	432		125	370			787			1193	
v/s Ratio Prot	c0.18	0.20		0.05	c0.35			c0.27			c0.55	
v/s Ratio Perm												
v/c Ratio	1.77	0.81		0.77	1.60			1.19			1.58	
Uniform Delay, d1	67.5	53.0		68.5	58.5			58.0			49.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.33	
Incremental Delay, d2	370.2	11.2		24.2	284.5			96.7			262.3	
Delay (s)	437.7	64.3		92.6	343.0			154.7			278.6	
Level of Service	F	E		F	F			F			F	
Approach Delay (s)		235.0			310.3			154.7			278.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	249.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	148.2%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: G Street & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	104	196	261	831	534	798	39	1875	37	370	3168	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1831	1583	1770	1863	1583	1770	3529		1770	3521	
Flt Permitted		0.68	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1261	1583	1770	1863	1583	1770	3529		1770	3521	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	196	261	831	534	798	39	1875	37	370	3168	113
RTOR Reduction (vph)	0	0	73	0	0	135	0	1	0	0	2	0
Lane Group Flow (vph)	0	300	188	831	534	663	39	1911	0	370	3279	0
Turn Type	Perm		Perm	Prot		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8						
Actuated Green, G (s)		20.0	20.0	17.0	41.0	41.0	5.0	38.0		9.0	42.0	
Effective Green, g (s)		20.0	20.0	17.0	41.0	41.0	5.0	38.0		9.0	42.0	
Actuated g/C Ratio		0.20	0.20	0.17	0.41	0.41	0.05	0.38		0.09	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		252	317	301	764	649	89	1341		159	1479	
v/s Ratio Prot				c0.47	0.29		0.02	c0.54		0.21	c0.93	
v/s Ratio Perm		c0.24	0.12			0.42						
v/c Ratio		1.19	0.59	2.76	0.70	1.02	0.44	1.42		2.33	2.22	
Uniform Delay, d1		40.0	36.3	41.5	24.4	29.5	46.1	31.0		45.5	29.0	
Progression Factor		1.01	1.02	1.27	0.62	0.45	1.37	0.11		1.00	1.00	
Incremental Delay, d2		116.7	7.5	797.7	3.1	32.2	1.4	191.6		616.4	549.8	
Delay (s)		157.2	44.6	850.4	18.2	45.4	64.8	195.0		661.9	578.8	
Level of Service		F	D	F	B	D	E	F		F	F	
Approach Delay (s)		104.8			348.0			192.4			587.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	400.0	HCM Level of Service	F
HCM Volume to Capacity ratio	2.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	170.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: G Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↖	↖	↕	↖	↖	↕			↕	↖
Volume (vph)	280	0	351	194	1035	503	26	230	0	0	751	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.5	4.0	4.5	4.0	3.5			4.0	3.5
Lane Util. Factor	1.00		1.00	1.00	0.95	1.00	1.00	1.00			0.95	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	0.89	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Flt Permitted	0.95		1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1583	1770	3539	1412	1770	1863			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	280	0	351	194	1035	503	26	230	0	0	751	760
RTOR Reduction (vph)	0	0	149	0	0	294	0	0	0	0	0	277
Lane Group Flow (vph)	280	0	202	194	1035	209	26	230	0	0	751	483
Confl. Peds. (#/hr)						72						
Turn Type	Prot		custom	Prot		Perm	Prot					Perm
Protected Phases	7			3	8		5	2				6
Permitted Phases			4			8						6
Actuated Green, G (s)	16.0		28.0	18.0	30.0	30.0	5.0	42.5			33.5	33.5
Effective Green, g (s)	16.0		28.0	17.5	30.0	29.5	5.0	42.5			33.0	33.5
Actuated g/C Ratio	0.16		0.28	0.18	0.30	0.29	0.05	0.42			0.33	0.34
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	3.5			3.5	3.5
Lane Grp Cap (vph)	283		443	310	1062	417	89	792			1168	530
v/s Ratio Prot	c0.16			0.11	c0.29		0.01	c0.12			0.21	
v/s Ratio Perm			0.13			0.15						c0.31
v/c Ratio	0.99		0.46	0.63	0.97	0.50	0.29	0.29			0.64	0.91
Uniform Delay, d1	41.9		29.7	38.2	34.6	29.2	45.8	18.9			28.5	31.8
Progression Factor	1.36		1.00	1.04	1.06	1.32	1.46	1.86			1.00	1.00
Incremental Delay, d2	13.8		0.3	7.2	18.9	3.3	2.6	0.3			2.7	22.5
Delay (s)	70.8		30.2	47.0	55.7	41.9	69.5	35.4			31.2	54.3
Level of Service	E		C	D	E	D	E	D			C	D
Approach Delay (s)		48.2			50.7			38.9			42.8	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: H Street & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	445	314	122	0	0	0	0	1618	41	1182	3086	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91						0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.97						1.00		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	1610	3151						3511		1770	3539	
Flt Permitted	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (perm)	1610	3151						3511		1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	445	314	122	0	0	0	0	1618	41	1182	3086	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	294	584	0	0	0	0	0	1657	0	1182	3086	0
Confl. Peds. (#/hr)	72		72							72	72	
Turn Type	Split						Prot					
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	17.0	17.0						32.0		40.5	76.0	
Effective Green, g (s)	17.0	16.5						31.5		40.0	75.5	
Actuated g/C Ratio	0.17	0.16						0.32		0.40	0.76	
Clearance Time (s)	3.5	3.5						3.5		3.5	3.5	
Lane Grp Cap (vph)	274	520						1106		708	2672	
v/s Ratio Prot	0.18	c0.19						c0.47		c0.67	0.87	
v/s Ratio Perm												
v/c Ratio	1.07	1.12						1.50		1.67	1.15	
Uniform Delay, d1	41.5	41.8						34.2		30.0	12.2	
Progression Factor	0.79	0.78						0.16		0.63	1.17	
Incremental Delay, d2	66.1	71.9						224.6		301.8	70.2	
Delay (s)	98.8	104.6						230.1		320.8	84.5	
Level of Service	F	F						F		F	F	
Approach Delay (s)		102.7			0.0			230.1			149.9	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	163.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	139.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: H Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕								↕	↕↕	
Volume (vph)	259	1210	338	0	0	0	0	0	0	399	717	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.98								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.97								1.00	1.00	
Flt Protected		0.99								0.95	1.00	
Satd. Flow (prot)		3354								1770	3539	
Flt Permitted		0.99								0.95	1.00	
Satd. Flow (perm)		3354								1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	259	1210	338	0	0	0	0	0	0	399	717	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1787	0	0	0	0	0	0	0	399	717	0
Confl. Peds. (#/hr)			72							72		
Turn Type	Split					Split						
Protected Phases	1	1								2	2	
Permitted Phases												
Actuated Green, G (s)		56.5								28.5	28.5	
Effective Green, g (s)		56.0								28.0	28.0	
Actuated g/C Ratio		0.56								0.28	0.28	
Clearance Time (s)		3.5								3.5	3.5	
Lane Grp Cap (vph)		1878								496	991	
v/s Ratio Prot		c0.53								c0.23	0.20	
v/s Ratio Perm												
v/c Ratio		0.95								0.80	0.72	
Uniform Delay, d1		20.7								33.5	32.5	
Progression Factor		0.51								0.64	0.64	
Incremental Delay, d2		1.6								10.4	3.6	
Delay (s)		12.1								31.7	24.3	
Level of Service		B								C	C	
Approach Delay (s)		12.1			0.0			0.0			26.9	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 8 seconds lost time added to represent LRT.			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
26: I Street & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←←		↖	↑↑			↗	↘
Volume (vph)	0	0	0	368	2116	301	328	1177	0	0	856	2550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	0.95			0.95	0.95
Frbp, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			0.92	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6210		1770	3539			1632	1504
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					6210		1770	3539			1632	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	368	2116	301	328	1177	0	0	856	2550
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	38	48
Lane Group Flow (vph)	0	0	0	0	2764	0	328	1177	0	0	1736	1584
Confl. Peds. (#/hr)						36						
Turn Type				Perm			Split					Prot
Protected Phases					4		1	1			2	2
Permitted Phases				4								
Actuated Green, G (s)					26.5		23.5	23.5			39.5	39.5
Effective Green, g (s)					26.0		23.0	23.0			39.0	39.0
Actuated g/C Ratio					0.26		0.23	0.23			0.39	0.39
Clearance Time (s)					3.5		3.5	3.5			3.5	3.5
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1615		407	814			636	587
v/s Ratio Prot							0.19	c0.33			c1.06	1.05
v/s Ratio Perm					0.45							
v/c Ratio					1.71		0.81	1.45			2.73	2.70
Uniform Delay, d1					37.0		36.4	38.5			30.5	30.5
Progression Factor					0.67		1.03	1.03			0.86	0.85
Incremental Delay, d2					321.2		6.7	203.4			778.4	764.6
Delay (s)					346.1		44.3	243.1			804.6	790.6
Level of Service					F		D	F			F	F
Approach Delay (s)		0.0			346.1			199.8			797.9	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	517.4	HCM Level of Service	F
HCM Volume to Capacity ratio	2.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	220.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2030 +Proj(Off) PM Peak (Mitigated)

27: I Street & 7th Street

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↖↖↖						↗↗↗	↗
Volume (vph)	0	0	0	108	2388	0	0	0	0	0	1368	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.91	1.00
Frbp, ped/bikes				1.00	1.00						1.00	0.93
Flpb, ped/bikes				0.94	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1435	4804						5085	1476
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1435	4804						5085	1476
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	108	2388	0	0	0	0	0	1368	424
RTOR Reduction (vph)	0	0	0	3	0	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	94	2399	0	0	0	0	0	1368	422
Confl. Peds. (#/hr)				36								36
Turn Type				Perm								Perm
Protected Phases					1							2
Permitted Phases				1								2
Actuated Green, G (s)				56.5	56.5						36.5	36.5
Effective Green, g (s)				56.0	56.0						36.0	36.0
Actuated g/C Ratio				0.56	0.56						0.36	0.36
Clearance Time (s)				3.5	3.5						3.5	3.5
Lane Grp Cap (vph)				804	2690						1831	531
v/s Ratio Prot											0.27	
v/s Ratio Perm				0.07	0.50							c0.29
v/c Ratio				0.12	0.89						0.75	0.79
Uniform Delay, d1				10.4	19.3						28.0	28.7
Progression Factor				1.00	1.00						0.68	0.68
Incremental Delay, d2				0.3	5.0						2.6	10.6
Delay (s)				10.7	24.3						21.5	30.2
Level of Service				B	C						C	C
Approach Delay (s)		0.0			23.8			0.0			23.6	
Approach LOS		A			C			A			C	

Intersection Summary

HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: J St & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙↕↘						↕		↘		
Volume (vph)	1037	1743	0	0	0	0	0	244	290	831	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0		
Lane Util. Factor	0.86	0.86						1.00		1.00		
Frbp, ped/bikes	1.00	1.00						0.96		1.00		
Flpb, ped/bikes	0.94	0.99						1.00		0.98		
Frt	1.00	1.00						0.93		1.00		
Flt Protected	0.95	0.99						1.00		0.95		
Satd. Flow (prot)	1435	4718						1663		1732		
Flt Permitted	0.95	0.99						1.00		0.30		
Satd. Flow (perm)	1435	4718						1663		547		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1037	1743	0	0	0	0	0	244	290	831	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	674	2106	0	0	0	0	0	533	0	831	0	0
Confl. Peds. (#/hr)	72								72	72		
Turn Type	Perm						custom					
Protected Phases	2						4					
Permitted Phases	2						8					
Actuated Green, G (s)	20.5	20.5						22.5		22.5		
Effective Green, g (s)	20.0	20.0						22.0		22.0		
Actuated g/C Ratio	0.40	0.40						0.44		0.44		
Clearance Time (s)	3.5	3.5						3.5		3.5		
Lane Grp Cap (vph)	574	1887						732		241		
v/s Ratio Prot								0.32				
v/s Ratio Perm	c0.47	0.45								c1.52		
v/c Ratio	1.17	1.12						0.73		3.45		
Uniform Delay, d1	15.0	15.0						11.5		14.0		
Progression Factor	0.96	0.97						1.00		1.28		
Incremental Delay, d2	80.3	53.0						6.3		1102.6		
Delay (s)	94.7	67.6						17.8		1120.5		
Level of Service	F	E						B		F		
Approach Delay (s)		74.1			0.0			17.8			1120.5	
Approach LOS		E			A			B			F	

Intersection Summary

HCM Average Control Delay	276.7	HCM Level of Service	F
HCM Volume to Capacity ratio	2.37		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	220.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: J St & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑								↑↑↑	
Volume (vph)	0	2214	828	0	0	0	0	0	0	297	1050	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.5								4.0	
Lane Util. Factor		0.91	1.00								0.91	
Frbp, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5085	1445								4959	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5085	1445								4959	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2214	828	0	0	0	0	0	0	297	1050	0
RTOR Reduction (vph)	0	0	7	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2214	821	0	0	0	0	0	0	0	1345	0
Confl. Peds. (#/hr)			72							72		
Turn Type			Perm								Perm	
Protected Phases		1										2
Permitted Phases			1							2		
Actuated Green, G (s)		26.0	26.0								17.0	
Effective Green, g (s)		25.5	26.0								16.5	
Actuated g/C Ratio		0.51	0.52								0.33	
Clearance Time (s)		3.5	3.5								3.5	
Lane Grp Cap (vph)		2593	751								1636	
v/s Ratio Prot		0.44										
v/s Ratio Perm			c0.57								0.27	
v/c Ratio		0.85	1.09								0.82	
Uniform Delay, d1		10.6	12.0								15.4	
Progression Factor		0.67	0.65								0.86	
Incremental Delay, d2		0.4	44.5								3.4	
Delay (s)		7.5	52.3								16.6	
Level of Service		A	D								B	
Approach Delay (s)		19.7			0.0			0.0			16.6	
Approach LOS		B			A			A			B	
Intersection Summary												
HCM Average Control Delay			18.8								HCM Level of Service	B
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			50.0								Sum of lost time (s)	7.5
Intersection Capacity Utilization			89.3%								ICU Level of Service	E
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
30: Richards Blvd & Dos Rios St

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑			↔			↔	
Volume (vph)	0	0	0	0	1002	187	0	12	0	0	248	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.5			4.5	
Lane Util. Factor					0.86			1.00			1.00	
Frt					0.98			1.00			0.99	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					6257			1863			1850	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					6257			1863			1850	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	1002	187	0	12	0	0	248	13
RTOR Reduction (vph)	0	0	0	0	67	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	1122	0	0	12	0	0	257	0
Turn Type				Prot			Perm					
Protected Phases				2				4			8	
Permitted Phases					2		4					
Actuated Green, G (s)					20.5			20.5			20.5	
Effective Green, g (s)					20.5			20.5			20.5	
Actuated g/C Ratio					0.41			0.41			0.41	
Clearance Time (s)					4.5			4.5			4.5	
Lane Grp Cap (vph)					2565			764			759	
v/s Ratio Prot								0.01			c0.14	
v/s Ratio Perm					c0.18							
v/c Ratio					0.44			0.02			0.34	
Uniform Delay, d1					10.6			8.8			10.1	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.5			0.0			1.2	
Delay (s)					11.1			8.8			11.3	
Level of Service					B			A			B	
Approach Delay (s)		0.0			11.1			8.8			11.3	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
31: Richards Blvd & 12th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑	↗	↙↗	↑↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	148	369	155	4	4385	0	0	3675	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.95	1.00	0.97	0.91			0.81	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583	3433	5085			7544	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583	3433	5085			7544	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	148	369	155	4	4385	0	0	3675	815
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	126
Lane Group Flow (vph)	0	0	0	148	369	113	4	4385	0	0	3675	689
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Effective Green, g (s)				32.8	32.8	32.8	1.2	89.2			84.0	84.0
Actuated g/C Ratio				0.25	0.25	0.25	0.01	0.69			0.65	0.65
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				447	893	399	32	3489			4875	1023
v/s Ratio Prot					c0.10		0.00	c0.86			0.49	
v/s Ratio Perm				0.08		0.07						0.44
v/c Ratio				0.33	0.41	0.28	0.12	1.26			0.75	0.67
Uniform Delay, d1				39.7	40.6	39.1	63.9	20.4			15.9	14.4
Progression Factor				1.00	1.00	1.00	1.00	0.91			1.00	1.00
Incremental Delay, d2				2.0	1.4	1.8	0.2	115.8			1.1	3.6
Delay (s)				41.6	42.0	40.9	64.4	134.3			17.0	18.0
Level of Service				D	D	D	E	F			B	B
Approach Delay (s)		0.0			41.7			134.3			17.2	
Approach LOS		A			D			F			B	

Intersection Summary

HCM Average Control Delay	72.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	145.3%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 8 seconds additional lost time represents LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Bannon St & 12th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔↔	↑	↔					↔↔↔	↔	↔	↑↑↑↑	
Volume (vph)	2318	92	717	0	0	0	0	2072	21	45	3780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Lane Util. Factor	0.94	1.00	1.00					0.91	1.00	1.00	0.81	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1863	1583					5085	1583	1770	7544	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1863	1583					5085	1583	1770	7544	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2318	92	717	0	0	0	0	2072	21	45	3780	0
RTOR Reduction (vph)	0	0	44	0	0	0	0	0	5	0	0	0
Lane Group Flow (vph)	2318	92	673	0	0	0	0	2072	16	45	3780	0
Turn Type	Split		Perm					Perm		Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	54.5	54.5	54.5					58.5	58.5	4.0	67.0	
Effective Green, g (s)	54.5	54.5	54.5					58.5	58.5	4.0	67.0	
Actuated g/C Ratio	0.42	0.42	0.42					0.45	0.45	0.03	0.52	
Clearance Time (s)	4.5	4.5	4.5					4.0	4.0	4.5	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2092	781	664					2288	712	54	3888	
v/s Ratio Prot	c0.46	0.05						0.41		0.03	c0.50	
v/s Ratio Perm			0.43						0.01			
v/c Ratio	1.11	0.12	1.01					0.91	0.02	0.83	0.97	
Uniform Delay, d1	37.8	23.1	37.8					33.2	19.9	62.7	30.6	
Progression Factor	1.00	1.00	1.00					1.33	0.76	0.76	0.54	
Incremental Delay, d2	56.2	0.1	38.5					0.7	0.0	48.5	6.9	
Delay (s)	94.0	23.1	76.3					44.7	15.2	96.1	23.5	
Level of Service	F	C	E					D	B	F	C	
Approach Delay (s)		87.8			0.0			44.4			24.4	
Approach LOS		F			A			D			C	

Intersection Summary

HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	145.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 33: Riverfront Dr & 5th Street

2030 +Proj(Off) PM Peak (Mitigated)
 1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	100	5	5	50	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	50	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			105		162	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		162	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		825	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	55	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	906
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.7	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.0
Approach LOS			A

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		16.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 34: Riverfront Dr & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)
 1/10/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	100	5	5	50	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	50	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			105		162	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		162	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		825	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	55	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	906
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.7	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.0
Approach LOS			A

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		16.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 36: Signature & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↗	↖↗	↖		↖	↑	↗		↔	
Volume (vph)	0	0	536	1106	112	15	149	756	505	5	1323	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Lane Util. Factor		0.95	0.95	0.97	1.00		1.00	1.00	1.00		1.00	
Flt		0.85	0.85	1.00	0.98		1.00	1.00	0.85		1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1504	1504	3433	1830		1770	1863	1583		1862	
Flt Permitted		1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1504	1504	3433	1830		1770	1863	1583		1859	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	536	1106	112	15	149	756	505	5	1323	0
RTOR Reduction (vph)	0	99	99	0	5	0	0	0	178	0	0	0
Lane Group Flow (vph)	0	169	169	1106	122	0	149	756	327	0	1328	0
Turn Type	Split		Perm	Split			Prot		Perm	Perm		
Protected Phases	4	4		8	8		5	2				6
Permitted Phases			4						2	6		
Actuated Green, G (s)		6.5	6.5	24.5	24.5		6.5	58.5	58.5		48.5	
Effective Green, g (s)		6.5	6.5	24.5	24.5		6.5	58.5	58.5		48.5	
Actuated g/C Ratio		0.06	0.06	0.24	0.24		0.06	0.58	0.58		0.48	
Clearance Time (s)		3.5	3.5	3.5	3.5		3.5	3.5	3.5		3.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		98	98	841	448		115	1090	926		902	
v/s Ratio Prot		c0.11		c0.32	0.07		c0.08	0.41				
v/s Ratio Perm			0.11						0.21		c0.71	
v/c Ratio		1.72	1.72	1.32	0.27		1.30	0.69	0.35		1.47	
Uniform Delay, d1		46.8	46.8	37.8	30.5		46.8	14.5	10.9		25.8	
Progression Factor		1.00	1.00	1.00	1.00		1.37	0.43	0.18		1.00	
Incremental Delay, d2		364.6	364.6	150.2	0.3		176.2	3.0	0.9		218.6	
Delay (s)		411.3	411.3	188.0	30.9		240.1	9.3	2.9		244.3	
Level of Service		F	F	F	C		F	A	A		F	
Approach Delay (s)		411.3			171.8			31.4			244.3	
Approach LOS		F			F			C			F	

Intersection Summary

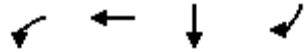
HCM Average Control Delay	177.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	165.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	448	303	2632	795
v/c Ratio	0.85	0.54	0.98	0.73
Control Delay	46.3	32.6	25.3	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.3	32.6	25.3	10.6
Queue Length 50th (ft)	146	103	677	195
Queue Length 95th (ft)	#209	110	#1038	341
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	530	566	2690	1088
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.54	0.98	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 +Proj (Off) AM Peak (Mitigated)

2: Richards Blvd & I-5 NB Off

1/10/2007



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	676	1441	74	240
v/c Ratio	0.17	0.53	0.22	0.44
Control Delay	4.1	2.2	8.5	36.7
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	4.4	2.2	8.5	36.7
Queue Length 50th (ft)	47	65	0	65
Queue Length 95th (ft)	52	71	21	103
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)			300	
Base Capacity (vph)	3892	2708	718	1345
Starvation Cap Reductn	2364	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.53	0.10	0.18

Intersection Summary

Queues

2030 +Proj (Off) AM Peak (Mitigated)

3: Richards Blvd & Bercut Dr

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	23	1624	466	249	90	91
v/c Ratio	0.02	0.35	0.73	0.44	0.66	0.53
Control Delay	4.5	4.3	28.6	17.5	67.4	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	4.3	28.6	17.5	67.4	30.0
Queue Length 50th (ft)	3	53	71	66	57	19
Queue Length 95th (ft)	m8	76	101	m88	105	66
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	946	4602	1013	932	298	304
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.35	0.46	0.27	0.30	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Off) AM Peak (Mitigated)

4: Richards Blvd & 6th Street

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	207	998	433	697	245	393
v/c Ratio	0.28	0.32	0.75	0.74	0.45	0.85
Control Delay	17.5	15.7	40.2	17.9	30.1	47.6
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.3
Total Delay	17.5	15.7	40.2	18.5	30.1	47.9
Queue Length 50th (ft)	90	106	132	156	126	219
Queue Length 95th (ft)	m176	m161	m154	m120	171	296
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	733	3102	669	1166	719	596
Starvation Cap Reductn	0	0	0	173	0	23
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.32	0.65	0.70	0.34	0.69

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	304	1089	263	249	1005	1013	364
v/c Ratio	0.52	0.51	0.40	0.55	1.06	1.06	0.23
Control Delay	23.6	20.8	5.8	33.9	79.2	82.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	6.1	0.0
Total Delay	23.6	20.8	5.8	33.9	79.2	88.6	0.3
Queue Length 50th (ft)	128	131	27	147	-381	-375	0
Queue Length 95th (ft)	215	167	47	m208	#521	#503	0
Internal Link Dist (ft)		1155			540	348	
Turn Bay Length (ft)	200		300	200			
Base Capacity (vph)	584	2115	663	451	948	956	1583
Starvation Cap Reductn	0	0	0	0	0	14	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.51	0.40	0.55	1.06	1.08	0.23

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Off) AM Peak (Mitigated)

6: Richards Blvd & 10th Street

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	211	749	1092	34	24	36
v/c Ratio	0.27	0.27	0.80	0.04	0.13	0.35
Control Delay	21.5	18.7	31.0	11.0	46.2	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	18.7	31.0	11.0	46.2	24.1
Queue Length 50th (ft)	85	83	308	11	7	0
Queue Length 95th (ft)	164	126	341	21	21	31
Internal Link Dist (ft)		1064		248	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	782	2801	1665	1155	319	157
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.27	0.66	0.03	0.08	0.23

Intersection Summary

Queues

2030 +Proj (Off) AM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	538	237	1415	249	163
v/c Ratio	0.28	0.72	0.55	0.96	0.42	0.27
Control Delay	33.0	28.7	26.5	35.6	9.3	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	28.7	26.5	35.6	9.3	13.4
Queue Length 50th (ft)	16	97	78	267	51	33
Queue Length 95th (ft)	44	140	144	#421	94	77
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	152	946	463	1482	592	608
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.57	0.51	0.95	0.42	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

9: Bannon St & I-5 SB Off



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	628	164	2318	762
v/c Ratio	0.75	0.35	0.68	0.32
Control Delay	41.2	11.0	6.9	5.3
Queue Delay	0.6	0.0	5.1	0.7
Total Delay	41.8	11.0	11.9	6.0
Queue Length 50th (ft)	196	20	93	58
Queue Length 95th (ft)	242	68	m258	m88
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1009	541	3416	2385
Starvation Cap Reductn	0	0	1030	1193
Spillback Cap Reductn	119	0	944	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.30	0.97	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

10: Bannon St & I-5 NB Off



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	240	2706	52	1730
v/c Ratio	0.31	0.94	0.05	0.89
Control Delay	6.4	31.7	11.1	27.7
Queue Delay	1.2	90.7	0.0	94.1
Total Delay	7.6	122.4	11.1	121.8
Queue Length 50th (ft)	19	413	15	404
Queue Length 95th (ft)	m50	#417	33	503
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	766	2881	1006	1949
Starvation Cap Reductn	327	634	0	0
Spillback Cap Reductn	0	175	0	518
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	1.20	0.05	1.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Off) AM Peak (Mitigated)

11: Bannon St & Bercut Dr

1/10/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	217	3341	878	446	146	6
v/c Ratio	0.19	0.79	0.65	0.79	0.74	0.01
Control Delay	4.8	10.0	1.3	51.3	53.2	11.5
Queue Delay	4.7	57.5	2.0	0.0	0.0	0.0
Total Delay	9.5	67.5	3.3	51.3	53.2	11.5
Queue Length 50th (ft)	32	355	0	143	51	2
Queue Length 95th (ft)	m37	525	m0	198	#108	m5
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	1171	4241	1344	595	197	484
Starvation Cap Reductn	875	1272	308	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.13	0.85	0.75	0.74	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	786	2749	759	112	69	570
v/c Ratio	0.92	1.16dr	0.82	0.24	0.30	0.38
Control Delay	24.6	13.6	23.9	2.4	42.7	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	13.6	23.9	2.4	42.7	24.2
Queue Length 50th (ft)	223	93	271	1	35	144
Queue Length 95th (ft)	#704	111	#350	4	75	127
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	858	3034	930	463	266	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.91	0.82	0.24	0.26	0.37

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	566	1311	28	480	341	199	1055
v/c Ratio	0.82	0.66	0.04	0.43	0.22	0.69	0.57
Control Delay	17.9	11.6	1.8	20.3	0.3	44.2	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.9	11.6	1.8	20.3	0.3	44.2	3.2
Queue Length 50th (ft)	75	63	0	144	0	74	21
Queue Length 95th (ft)	m161	m95	m0	202	0	m71	m35
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	735	2110	673	1106	1583	330	1842
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.62	0.04	0.43	0.22	0.60	0.57

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Off) AM Peak (Mitigated)

14: N B Street & 6th Street

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	46	72	142	195	17	73	766	79	89	1125	143
v/c Ratio	0.54	0.11	0.18	0.49	0.49	0.05	0.45	0.43	0.10	0.29	0.54	0.15
Control Delay	44.9	30.1	8.4	43.6	41.9	21.1	49.6	4.8	0.4	37.6	9.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	30.1	8.4	43.6	41.9	21.1	49.6	4.8	0.4	37.6	9.9	2.2
Queue Length 50th (ft)	57	23	0	85	117	0	50	43	0	54	160	5
Queue Length 95th (ft)	110	51	34	m142	m183	m13	96	44	1	m78	m313	m22
Internal Link Dist (ft)		435			1023			498			815	
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	229	484	465	352	484	424	204	1949	907	334	2067	975
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	1	0	0	0	0	0	0	0	69	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.10	0.16	0.40	0.40	0.04	0.36	0.39	0.09	0.27	0.56	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	88	57	89	130	308	80	624	381	117	1298
v/c Ratio	0.41	0.16	0.19	0.36	0.19	0.55	0.45	0.43	0.38	0.32	0.69
Control Delay	49.2	28.0	12.0	48.3	33.5	8.2	49.5	18.2	2.4	21.6	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.2	28.0	12.0	48.3	33.5	8.2	49.5	18.2	2.4	21.6	12.5
Queue Length 50th (ft)	0	25	2	28	36	0	50	152	6	32	124
Queue Length 95th (ft)	#56	46	18	53	62	71	m87	192	m27	70	148
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	96	637	332	257	787	591	181	1492	992	371	1875
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.14	0.17	0.35	0.17	0.52	0.44	0.42	0.38	0.32	0.69

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1381	107	117	32	298	4555	383
v/c Ratio	1.71	0.19	0.35	0.12	0.55	1.07	0.30
Control Delay	355.6	39.9	12.1	46.8	53.2	52.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	355.6	39.9	12.1	46.8	53.2	52.4	5.2
Queue Length 50th (ft)	~615	35	7	23	116	~678	92
Queue Length 95th (ft)	#711	m62	m40	53	164	m#699	m101
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	806	572	333	313	623	4245	1274
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.71	0.19	0.35	0.10	0.48	1.07	0.30

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

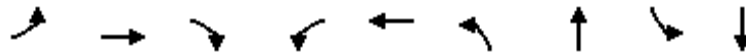
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	65	204	76	27	211	783	83	1297
v/c Ratio	0.25	0.22	0.49	0.37	0.10	0.71	0.48	0.18	0.68
Control Delay	38.5	37.2	9.5	55.5	33.1	37.7	10.1	15.8	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	38.5	37.2	9.5	55.5	33.1	37.7	10.1	15.8	12.3
Queue Length 50th (ft)	30	36	0	47	4	49	53	38	344
Queue Length 95th (ft)	66	74	61	m80	m14	m102	132	m56	171
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	456	244	319	374	2235	487	1895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	147
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.19	0.45	0.31	0.08	0.56	0.35	0.17	0.74

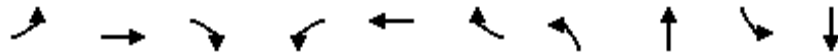
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	229	11	46	187	4	5	63	414	24	1563
v/c Ratio	0.84	0.03	0.13	0.69	0.01	0.02	0.55	0.17	0.27	0.70
Control Delay	56.9	22.2	6.7	50.7	31.0	19.2	62.8	8.5	52.8	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Total Delay	56.9	22.2	6.7	50.7	31.0	19.2	62.8	8.5	52.8	15.0
Queue Length 50th (ft)	144	5	3	109	2	0	42	86	15	187
Queue Length 95th (ft)	#256	18	22	184	11	10	m71	118	m28	263
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	302	401	376	300	401	344	117	2404	89	2245
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	6
Spillback Cap Reductn	0	0	6	0	0	0	0	0	0	412
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.03	0.12	0.62	0.01	0.01	0.54	0.17	0.27	0.85

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

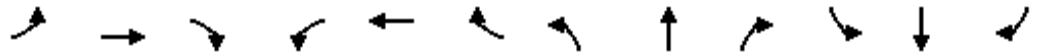
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	151	618	280	394	715	64	402	722	537	366	1001	63
v/c Ratio	0.43	0.80	0.62	1.04	0.99dl	0.15	1.12	0.70	0.66	1.12	1.01	0.13
Control Delay	38.8	35.9	16.6	60.9	27.3	3.5	125.0	36.1	8.1	115.8	61.0	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	35.9	16.6	60.9	27.3	3.5	125.0	36.1	8.1	115.8	61.0	9.6
Queue Length 50th (ft)	84	148	41	~286	79	0	~152	215	16	~143	~366	17
Queue Length 95th (ft)	144	217	135	m#292	m79	m1	#247	281	113	#227	#481	m26
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	372	802	468	379	778	414	360	1026	815	326	991	473
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.77	0.60	1.04	0.92	0.15	1.12	0.70	0.66	1.12	1.01	0.13

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	453	647	66	879	807	147	418	405	15	1467	182
v/c Ratio	0.79	0.92	0.18	1.49	1.13	0.85	0.30	0.47	0.17	1.24	0.31
Control Delay	39.5	47.2	8.1	262.6	113.6	87.2	22.8	4.5	48.9	138.8	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	47.2	8.1	262.6	113.6	87.2	22.8	4.5	48.9	138.8	8.0
Queue Length 50th (ft)	149	226	3	~403	~330	48	89	0	9	~602	20
Queue Length 95th (ft)	m173	m#272	m6	#524	#450	#106	146	64	m13	#742	m62
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	618	708	365	589	714	172	1377	864	89	1186	589
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.91	0.18	1.49	1.13	0.85	0.30	0.47	0.17	1.24	0.31

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	74	51	56	233	578	2454
v/c Ratio	1.25	0.22	0.95	0.99	1.23	1.19
Control Delay	254.8	61.5	172.9	118.2	172.5	119.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	254.8	61.5	172.9	118.2	172.5	119.3
Queue Length 50th (ft)	~90	46	56	223	~365	~1520
Queue Length 95th (ft)	#202	90	#151	#405	#492	#1643
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	59	236	59	235	470	2064
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.22	0.95	0.99	1.23	1.19

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
22: G Street & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	118	587	456	572	94	2040	421	1672
v/c Ratio	1.31	0.29	2.21	0.61	0.70	1.06	1.61	1.99	1.11
Control Delay	195.5	4.8	571.5	14.7	7.3	90.5	299.7	486.3	87.8
Queue Delay	0.0	2.0	128.3	1.1	0.7	0.0	124.4	0.0	25.7
Total Delay	195.5	6.8	699.7	15.8	8.0	90.5	424.1	486.3	113.4
Queue Length 50th (ft)	~170	6	~625	123	51	~64	~980	~420	~644
Queue Length 95th (ft)	m#285	m18	m#797	m174	m92	m41	m#579	#608	#784
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	157	411	266	745	812	89	1268	212	1507
Starvation Cap Reductn	0	0	0	117	59	0	186	0	0
Spillback Cap Reductn	0	183	122	22	0	0	0	0	76
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.52	4.08	0.73	0.76	1.06	1.89	1.99	1.17

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	257	394	923	402	14	203	1048	719
v/c Ratio	0.64	0.64	0.91	0.74	0.54	0.16	0.24	0.82	0.85
Control Delay	62.5	37.4	54.9	28.4	5.4	40.4	9.9	35.7	27.0
Queue Delay	0.0	0.1	5.6	3.7	0.4	0.0	0.0	6.0	9.0
Total Delay	62.5	37.5	60.5	32.1	5.8	40.4	9.9	41.7	36.0
Queue Length 50th (ft)	63	105	224	234	29	8	76	315	280
Queue Length 95th (ft)	m38	m41	m#382	294	m50	m8	m75	400	#527
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	142	402	434	1239	750	89	848	1274	849
Starvation Cap Reductn	0	0	21	228	86	0	0	180	108
Spillback Cap Reductn	0	4	0	7	0	0	0	94	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.65	0.95	0.91	0.61	0.16	0.24	0.96	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	538	795	1823	652	1569
v/c Ratio	1.30	1.21dl	1.81	1.27	0.70
Control Delay	158.5	24.1	388.5	160.5	6.2
Queue Delay	77.2	34.9	74.8	151.2	5.3
Total Delay	235.7	59.0	463.3	311.7	11.4
Queue Length 50th (ft)	~481	235	~945	~543	112
Queue Length 95th (ft)	m#371	m182	m#907	m#368	m86
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	415	854	1009	513	2230
Starvation Cap Reductn	0	0	0	74	594
Spillback Cap Reductn	49	114	85	108	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.47	1.07	1.97	1.61	0.96

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
25: H Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1664	512	1047
v/c Ratio	0.97	0.85	0.87
Control Delay	23.6	31.1	27.5
Queue Delay	80.9	7.1	6.4
Total Delay	104.5	38.1	33.9
Queue Length 50th (ft)	336	242	270
Queue Length 95th (ft)	m254	m#347	m#336
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1717	602	1203
Starvation Cap Reductn	318	61	122
Spillback Cap Reductn	2	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.19	0.95	0.97

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1990	54	1279	845	787
v/c Ratio	1.15	0.08	0.98	2.90	1.20
Control Delay	85.7	8.6	31.6	880.0	121.7
Queue Delay	40.2	0.1	14.3	0.0	228.9
Total Delay	125.9	8.7	45.9	880.0	350.6
Queue Length 50th (ft)	~261	14	298	~1007	~354
Queue Length 95th (ft)	m#254	m16	m#351	m#1263	m#836
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1727	655	1309	291	657
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	126	145	71	123	197
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.24	0.11	1.03	5.03	1.71

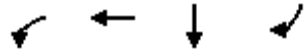
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	268	1729	973	288
v/c Ratio	0.44	1.03	0.52	0.46
Control Delay	9.2	48.4	8.3	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.2	48.4	8.3	5.2
Queue Length 50th (ft)	32	-202	55	13
Queue Length 95th (ft)	87	#310	m65	m19
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	603	1683	1881	632
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	1.03	0.52	0.46

Intersection Summary

Description: 6 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	891	2779	87	292
v/c Ratio	0.98	0.88	0.21	1.02
Control Delay	12.8	4.4	28.1	64.5
Queue Delay	8.0	5.1	0.0	0.0
Total Delay	20.8	9.5	28.1	64.5
Queue Length 50th (ft)	143	143	39	~179
Queue Length 95th (ft)	m133	m132	80	m78
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	912	3156	424	286
Starvation Cap Reductn	32	332	0	0
Spillback Cap Reductn	0	76	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.01	0.98	0.21	1.02

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
29: J St & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2373	537	1123
v/c Ratio	0.76	0.65	0.75
Control Delay	8.1	7.4	28.2
Queue Delay	2.0	1.4	0.2
Total Delay	10.2	8.8	28.5
Queue Length 50th (ft)	247	101	240
Queue Length 95th (ft)	m258	m121	m269
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	3102	828	1502
Starvation Cap Reductn	550	133	57
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	0.77	0.78

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Off) AM Peak (Mitigated)

30: Richards Blvd & Dos Rios St

1/10/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1680	2	313
v/c Ratio	0.56	0.00	0.43
Control Delay	7.7	12.0	8.2
Queue Delay	0.0	0.0	0.0
Total Delay	7.7	12.0	8.2
Queue Length 50th (ft)	100	1	26
Queue Length 95th (ft)	m89	4	54
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2990	731	726
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.00	0.43

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
31: Richards Blvd & 12th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	47	827	89	2241	4372	853
v/c Ratio	0.10	0.92	0.20	0.64	0.85	0.73
Control Delay	38.1	63.5	16.0	5.0	17.5	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	38.1	63.5	16.0	5.0	18.3	13.3
Queue Length 50th (ft)	31	358	18	231	624	300
Queue Length 95th (ft)	64	#477	63	249	652	465
Internal Link Dist (ft)		258		468	518	
Turn Bay Length (ft)	150					300
Base Capacity (vph)	449	898	447	3481	5165	1161
Starvation Cap Reductn	0	0	0	42	0	0
Spillback Cap Reductn	0	0	0	0	437	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.92	0.20	0.65	0.92	0.73

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
32: Richards & 12th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	794	30	549	1449	1	32	4388
v/c Ratio	0.52	0.05	1.05	0.54	0.00	0.18	0.92
Control Delay	38.8	32.4	90.9	8.4	0.0	37.5	9.0
Queue Delay	0.0	0.0	0.7	0.3	0.0	0.0	0.6
Total Delay	38.8	32.4	91.6	8.6	0.0	37.5	9.7
Queue Length 50th (ft)	196	18	~465	189	0	24	765
Queue Length 95th (ft)	238	42	#692	m9	m0	m30	290
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	1524	569	525	2763	860	177	4747
Starvation Cap Reductn	0	0	0	558	0	0	15
Spillback Cap Reductn	0	0	1	0	0	0	120
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.05	1.05	0.66	0.00	0.18	0.95

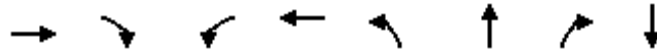
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj (Off) AM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	83	82	468	123	231	556	454	749
v/c Ratio	0.24	0.24	0.69	0.34	0.86	0.44	0.37	0.80
Control Delay	1.7	1.6	54.1	45.3	81.6	11.3	1.7	36.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.4	0.9	112.9
Total Delay	1.7	1.6	54.1	45.3	81.6	14.7	2.5	148.9
Queue Length 50th (ft)	0	0	191	87	187	196	0	535
Queue Length 95th (ft)	0	0	238	140	#352	304	36	#748
Internal Link Dist (ft)	331			1127		348		285
Turn Bay Length (ft)		150	350		100		160	
Base Capacity (vph)	464	464	674	362	272	1268	1222	931
Starvation Cap Reductn	0	0	0	0	0	597	477	330
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.18	0.69	0.34	0.85	0.83	0.61	1.25

Intersection Summary

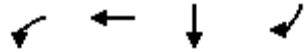
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007

1: Richards Blvd & I-5 SB Off



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1140	440	1798	851
v/c Ratio	0.94	0.35	0.91	0.96
Control Delay	31.6	11.6	27.9	39.8
Queue Delay	18.3	0.0	42.3	0.0
Total Delay	49.9	11.6	70.3	39.8
Queue Length 50th (ft)	301	72	507	399
Queue Length 95th (ft)	#108	91	#646	#714
Internal Link Dist (ft)		264	611	
Turn Bay Length (ft)	100			300
Base Capacity (vph)	1218	1274	1982	883
Starvation Cap Reductn	18	0	0	0
Spillback Cap Reductn	113	0	335	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.03	0.35	1.09	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

2: Richards Blvd & I-5 NB Off

1/10/2007



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1481	3221	98	602
v/c Ratio	0.44	1.19	0.20	0.65
Control Delay	4.5	105.6	12.8	26.4
Queue Delay	0.8	0.0	0.0	0.0
Total Delay	5.3	105.6	12.8	26.4
Queue Length 50th (ft)	62	-949	21	134
Queue Length 95th (ft)	m75	m#486	m32	135
Internal Link Dist (ft)	219			328
Turn Bay Length (ft)			300	
Base Capacity (vph)	3350	2708	673	1309
Starvation Cap Reductn	1438	0	0	0
Spillback Cap Reductn	308	0	2	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	1.19	0.15	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

3: Richards Blvd & Bercut Dr

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	3700	828	221	215	213
v/c Ratio	0.02	0.98	1.02	0.28	0.84	0.97
Control Delay	5.5	15.6	52.8	6.4	70.0	97.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	15.6	52.8	6.4	70.0	97.0
Queue Length 50th (ft)	2	217	~255	25	135	135
Queue Length 95th (ft)	m2	m#254	m#383	m34	#258	#280
Internal Link Dist (ft)		1382		413	595	
Turn Bay Length (ft)	150		200			150
Base Capacity (vph)	770	3777	808	782	261	224
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.98	1.02	0.28	0.82	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

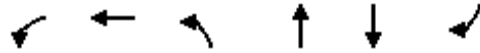
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

4: Richards Blvd & 6th Street

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	416	2648	963	650	197	281
v/c Ratio	0.62	0.92	0.96	0.65	0.52	0.91
Control Delay	12.5	17.1	33.0	10.3	40.8	70.6
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	12.5	17.1	33.0	11.9	40.8	70.6
Queue Length 50th (ft)	96	164	314	226	111	170
Queue Length 95th (ft)	m123	m#217	m301	m208	182	#314
Internal Link Dist (ft)		1043		501	338	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	675	2865	1002	1015	401	330
Starvation Cap Reductn	0	0	0	199	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.92	0.96	0.80	0.49	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	299	1720	109	367	805	1225	896
v/c Ratio	0.50	0.80	0.19	0.97	1.01	1.12	0.57
Control Delay	22.8	25.5	5.8	83.1	79.2	82.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	45.6	0.0
Total Delay	22.8	25.5	5.8	83.1	79.2	128.0	0.3
Queue Length 50th (ft)	111	216	8	219	-245	-466	0
Queue Length 95th (ft)	198	302	m11	m#418	#407	m223	m0
Internal Link Dist (ft)		1155			540	348	
Turn Bay Length (ft)	200		300	200			
Base Capacity (vph)	593	2147	566	378	794	1097	1583
Starvation Cap Reductn	0	0	0	0	0	94	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.80	0.19	0.97	1.01	1.22	0.57

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

6: Richards Blvd & 10th Street

1/10/2007



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	91	733	930	42	33	169
v/c Ratio	0.12	0.28	0.81	0.05	0.07	0.76
Control Delay	21.3	22.0	36.5	9.9	36.2	51.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	22.0	36.5	9.9	36.2	51.4
Queue Length 50th (ft)	43	126	276	13	10	78
Queue Length 95th (ft)	72	111	319	22	22	140
Internal Link Dist (ft)		1064		356	281	
Turn Bay Length (ft)	150		150			150
Base Capacity (vph)	742	2675	1329	1159	672	317
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.70	0.04	0.05	0.53

Intersection Summary

Queues

2030 +Proj(Off) PM Peak (Mitigated)

7: Richard Blvd & Dos Rios St

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	797	109	1550	204	151
v/c Ratio	0.54	0.55	0.48	0.98	0.39	0.27
Control Delay	45.8	17.5	35.4	38.2	23.2	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	17.5	35.4	38.2	23.2	17.1
Queue Length 50th (ft)	33	134	44	323	72	39
Queue Length 95th (ft)	#85	186	89	#491	130	84
Internal Link Dist (ft)		771		1307	996	765
Turn Bay Length (ft)	150		150			
Base Capacity (vph)	147	1453	253	1593	524	564
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.55	0.43	0.97	0.39	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

9: Bannon St & I-5 SB Off

1/10/2007



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	1022	1066	1428	1511
v/c Ratio	0.84	0.67	0.50	0.75
Control Delay	37.1	2.3	11.3	16.1
Queue Delay	0.0	0.0	1.0	33.0
Total Delay	37.1	2.3	12.4	49.1
Queue Length 50th (ft)	305	0	151	296
Queue Length 95th (ft)	376	0	m187	m425
Internal Link Dist (ft)	195			250
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	1327	1583	2857	2003
Starvation Cap Reductn	0	0	1072	582
Spillback Cap Reductn	0	0	697	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.67	0.80	1.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

10: Bannon St & I-5 NB Off

1/10/2007



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	593	1857	52	1385
v/c Ratio	0.65	0.74	0.05	0.65
Control Delay	8.3	28.3	8.5	15.4
Queue Delay	1.1	4.8	0.0	7.1
Total Delay	9.4	33.1	8.5	22.6
Queue Length 50th (ft)	71	281	13	232
Queue Length 95th (ft)	107	299	28	290
Internal Link Dist (ft)		196	622	
Turn Bay Length (ft)	150			300
Base Capacity (vph)	908	2508	1118	2166
Starvation Cap Reductn	134	579	0	0
Spillback Cap Reductn	0	175	0	736
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.96	0.05	0.97

Intersection Summary

Queues

2030 +Proj(Off) PM Peak (Mitigated)

11: Bannon St & Bercut Dr

1/10/2007



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	144	2398	700	853	126	22
v/c Ratio	0.15	0.69	0.59	0.87	0.61	0.03
Control Delay	8.7	13.0	2.2	33.9	39.6	27.3
Queue Delay	2.2	4.8	0.5	0.0	0.0	0.0
Total Delay	10.9	17.8	2.7	33.9	39.6	27.3
Queue Length 50th (ft)	27	201	6	189	44	15
Queue Length 95th (ft)	m42	292	21	#238	m55	m19
Internal Link Dist (ft)		86		744		413
Turn Bay Length (ft)	150				150	
Base Capacity (vph)	960	3476	1179	1022	206	727
Starvation Cap Reductn	693	1004	168	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.97	0.69	0.83	0.61	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
12: Bannon St & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	630	2134	1355	579	160	948
v/c Ratio	1.06	1.04dr	1.02	0.93	0.66	0.47
Control Delay	69.9	34.8	40.1	27.1	66.0	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	34.8	40.1	27.1	66.0	13.5
Queue Length 50th (ft)	~453	278	~516	257	105	134
Queue Length 95th (ft)	m#637	#455	#643	m#509	173	164
Internal Link Dist (ft)		735	815			501
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	596	2138	1331	622	266	2028
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.00	1.02	0.93	0.60	0.47

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
13: Bannon St & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	494	1708	163	462	1156	384	760
v/c Ratio	0.79	0.95	0.25	0.57	0.73	0.78	0.39
Control Delay	19.5	23.0	0.6	19.6	15.9	28.7	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	23.0	0.6	19.6	15.9	28.7	3.9
Queue Length 50th (ft)	161	263	0	88	329	133	45
Queue Length 95th (ft)	m178	m283	m0	m111	m340	m112	m46
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	628	1805	665	815	1583	502	1964
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.95	0.25	0.57	0.73	0.76	0.39

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

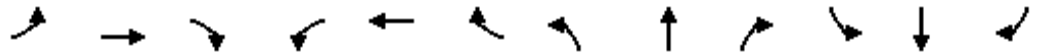
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

14: N B Street & 6th Street

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	52	144	271	315	132	72	161	1817	167	12	1276	180
v/c Ratio	0.15	0.27	0.46	0.95	0.24	0.14	0.72	0.85	0.17	0.13	0.80	0.23
Control Delay	28.5	29.3	12.9	72.0	25.2	10.9	43.1	8.2	0.3	42.2	24.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.2	0.0
Total Delay	28.5	29.3	12.9	72.0	25.2	10.9	43.1	11.3	0.3	42.2	24.3	4.9
Queue Length 50th (ft)	25	72	43	214	71	3	108	51	1	7	260	10
Queue Length 95th (ft)	56	124	116	#383	131	46	m125	m#711	m0	m12	m343	m27
Internal Link Dist (ft)		435			1023			498				815
Turn Bay Length (ft)	150		150	150			150		150	150		150
Base Capacity (vph)	343	541	589	333	541	510	225	2144	997	91	1646	804
Starvation Cap Reductn	0	0	0	0	0	0	0	231	0	0	0	0
Spillback Cap Reductn	0	0	3	0	0	0	0	0	0	0	55	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.27	0.46	0.95	0.24	0.14	0.72	0.95	0.17	0.13	0.80	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: N B Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	100	39	477	284	14	90	1491	591	263	658
v/c Ratio	0.29	0.18	0.14	0.93	0.30	0.03	0.49	0.98	0.53	1.41	0.41
Control Delay	41.6	30.7	9.5	71.3	31.6	14.9	50.0	37.5	2.0	237.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.2	0.0	0.0
Total Delay	41.6	30.7	9.5	71.3	31.6	14.9	50.0	46.3	2.3	237.9	4.7
Queue Length 50th (ft)	20	31	1	~204	80	0	49	494	11	~220	31
Queue Length 95th (ft)	47	55	25	#305	119	16	m68	#638	m15	#377	43
Internal Link Dist (ft)		1023			1129			471			779
Turn Bay Length (ft)	150		150	150		150	150		150	150	
Base Capacity (vph)	106	637	317	515	945	433	216	1522	1120	186	1592
Starvation Cap Reductn	0	0	0	0	0	0	0	57	121	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.16	0.12	0.93	0.30	0.03	0.42	1.02	0.59	1.41	0.41

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: N B Street & 12th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1428	515	404	58	331	3359	1150
v/c Ratio	1.69	0.86	0.90	0.21	0.52	0.81	0.87
Control Delay	349.9	67.6	44.8	48.1	31.1	23.1	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	3.1
Total Delay	349.9	67.6	44.8	48.1	31.1	23.1	15.7
Queue Length 50th (ft)	~624	224	143	42	75	559	196
Queue Length 95th (ft)	#718	#313	#336	84	124	m576	m185
Internal Link Dist (ft)		767			1056	531	
Turn Bay Length (ft)	150		150	150			150
Base Capacity (vph)	844	599	449	313	698	4144	1316
Starvation Cap Reductn	0	0	0	0	0	0	95
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.69	0.86	0.90	0.19	0.47	0.81	0.94

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

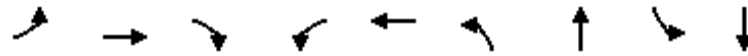
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
17: Canal St & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	185	356	37	26	194	1903	162	1556
v/c Ratio	0.53	0.60	0.71	0.27	0.09	0.78	0.91	0.81	0.80
Control Delay	39.3	40.1	14.9	25.2	10.2	62.5	27.5	53.3	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	26.7	0.0	0.2
Total Delay	39.3	40.1	14.9	25.2	10.2	62.5	54.2	53.3	9.6
Queue Length 50th (ft)	57	90	30	22	12	119	556	95	149
Queue Length 95th (ft)	m88	m128	m60	m49	m16	#218	#772	m#143	m254
Internal Link Dist (ft)		528			290		482		498
Turn Bay Length (ft)	150		150	150		150		150	
Base Capacity (vph)	252	341	522	151	323	270	2082	204	1957
Starvation Cap Reductn	0	0	0	0	0	0	277	0	57
Spillback Cap Reductn	0	0	0	0	0	0	83	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.54	0.68	0.25	0.08	0.72	1.05	0.79	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

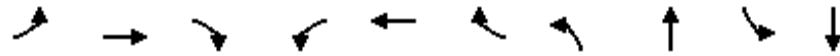
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
18: Canal St & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	277	40	38	89	3	9	74	1611	63	1213
v/c Ratio	0.91	0.10	0.10	0.30	0.01	0.03	0.50	0.73	0.71	0.58
Control Delay	48.4	11.1	7.9	35.6	30.3	16.7	55.4	16.5	80.3	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.1
Total Delay	48.4	11.1	7.9	35.6	30.3	16.7	55.4	19.2	80.3	13.6
Queue Length 50th (ft)	192	14	3	47	2	0	45	373	39	304
Queue Length 95th (ft)	m#296	m25	m9	93	9	13	92	465	m#80	m337
Internal Link Dist (ft)		326			369			443		471
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	317	419	386	306	419	363	165	2201	89	2105
Starvation Cap Reductn	0	0	0	0	0	0	0	454	0	123
Spillback Cap Reductn	0	0	0	0	0	0	0	344	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.10	0.10	0.29	0.01	0.02	0.45	0.92	0.71	0.61

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

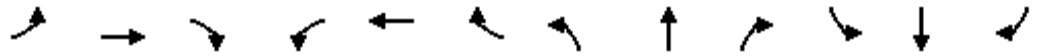
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
19: Big Four Blvd & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	756	337	306	638	199	598	1759	839	228	1547	182
v/c Ratio	0.99	1.17	0.71	1.12	1.12	0.55	1.22	1.07	0.95	1.17	1.16	0.29
Control Delay	107.3	143.1	24.1	90.9	87.1	17.6	166.5	83.2	45.3	176.0	122.7	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.5	6.0	0.0	105.5	0.0
Total Delay	107.3	143.1	24.1	90.9	87.1	17.6	166.5	134.7	51.3	176.0	228.2	22.8
Queue Length 50th (ft)	330	-469	85	-352	-367	73	-368	-1002	586	-136	-940	81
Queue Length 95th (ft)	#537	#609	219	m176	m179	m61	#491	#1139	#902	#227	#1080	144
Internal Link Dist (ft)		637			950			690			482	
Turn Bay Length (ft)	150			150		150	150		150	100		150
Base Capacity (vph)	336	644	476	274	572	365	492	1640	886	195	1333	634
Starvation Cap Reductn	0	0	0	0	0	0	0	164	36	0	226	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	1.17	0.71	1.12	1.12	0.55	1.22	1.19	0.99	1.17	1.40	0.29

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
20: Big Four Blvd & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1232	915	39	615	606	472	931	470	49	1075	7
v/c Ratio	1.18	0.95	0.09	1.01	1.17	1.21	0.76	0.66	0.50	1.11	0.02
Control Delay	135.5	67.9	26.8	99.4	148.7	137.3	19.0	4.4	85.7	114.0	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.0	0.0
Total Delay	135.5	67.9	26.8	99.4	148.7	137.3	19.0	4.4	85.7	171.0	32.0
Queue Length 50th (ft)	~744	461	9	~331	~370	~296	286	58	47	~631	3
Queue Length 95th (ft)	m#744	m468	m22	#456	#495	m206	m181	m35	#121	#770	16
Internal Link Dist (ft)		950			792		1399			443	
Turn Bay Length (ft)	150		150	150		150		150	150		150
Base Capacity (vph)	1041	979	452	608	519	389	1274	728	98	967	435
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	102	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.93	0.09	1.01	1.17	1.21	0.73	0.65	0.50	1.24	0.02

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
21: F Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	314	373	96	639	941	1889
v/c Ratio	1.77	0.82	0.77	1.54	1.19	1.58
Control Delay	406.4	65.1	103.6	289.6	144.5	281.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	406.4	65.1	103.6	289.6	144.5	281.8
Queue Length 50th (ft)	~457	325	94	~835	~578	~1352
Queue Length 95th (ft)	#654	#490	#189	#1081	#717	m#1245
Internal Link Dist (ft)		457		961	370	1399
Turn Bay Length (ft)						
Base Capacity (vph)	177	453	130	415	794	1197
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.77	0.82	0.74	1.54	1.19	1.58

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
22: G Street & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	300	261	831	534	798	39	1912	370	3281
v/c Ratio	1.19	0.67	2.76	0.70	1.02	0.44	1.42	2.33	2.21
Control Delay	154.0	33.3	818.5	18.6	41.7	65.7	205.8	639.5	569.2
Queue Delay	0.0	0.4	0.0	4.7	0.0	0.0	31.0	0.0	128.1
Total Delay	154.0	33.7	818.5	23.4	41.7	65.7	236.7	639.5	697.3
Queue Length 50th (ft)	~237	118	~899	149	~141	25	~844	~387	~1808
Queue Length 95th (ft)	m#404	m200	m#979	m167	m#503	m18	m#123	#566	#1937
Internal Link Dist (ft)	304			325			319		708
Turn Bay Length (ft)		150	165			100		150	
Base Capacity (vph)	252	389	301	764	784	89	1342	159	1482
Starvation Cap Reductn	0	0	0	122	0	0	62	0	0
Spillback Cap Reductn	0	12	11	163	0	0	0	0	493
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.69	2.87	0.89	1.02	0.44	1.49	2.33	3.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
23: G Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	280	351	194	1035	503	26	230	751	760
v/c Ratio	0.99	0.59	0.63	0.97	0.71	0.29	0.29	0.64	0.94
Control Delay	70.4	13.1	47.8	56.4	13.0	70.4	36.1	31.6	36.0
Queue Delay	0.0	0.8	0.0	49.3	0.8	0.0	0.0	0.5	1.8
Total Delay	70.4	13.9	47.8	105.7	13.8	70.4	36.1	32.0	37.8
Queue Length 50th (ft)	164	132	115	340	43	18	157	212	245
Queue Length 95th (ft)	m100	m76	m192	#480	157	m19	m165	276	#512
Internal Link Dist (ft)				280			313	370	
Turn Bay Length (ft)	60		100			75			150
Base Capacity (vph)	283	592	310	1062	711	89	792	1168	807
Starvation Cap Reductn	0	72	0	139	53	0	0	122	13
Spillback Cap Reductn	0	2	0	10	0	0	0	36	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.68	0.63	1.12	0.76	0.29	0.29	0.72	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
24: H Street & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	294	587	1659	1182	3086
v/c Ratio	1.07	1.12	1.50	1.67	1.15
Control Delay	100.5	104.3	240.0	323.0	87.9
Queue Delay	96.2	385.8	14.3	295.7	189.9
Total Delay	196.6	490.1	254.2	618.8	277.8
Queue Length 50th (ft)	~237	~243	~740	~1110	~1225
Queue Length 95th (ft)	m#287	m#255	m#418	m276	m68
Internal Link Dist (ft)		318	382		319
Turn Bay Length (ft)	150			150	
Base Capacity (vph)	274	523	1108	708	2672
Starvation Cap Reductn	0	0	17	200	717
Spillback Cap Reductn	49	228	23	0	627
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.31	1.99	1.53	2.33	1.58

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
25: H Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1807	399	717
v/c Ratio	0.95	0.80	0.72
Control Delay	13.2	33.0	24.5
Queue Delay	79.4	3.4	0.4
Total Delay	92.6	36.5	25.0
Queue Length 50th (ft)	189	127	118
Queue Length 95th (ft)	m131	#367	176
Internal Link Dist (ft)	342		313
Turn Bay Length (ft)		175	
Base Capacity (vph)	1898	496	991
Starvation Cap Reductn	369	21	52
Spillback Cap Reductn	150	43	23
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.18	0.88	0.76

Intersection Summary

Description: 8 seconds lost time added to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
26: I Street & 6th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



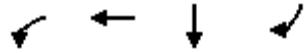
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2785	328	1177	1774	1632
v/c Ratio	1.70	0.81	1.45	2.63	2.57
Control Delay	340.2	45.4	235.2	750.6	724.7
Queue Delay	66.7	0.0	18.9	0.0	0.0
Total Delay	406.9	45.4	254.1	750.6	724.7
Queue Length 50th (ft)	~772	212	~554	~2007	~1828
Queue Length 95th (ft)	#832	m220	m#517	m#1708	m#1551
Internal Link Dist (ft)	343		302	382	
Turn Bay Length (ft)					
Base Capacity (vph)	1636	407	814	675	635
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	131	0	23	368	341
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.85	0.81	1.49	5.78	5.55

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
27: I Street & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)
1/10/2007



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	97	2399	1368	424
v/c Ratio	0.12	0.89	0.75	0.80
Control Delay	10.2	24.8	21.7	31.3
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	10.2	24.8	21.9	31.3
Queue Length 50th (ft)	30	490	175	148
Queue Length 95th (ft)	59	577	m204	m#267
Internal Link Dist (ft)		1074	386	
Turn Bay Length (ft)				100
Base Capacity (vph)	806	2691	1831	533
Starvation Cap Reductn	0	0	74	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.89	0.78	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	NBT	SBL
Lane Group Flow (vph)	674	2106	534	831
v/c Ratio	1.17	1.12	0.73	3.45
Control Delay	99.3	71.0	19.3	1116.5
Queue Delay	123.0	52.4	16.4	0.0
Total Delay	222.3	123.3	35.7	1116.5
Queue Length 50th (ft)	~448	~394	120	~880
Queue Length 95th (ft)	m#390	m#284	#259	m#260
Internal Link Dist (ft)		329	356	
Turn Bay Length (ft)				
Base Capacity (vph)	574	1886	733	241
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	110	181	192	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.45	1.24	0.99	3.45

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	2214	828	1347
v/c Ratio	0.85	1.09	0.82
Control Delay	7.6	56.7	16.7
Queue Delay	0.0	0.0	0.0
Total Delay	7.6	56.7	16.7
Queue Length 50th (ft)	126	~344	130
Queue Length 95th (ft)	m86	m95	180
Internal Link Dist (ft)	348		293
Turn Bay Length (ft)		100	
Base Capacity (vph)	2593	758	1638
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.85	1.09	0.82

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj(Off) PM Peak (Mitigated)

30: Richards Blvd & Dos Rios St

1/10/2007



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1189	12	261
v/c Ratio	0.45	0.02	0.34
Control Delay	10.2	8.9	11.5
Queue Delay	0.0	0.0	0.0
Total Delay	10.2	8.9	11.5
Queue Length 50th (ft)	61	2	48
Queue Length 95th (ft)	84	9	92
Internal Link Dist (ft)	705	350	996
Turn Bay Length (ft)			
Base Capacity (vph)	2631	764	762
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.02	0.34

Intersection Summary

Queues
31: Richards Blvd & 12th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	148	369	155	4	4385	3675	815
v/c Ratio	0.30	0.38	0.32	0.03	1.30	0.75	0.71
Control Delay	39.2	39.3	25.6	59.8	159.3	17.6	12.3
Queue Delay	0.0	0.0	0.0	0.0	4.7	0.5	0.0
Total Delay	39.2	39.3	25.6	59.8	164.0	18.1	12.3
Queue Length 50th (ft)	99	132	65	1	~1736	467	220
Queue Length 95th (ft)	160	179	127	m1	m#1617	625	470
Internal Link Dist (ft)		258			468	518	
Turn Bay Length (ft)	150			200			300
Base Capacity (vph)	490	980	479	150	3364	4874	1148
Starvation Cap Reductn	0	0	0	0	27	0	0
Spillback Cap Reductn	0	0	0	0	0	627	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.32	0.03	1.31	0.87	0.71

Intersection Summary

Description: 8 seconds additional lost time represents LRT.

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
32: Bannon St & 12th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBL	EBT	EBR	NET	NER	SWL	SWT
Lane Group Flow (vph)	2318	92	717	2072	21	45	3780
v/c Ratio	1.11	0.12	1.01	0.89	0.03	0.66	0.97
Control Delay	92.2	23.7	71.3	44.3	11.0	77.0	24.1
Queue Delay	305.3	0.0	6.7	10.8	0.0	0.0	0.4
Total Delay	397.5	23.7	78.0	55.1	11.0	77.0	24.5
Queue Length 50th (ft)	~789	47	~577	446	0	38	748
Queue Length 95th (ft)	#879	83	#841	m261	m2	m50	145
Internal Link Dist (ft)		339		531			468
Turn Bay Length (ft)					150	150	
Base Capacity (vph)	2092	781	707	2323	728	68	3888
Starvation Cap Reductn	0	0	0	0	0	0	17
Spillback Cap Reductn	797	0	15	266	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.79	0.12	1.04	1.01	0.03	0.66	0.98

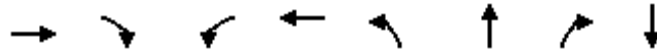
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj(Off) PM Peak (Mitigated)

1/10/2007



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	268	268	1106	127	149	756	505	1328
v/c Ratio	1.36	1.36	1.32	0.28	1.30	0.69	0.46	1.47
Control Delay	215.1	215.1	183.0	31.1	224.4	9.6	1.5	243.5
Queue Delay	83.7	83.7	265.6	0.0	0.0	5.8	0.8	100.5
Total Delay	298.8	298.8	448.6	31.1	224.4	15.4	2.3	344.0
Queue Length 50th (ft)	~167	~167	~471	63	~126	105	0	~1170
Queue Length 95th (ft)	#337	#337	#598	113	m#184	m113	m0	#1425
Internal Link Dist (ft)	331			1127		348		288
Turn Bay Length (ft)		150	350		100		160	
Base Capacity (vph)	197	197	841	453	115	1090	1104	902
Starvation Cap Reductn	0	0	0	0	0	274	322	119
Spillback Cap Reductn	24	24	261	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.55	1.55	1.91	0.28	1.30	0.93	0.65	1.70

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) AM Peak (Mitigated /8th St)

5: Richards Blvd & 7th Street

1/12/2007

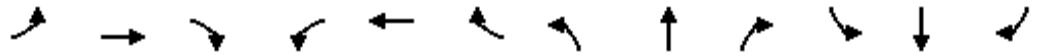


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	508	1107	42	254	291	0	0	569	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frft				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	0.99			1.00	1.00
Satd. Flow (prot)				1770	6408	1518	1610	3355			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	0.99			1.00	1.00
Satd. Flow (perm)				1770	6408	1518	1610	3355			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	508	1107	42	254	291	0	0	569	134
RTOR Reduction (vph)	0	0	0	0	0	21	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	508	1107	21	178	367	0	0	569	134
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				51.7	50.7	50.7	17.6	17.6			20.7	100.0
Effective Green, g (s)				50.7	50.7	50.7	17.1	17.1			20.2	100.0
Actuated g/C Ratio				0.51	0.51	0.51	0.17	0.17			0.20	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				897	3249	770	275	574			715	1583
v/s Ratio Prot				c0.29	0.17		c0.11	0.11			c0.16	
v/s Ratio Perm						0.01						0.08
v/c Ratio				0.57	0.34	0.03	0.65	0.64			0.80	0.08
Uniform Delay, d1				17.0	14.7	12.3	38.6	38.6			37.9	0.0
Progression Factor				1.06	1.16	1.61	0.90	0.90			0.72	1.00
Incremental Delay, d2				0.4	0.2	0.1	3.9	1.7			5.4	0.1
Delay (s)				18.5	17.3	19.9	38.6	36.5			32.6	0.1
Level of Service				B	B	B	D	D			C	A
Approach Delay (s)		0.0			17.7			37.2			26.4	
Approach LOS		A			B			D			C	

Intersection Summary

HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) AM Peak (Mitigated /8th St)
 13: Bannon St & 7th Street 1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗					↑↑	↗	↘	↑↑	
Volume (vph)	181	1693	28	0	0	0	0	142	424	148	865	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	181	1693	28	0	0	0	0	142	424	148	865	0
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	181	1693	11	0	0	0	0	142	424	148	865	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	40.5	40.5	40.5					32.4	100.0	13.6	50.5	
Effective Green, g (s)	40.5	40.5	40.5					32.4	100.0	13.6	50.5	
Actuated g/C Ratio	0.40	0.40	0.40					0.32	1.00	0.14	0.50	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	717	2059	641					1147	1583	241	1787	
v/s Ratio Prot		c0.33						0.04		c0.08	c0.24	
v/s Ratio Perm	0.10		0.01						0.27			
v/c Ratio	0.25	0.82	0.02					0.12	0.27	0.61	0.48	
Uniform Delay, d1	19.7	26.5	17.8					23.8	0.0	40.7	16.2	
Progression Factor	0.32	0.36	0.06					0.67	1.00	0.89	0.70	
Incremental Delay, d2	0.1	1.6	0.0					0.2	0.4	4.0	0.8	
Delay (s)	6.5	11.1	1.0					16.3	0.4	40.1	12.1	
Level of Service	A	B	A					B	A	D	B	
Approach Delay (s)		10.5			0.0			4.4			16.2	
Approach LOS		B			A			A			B	

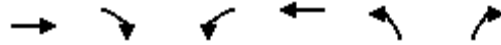
Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj (Res) AM Peak (Mitigated /8th St)
 33: Riverfront Dr & 5th Street 1/12/2007

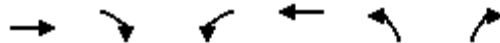


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj (Res) AM Peak (Mitigated /8th St)
 34: Riverfront Dr & 7th Street 1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) AM Peak (Mitigated /8th St)
 36: Signature & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘		↙	↘	↙		↕	
Volume (vph)	0	0	211	118	43	15	61	181	92	5	375	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Frt		0.86		1.00	0.96		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770	1790		1770	1863	1583		1862	
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770	1790		1770	1863	1583		1858	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	211	118	43	15	61	181	92	5	375	0
RTOR Reduction (vph)	0	178	0	0	10	0	0	0	40	0	0	0
Lane Group Flow (vph)	0	33	0	118	48	0	61	181	52	0	380	0
Turn Type	Perm			Prot			Prot		Perm	Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		15.5		15.9	35.4		7.7	56.6	56.6		44.9	
Effective Green, g (s)		15.5		15.9	35.4		7.7	56.6	56.6		44.9	
Actuated g/C Ratio		0.16		0.16	0.35		0.08	0.57	0.57		0.45	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		250		281	634		136	1054	896		834	
v/s Ratio Prot		c0.02		c0.07	0.03		c0.03	0.10				
v/s Ratio Perm									0.03		c0.20	
v/c Ratio		0.13		0.42	0.08		0.45	0.17	0.06		0.46	
Uniform Delay, d1		36.4		37.9	21.4		44.1	10.4	9.7		19.1	
Progression Factor		1.00		1.00	1.00		1.36	0.51	0.19		1.00	
Incremental Delay, d2		0.2		1.0	0.1		2.2	0.3	0.1		1.8	
Delay (s)		36.7		38.9	21.5		62.3	5.7	1.9		20.9	
Level of Service		D		D	C		E	A	A		C	
Approach Delay (s)		36.7			33.2			15.0			20.9	
Approach LOS		D			C			B			C	

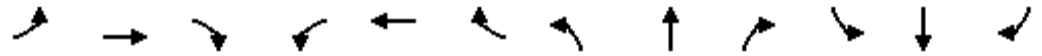
Intersection Summary

HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) AM Peak (Mitigated /8th St)

39: Richards Blvd & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4111		1	1			1	1
Volume (vph)	0	0	0	50	1226	177	50	548	0	0	272	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	1.00			1.00	1.00
Flt					0.98		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6280		1770	1863			1863	1583
Flt Permitted					1.00		0.56	1.00			1.00	1.00
Satd. Flow (perm)					6280		1047	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	50	1226	177	50	548	0	0	272	430
RTOR Reduction (vph)	0	0	0	0	26	0	0	0	0	0	0	4
Lane Group Flow (vph)	0	0	0	0	1427	0	50	548	0	0	272	426
Turn Type					Perm		Perm					Perm
Protected Phases					8		2				6	
Permitted Phases				8			2					6
Actuated Green, G (s)					31.5		60.5	60.5			60.5	60.5
Effective Green, g (s)					31.5		60.5	60.5			60.5	60.5
Actuated g/C Ratio					0.32		0.60	0.60			0.60	0.60
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1978		633	1127			1127	958
v/s Ratio Prot								c0.29			0.15	
v/s Ratio Perm					0.23		0.05					0.27
v/c Ratio					0.72		0.08	0.49			0.24	0.45
Uniform Delay, d1					30.4		8.2	11.1			9.1	10.7
Progression Factor					0.90		0.70	0.74			1.00	1.00
Incremental Delay, d2					1.1		0.2	1.4			0.5	1.5
Delay (s)					28.4		6.0	9.6			9.6	12.2
Level of Service					C		A	A			A	B
Approach Delay (s)		0.0			28.4			9.3			11.2	
Approach LOS		A			C			A			B	

Intersection Summary

HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) AM Peak (Mitigated /8th St)
 40: Bannon St & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑						↑		↗	↑	
Volume (vph)	465	1800	50	0	0	0	0	83	50	68	204	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91						1.00		1.00	1.00	
Frt	1.00	1.00						0.95		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	5065						1768		1770	1863	
Flt Permitted	0.95	1.00						1.00		0.65	1.00	
Satd. Flow (perm)	1770	5065						1768		1216	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	465	1800	50	0	0	0	0	83	50	68	204	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	14	0	0	0	0
Lane Group Flow (vph)	465	1846	0	0	0	0	0	119	0	68	204	0
Turn Type	Perm						Perm					
Protected Phases	4						2					
Permitted Phases	4						6					
Actuated Green, G (s)	55.2						36.8					
Effective Green, g (s)	55.2						36.8					
Actuated g/C Ratio	0.55						0.37					
Clearance Time (s)	4.0						4.0					
Vehicle Extension (s)	3.0						3.0					
Lane Grp Cap (vph)	977						2796					
v/s Ratio Prot	c0.36						0.07					
v/s Ratio Perm	0.26						0.06					
v/c Ratio	0.48						0.18					
Uniform Delay, d1	13.6						15.8					
Progression Factor	0.92						0.87					
Incremental Delay, d2	0.3						0.4					
Delay (s)	12.8						14.2					
Level of Service	B						B					
Approach Delay (s)	13.9						0.0					
Approach LOS	B						A					

Intersection Summary

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) PM Peak (Mitigated w/8th)

5: Richards Blvd & 7th Street

1/12/2007

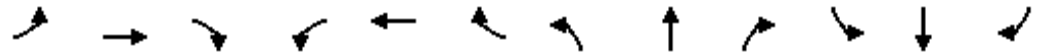


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑↑	↗	↙	↕↑			↑↑	↗
Volume (vph)	0	0	0	426	2354	110	408	408	0	0	462	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Fr _t				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00	1.00	0.95	0.99			1.00	1.00
Satd. Flow (prot)				1770	6408	1518	1610	3347			3539	1583
Fl _t Permitted				0.95	1.00	1.00	0.95	0.99			1.00	1.00
Satd. Flow (perm)				1770	6408	1518	1610	3347			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	426	2354	110	408	408	0	0	462	255
RTOR Reduction (vph)	0	0	0	0	0	52	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	426	2354	58	265	551	0	0	462	255
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				51.5	50.5	50.5	21.1	21.1			17.4	100.0
Effective Green, g (s)				50.5	50.5	50.5	20.6	20.6			16.9	100.0
Actuated g/C Ratio				0.50	0.50	0.50	0.21	0.21			0.17	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				894	3236	767	332	689			598	1583
v/s Ratio Prot				0.24	c0.37		0.16	c0.16			c0.13	
v/s Ratio Perm						0.04						0.16
v/c Ratio				0.48	0.73	0.08	0.80	0.80			0.77	0.16
Uniform Delay, d ₁				16.1	19.4	12.7	37.7	37.7			39.7	0.0
Progression Factor				0.60	0.57	0.28	0.64	0.64			0.74	1.00
Incremental Delay, d ₂				0.1	0.9	0.1	10.1	5.2			5.1	0.2
Delay (s)				9.8	11.9	3.6	34.3	29.2			34.5	0.2
Level of Service				A	B	A	C	C			C	A
Approach Delay (s)		0.0			11.3			30.8			22.3	
Approach LOS		A			B			C			C	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) PM Peak (Mitigated w/8th)
 13: Bannon St & 7th Street 1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗					↑↑	↗	↘	↑↑	
Volume (vph)	492	1708	163	0	0	0	0	462	1156	230	541	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	1708	163	0	0	0	0	462	1156	230	541	0
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	492	1708	71	0	0	0	0	462	1156	230	541	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	43.5	43.5	43.5					28.5	100.0	14.5	47.5	
Effective Green, g (s)	43.5	43.5	43.5					28.5	100.0	14.5	47.5	
Actuated g/C Ratio	0.44	0.44	0.44					0.28	1.00	0.14	0.48	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	770	2212	689					1009	1583	257	1681	
v/s Ratio Prot		0.34						0.13		0.13	0.15	
v/s Ratio Perm	0.28		0.04						c0.73			
v/c Ratio	0.64	0.77	0.10					0.46	0.73	0.89	0.32	
Uniform Delay, d1	22.1	24.0	16.7					29.4	0.0	42.0	16.3	
Progression Factor	0.45	0.45	0.06					1.56	1.00	1.07	0.88	
Incremental Delay, d2	0.6	0.6	0.0					0.7	1.5	27.5	0.4	
Delay (s)	10.6	11.3	1.0					46.5	1.5	72.3	14.8	
Level of Service	B	B	A					D	A	E	B	
Approach Delay (s)		10.5			0.0			14.4			32.0	
Approach LOS		B			A			B			C	

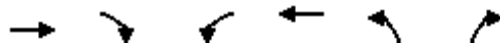
Intersection Summary

HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj (Res) PM Peak (Mitigated w/8th)
 33: Riverfront Dr & 5th Street 1/12/2007

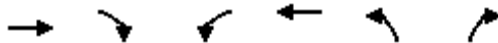


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	100	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			105		212	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		212	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		773	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	884
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		19.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj (Res) PM Peak (Mitigated w/8th)
 34: Riverfront Dr & 7th Street 1/12/2007

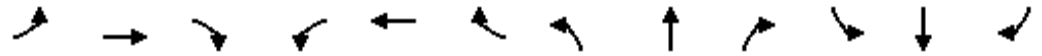


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Volume (veh/h)	100	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			105		212	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		212	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		773	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	884
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		19.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) PM Peak (Mitigated w/8th)
 36: Signature & 7th Street 1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘		↗	↑	↘		↕	
Volume (vph)	0	0	177	171	112	15	153	305	60	5	369	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Frt		0.86		1.00	0.98		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770	1830		1770	1863	1583		1862	
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770	1830		1770	1863	1583		1856	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	177	171	112	15	153	305	60	5	369	0
RTOR Reduction (vph)	0	150	0	0	5	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	27	0	171	122	0	153	305	34	0	374	0
Turn Type	Perm		Prot		Prot		Perm		Perm			
Protected Phases		4		3	8		5	2				6
Permitted Phases	4								2	6		
Actuated Green, G (s)		15.5		16.3	35.8		13.0	56.2	56.2		39.2	
Effective Green, g (s)		15.5		16.3	35.8		13.0	56.2	56.2		39.2	
Actuated g/C Ratio		0.16		0.16	0.36		0.13	0.56	0.56		0.39	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		250		289	655		230	1047	890		728	
v/s Ratio Prot		0.02		c0.10	c0.07		c0.09	0.16				
v/s Ratio Perm									0.02		c0.20	
v/c Ratio		0.11		0.59	0.19		0.67	0.29	0.04		0.51	
Uniform Delay, d1		36.3		38.8	22.1		41.4	11.5	9.8		23.1	
Progression Factor		1.00		1.00	1.00		0.44	0.48	0.20		1.00	
Incremental Delay, d2		0.2		3.2	0.1		6.0	0.6	0.1		2.6	
Delay (s)		36.5		42.0	22.2		24.4	6.1	2.0		25.7	
Level of Service		D		D	C		C	A	A		C	
Approach Delay (s)		36.5			33.6			11.0			25.7	
Approach LOS		D			C			B			C	

Intersection Summary		
HCM Average Control Delay	23.3	HCM Level of Service C
HCM Volume to Capacity ratio	0.48	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	69.5%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) PM Peak (Mitigated w/8th)

39: Richards Blvd & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4111		1	1			1	1
Volume (vph)	0	0	0	50	2127	50	50	356	0	0	263	763
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	1.00			0.95	0.95
Frt					1.00		1.00	1.00			0.92	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6379		1770	1863			1636	1504
Flt Permitted					1.00		0.29	1.00			1.00	1.00
Satd. Flow (perm)					6379		538	1863			1636	1504
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	50	2127	50	50	356	0	0	263	763
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2224	0	50	356	0	0	530	496
Turn Type					Perm		Perm					Perm
Protected Phases					8		2				6	
Permitted Phases				8			2					6
Actuated Green, G (s)					41.8		50.2	50.2			50.2	50.2
Effective Green, g (s)					41.8		50.2	50.2			50.2	50.2
Actuated g/C Ratio					0.42		0.50	0.50			0.50	0.50
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					2666		270	935			821	755
v/s Ratio Prot								0.19			0.32	
v/s Ratio Perm					0.35		0.09					c0.33
v/c Ratio					0.83		0.19	0.38			0.64	0.66
Uniform Delay, d1					26.0		13.7	15.3			18.3	18.5
Progression Factor					0.76		0.66	0.66			1.00	1.00
Incremental Delay, d2					2.2		1.5	1.2			3.9	4.4
Delay (s)					22.0		10.5	11.3			22.2	22.9
Level of Service					C		B	B			C	C
Approach Delay (s)		0.0			22.0			11.2			22.6	
Approach LOS		A			C			B			C	

Intersection Summary

HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Res) PM Peak (Mitigated w/8th)

40: Bannon St & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	293	2958	50	0	0	0	0	63	50	136	127	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91						1.00		1.00	1.00	
Frt	1.00	1.00						0.94		1.00	0.99	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	5073						1751		1770	1842	
Flt Permitted	0.95	1.00						1.00		0.65	1.00	
Satd. Flow (perm)	1770	5073						1751		1210	1842	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	2958	50	0	0	0	0	63	50	136	127	10
RTOR Reduction (vph)	0	2	0	0	0	0	0	2	0	0	3	0
Lane Group Flow (vph)	293	3006	0	0	0	0	0	111	0	136	134	0
Turn Type	Perm						Perm					
Protected Phases	4						2					
Permitted Phases	4						6					
Actuated Green, G (s)	69.0	69.0						23.0		23.0	23.0	
Effective Green, g (s)	69.0	69.0						23.0		23.0	23.0	
Actuated g/C Ratio	0.69	0.69						0.23		0.23	0.23	
Clearance Time (s)	4.0	4.0						4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)	1221	3500						403		278	424	
v/s Ratio Prot		c0.59						0.06			0.07	
v/s Ratio Perm	0.17									c0.11		
v/c Ratio	0.24	0.86						0.27		0.49	0.32	
Uniform Delay, d1	5.8	11.8						31.6		33.4	32.0	
Progression Factor	0.17	0.28						1.00		0.59	0.56	
Incremental Delay, d2	0.1	1.6						1.7		4.4	1.4	
Delay (s)	1.1	4.9						33.3		24.2	19.4	
Level of Service	A	A						C		C	B	
Approach Delay (s)		4.6			0.0			33.3			21.8	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Res) AM Peak (Mitigated /8th St)

1/12/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	508	1107	42	178	367	569	134
v/c Ratio	0.57	0.34	0.05	0.64	0.64	0.79	0.08
Control Delay	23.5	19.2	9.7	44.9	39.3	35.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	19.2	9.7	44.9	39.3	35.3	0.1
Queue Length 50th (ft)	175	106	2	110	114	165	0
Queue Length 95th (ft)	289	156	m13	168	139	217	0
Internal Link Dist (ft)		418			540	348	
Turn Bay Length (ft)	200		300	200			
Base Capacity (vph)	896	3245	789	419	873	1239	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.34	0.05	0.42	0.42	0.46	0.08

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
13: Bannon St & 7th Street

2030 +Proj (Res) AM Peak (Mitigated /8th St)

1/12/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	181	1693	28	142	424	148	865
v/c Ratio	0.25	0.82	0.04	0.12	0.27	0.61	0.48
Control Delay	6.9	11.8	0.5	17.5	1.0	45.3	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	11.8	0.5	17.5	1.0	45.3	12.4
Queue Length 50th (ft)	20	157	0	18	14	64	205
Queue Length 95th (ft)	m30	222	m0	41	25	106	105
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	735	2110	673	1148	1583	328	1788
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.80	0.04	0.12	0.27	0.45	0.48

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj (Res) AM Peak (Mitigated /8th St)

1/12/2007



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	211	118	58	61	181	92	380
v/c Ratio	0.33	0.42	0.09	0.39	0.17	0.10	0.45
Control Delay	1.4	41.8	15.2	64.4	6.6	0.7	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	1.4	41.8	15.2	64.4	6.6	0.7	25.0
Queue Length 50th (ft)	0	67	17	42	15	0	182
Queue Length 95th (ft)	0	121	42	85	15	1	287
Internal Link Dist (ft)	331		1127		348		286
Turn Bay Length (ft)				100			
Base Capacity (vph)	665	319	725	167	1055	936	876
Starvation Cap Reductn	0	0	0	0	0	0	240
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.37	0.08	0.37	0.17	0.10	0.60

Intersection Summary

Queues

2030 +Proj (Res) AM Peak (Mitigated /8th St)

39: Richards Blvd & 8th St

1/12/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1453	50	548	272	430
v/c Ratio	0.72	0.08	0.49	0.24	0.45
Control Delay	28.3	6.9	10.3	10.5	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	6.9	10.3	10.5	13.0
Queue Length 50th (ft)	273	12	149	76	138
Queue Length 95th (ft)	241	24	182	128	226
Internal Link Dist (ft)	655		577	85	
Turn Bay Length (ft)					
Base Capacity (vph)	2223	633	1126	1126	960
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.08	0.49	0.24	0.45

Intersection Summary

Queues
40: Bannon St & 8th St

2030 +Proj (Res) AM Peak (Mitigated /8th St)

1/12/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	465	1850	133	68	204
v/c Ratio	0.48	0.66	0.20	0.15	0.30
Control Delay	13.1	14.3	21.1	18.5	19.8
Queue Delay	0.2	0.0	0.0	0.0	0.0
Total Delay	13.3	14.3	21.1	18.5	19.8
Queue Length 50th (ft)	106	155	48	31	101
Queue Length 95th (ft)	m109	138	102	m69	177
Internal Link Dist (ft)		397	65		577
Turn Bay Length (ft)					
Base Capacity (vph)	1115	3194	664	447	685
Starvation Cap Reductn	152	86	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.60	0.20	0.15	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) PM Peak (Mitigated w/8th)

5: Richards Blvd & 7th Street

1/12/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	426	2354	110	265	551	462	255
v/c Ratio	0.48	0.73	0.13	0.80	0.80	0.77	0.16
Control Delay	12.2	13.0	1.3	39.3	31.7	37.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	13.0	1.3	39.3	31.7	37.5	0.2
Queue Length 50th (ft)	112	186	0	120	125	156	0
Queue Length 95th (ft)	m134	272	m1	276	239	169	0
Internal Link Dist (ft)		428			540	348	
Turn Bay Length (ft)	200		300	200			
Base Capacity (vph)	892	3231	818	403	837	920	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.73	0.13	0.66	0.66	0.50	0.16

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
13: Bannon St & 7th Street

2030 +Proj (Res) PM Peak (Mitigated w/8th)

1/12/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	492	1708	163	462	1156	230	541
v/c Ratio	0.64	0.77	0.21	0.46	0.73	0.89	0.32
Control Delay	11.6	11.7	0.4	47.5	15.6	77.7	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	11.7	0.4	47.5	15.6	77.7	15.2
Queue Length 50th (ft)	121	158	0	138	676	160	94
Queue Length 95th (ft)	m125	m164	m0	m155	m756	#297	136
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	788	2263	795	1009	1583	257	1682
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.75	0.21	0.46	0.73	0.89	0.32

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj (Res) PM Peak (Mitigated w/8th)

1/12/2007



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	177	171	127	153	305	60	374
v/c Ratio	0.28	0.59	0.19	0.66	0.29	0.07	0.51
Control Delay	1.1	47.3	19.8	30.2	6.9	0.8	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.0	1.2
Total Delay	1.1	47.3	19.8	30.2	7.5	0.8	30.2
Queue Length 50th (ft)	0	100	48	23	22	0	195
Queue Length 95th (ft)	0	168	87	m89	257	m5	298
Internal Link Dist (ft)	331		1127		348		286
Turn Bay Length (ft)				100			
Base Capacity (vph)	669	319	736	269	1048	917	731
Starvation Cap Reductn	0	0	0	0	436	0	178
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.54	0.17	0.57	0.50	0.07	0.68

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 +Proj (Res) PM Peak (Mitigated w/8th)

39: Richards Blvd & 8th St

1/12/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2227	50	356	530	496
v/c Ratio	0.83	0.19	0.38	0.65	0.66
Control Delay	22.9	11.2	11.5	22.9	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	11.2	11.5	22.9	23.7
Queue Length 50th (ft)	297	11	96	251	237
Queue Length 95th (ft)	333	34	176	374	362
Internal Link Dist (ft)	645		575	226	
Turn Bay Length (ft)					
Base Capacity (vph)	2683	270	936	821	756
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.19	0.38	0.65	0.66

Intersection Summary

Queues
40: Bannon St & 8th St

2030 +Proj (Res) PM Peak (Mitigated w/8th)

1/12/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	293	3008	113	136	137
v/c Ratio	0.24	0.86	0.28	0.49	0.32
Control Delay	1.3	5.5	33.1	24.7	19.2
Queue Delay	0.0	0.2	0.0	0.0	0.0
Total Delay	1.3	5.7	33.1	24.7	19.2
Queue Length 50th (ft)	8	38	58	66	52
Queue Length 95th (ft)	m22	82	107	m92	m76
Internal Link Dist (ft)		429	156		575
Turn Bay Length (ft)					
Base Capacity (vph)	1221	3504	405	279	427
Starvation Cap Reductn	0	82	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.88	0.28	0.49	0.32

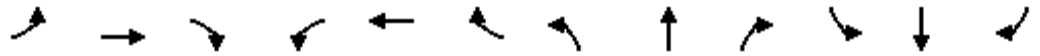
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)

5: Richards Blvd & 7th Street

1/12/2007



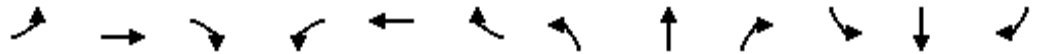
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑↑	↗	↙	↕↑			↑↑	↗
Volume (vph)	0	0	0	508	1316	86	277	430	0	0	538	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	6408	1518	1610	3374			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	6408	1518	1610	3374			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	508	1316	86	277	430	0	0	538	138
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	508	1316	43	230	477	0	0	538	138
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				50.5	49.5	49.5	19.9	19.9			19.6	100.0
Effective Green, g (s)				49.5	49.5	49.5	19.4	19.4			19.1	100.0
Actuated g/C Ratio				0.50	0.50	0.50	0.19	0.19			0.19	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				876	3172	751	312	655			676	1583
v/s Ratio Prot				c0.29	0.21		c0.14	0.14			c0.15	
v/s Ratio Perm						0.03						0.09
v/c Ratio				0.58	0.41	0.06	0.74	0.73			0.80	0.09
Uniform Delay, d1				17.9	16.0	13.1	37.9	37.8			38.6	0.0
Progression Factor				0.51	0.48	0.09	0.74	0.74			1.00	1.00
Incremental Delay, d2				0.5	0.3	0.1	7.5	3.4			6.0	0.1
Delay (s)				9.5	8.0	1.3	35.5	31.3			44.6	0.1
Level of Service				A	A	A	D	C			D	A
Approach Delay (s)		0.0			8.1			32.6			35.5	
Approach LOS		A			A			C			D	

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)
 13: Bannon St & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗					↑↑	↗	↘	↑↑	
Volume (vph)	184	1693	28	0	0	0	0	301	424	131	851	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	184	1693	28	0	0	0	0	301	424	131	851	0
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	184	1693	11	0	0	0	0	301	424	131	851	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	40.5	40.5	40.5					28.5	100.0	17.5	50.5	
Effective Green, g (s)	40.5	40.5	40.5					28.5	100.0	17.5	50.5	
Actuated g/C Ratio	0.40	0.40	0.40					0.28	1.00	0.18	0.50	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	717	2059	641					1009	1583	310	1787	
v/s Ratio Prot		c0.33						0.09		0.07	c0.24	
v/s Ratio Perm	0.10		0.01						0.27			
v/c Ratio	0.26	0.82	0.02					0.30	0.27	0.42	0.48	
Uniform Delay, d1	19.8	26.5	17.8					27.9	0.0	36.7	16.1	
Progression Factor	0.46	0.41	0.21					0.65	1.00	1.00	0.83	
Incremental Delay, d2	0.1	1.5	0.0					0.7	0.4	0.8	0.8	
Delay (s)	9.1	12.4	3.7					18.9	0.4	37.6	14.2	
Level of Service	A	B	A					B	A	D	B	
Approach Delay (s)		11.9			0.0			8.1			17.3	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)
 33: Riverfront Dr & 5th Street

1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				374		
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)
 34: Riverfront Dr & 7th Street

1/12/2007



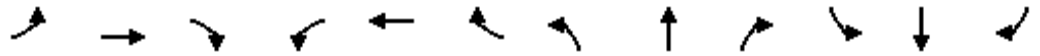
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Volume (veh/h)	300	5	5	100	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	300	5	5	100	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			305		412	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		412	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1256		593	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	105	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1256	682
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		26.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)
 36: Signature & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗	↖	↗	↕	
Volume (vph)	0	0	165	118	108	15	231	194	92	5	394	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Frt		0.86		1.00	0.98		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770	1829		1770	1863	1583		1862	
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770	1829		1770	1863	1583		1858	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	165	118	108	15	231	194	92	5	394	0
RTOR Reduction (vph)	0	142	0	0	5	0	0	0	33	0	0	0
Lane Group Flow (vph)	0	23	0	118	118	0	231	194	59	0	399	0
Turn Type	Perm			Prot			Prot		Perm	Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		15.5		12.1	31.6		18.5	69.4	69.4		46.9	
Effective Green, g (s)		15.5		12.1	31.6		18.5	69.4	69.4		46.9	
Actuated g/C Ratio		0.14		0.11	0.29		0.17	0.64	0.64		0.43	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		229		196	530		300	1186	1008		799	
v/s Ratio Prot		0.01		c0.07	c0.06		c0.13	0.10				
v/s Ratio Perm									0.04		c0.21	
v/c Ratio		0.10		0.60	0.22		0.77	0.16	0.06		0.50	
Uniform Delay, d1		40.7		46.2	29.4		43.2	8.0	7.5		22.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		0.2		5.1	0.2		11.5	0.3	0.1		2.2	
Delay (s)		40.9		51.3	29.6		54.7	8.3	7.6		24.8	
Level of Service		D		D	C		D	A	A		C	
Approach Delay (s)		40.9			40.2			28.9			24.8	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)

39: Richards Blvd & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4111		1	1			1	1
Volume (vph)	0	0	0	50	1479	177	50	548	0	0	272	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	1.00			1.00	1.00
Flt					0.98		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6299		1770	1863			1863	1583
Flt Permitted					1.00		0.55	1.00			1.00	1.00
Satd. Flow (perm)					6299		1023	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	50	1479	177	50	548	0	0	272	430
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	0	0	1685	0	50	548	0	0	272	427
Turn Type				Perm			Perm					Perm
Protected Phases					8			2				6
Permitted Phases				8			2					6
Actuated Green, G (s)					36.8		55.2	55.2			55.2	55.2
Effective Green, g (s)					36.8		55.2	55.2			55.2	55.2
Actuated g/C Ratio					0.37		0.55	0.55			0.55	0.55
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					2318		565	1028			1028	874
v/s Ratio Prot								c0.29			0.15	
v/s Ratio Perm					0.27		0.05					0.27
v/c Ratio					0.73		0.09	0.53			0.26	0.49
Uniform Delay, d1					27.3		10.6	14.2			11.8	13.7
Progression Factor					0.94		0.51	0.55			1.00	1.00
Incremental Delay, d2					1.0		0.3	1.9			0.6	1.9
Delay (s)					26.6		5.7	9.8			12.4	15.7
Level of Service					C		A	A			B	B
Approach Delay (s)		0.0			26.6			9.4			14.4	
Approach LOS		A			C			A			B	

Intersection Summary

HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)
 40: Bannon St & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑						↑		↗	↑	
Volume (vph)	465	1783	0	0	0	0	0	83	50	68	204	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91						1.00		1.00	1.00	
Frt	1.00	1.00						0.95		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085						1768		1770	1863	
Flt Permitted	0.95	1.00						1.00		0.66	1.00	
Satd. Flow (perm)	1770	5085						1768		1221	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	465	1783	0	0	0	0	0	83	50	68	204	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	14	0	0	0	0
Lane Group Flow (vph)	465	1783	0	0	0	0	0	119	0	68	204	0
Turn Type	Perm						Perm					
Protected Phases	4						2					
Permitted Phases	4						6					
Actuated Green, G (s)	53.7	53.7						38.3		38.3	38.3	
Effective Green, g (s)	53.7	53.7						38.3		38.3	38.3	
Actuated g/C Ratio	0.54	0.54						0.38		0.38	0.38	
Clearance Time (s)	4.0	4.0						4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)	950	2731						677		468	714	
v/s Ratio Prot		c0.35						0.07			c0.11	
v/s Ratio Perm	0.26									0.06		
v/c Ratio	0.49	0.65						0.18		0.15	0.29	
Uniform Delay, d1	14.5	16.5						20.4		20.2	21.4	
Progression Factor	0.34	0.31						1.00		0.68	0.71	
Incremental Delay, d2	0.3	0.4						0.6		0.6	1.0	
Delay (s)	5.2	5.6						21.0		14.3	16.1	
Level of Service	A	A						C		B	B	
Approach Delay (s)		5.5			0.0			21.0			15.6	
Approach LOS		A			A			C			B	

Intersection Summary

HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)

5: Richards Blvd & 7th Street

1/12/2007



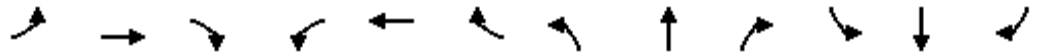
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙	↕			↑↑	↗
Volume (vph)	0	0	0	426	2356	109	408	409	0	0	835	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	0.86	1.00	0.91	0.91			0.95	1.00
Frbp, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	0.99			1.00	1.00
Satd. Flow (prot)				1770	6408	1518	1610	3347			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	0.99			1.00	1.00
Satd. Flow (perm)				1770	6408	1518	1610	3347			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	426	2356	109	408	409	0	0	835	260
RTOR Reduction (vph)	0	0	0	0	0	60	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	426	2356	50	265	552	0	0	835	260
Confl. Peds. (#/hr)			24			24			24			
Turn Type				Prot		Perm	Split					Free
Protected Phases				5	2		8	8			7	
Permitted Phases						2						Free
Actuated Green, G (s)				41.5	40.5	40.5	20.8	20.8			27.7	100.0
Effective Green, g (s)				40.5	40.5	40.5	20.3	20.3			27.2	100.0
Actuated g/C Ratio				0.40	0.40	0.40	0.20	0.20			0.27	1.00
Clearance Time (s)				3.0	4.0	4.0	3.5	3.5			3.5	
Vehicle Extension (s)				2.0	2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)				717	2595	615	327	679			963	1583
v/s Ratio Prot				0.24	c0.37		0.16	c0.16			c0.24	
v/s Ratio Perm						0.03						0.16
v/c Ratio				0.59	0.91	0.08	0.81	0.81			0.87	0.16
Uniform Delay, d1				23.3	28.0	18.3	38.0	38.0			34.7	0.0
Progression Factor				0.50	0.48	0.03	0.90	0.89			0.89	1.00
Incremental Delay, d2				0.4	2.5	0.1	13.2	6.9			6.2	0.2
Delay (s)				12.0	16.1	0.7	47.3	40.8			37.0	0.2
Level of Service				B	B	A	D	D			D	A
Approach Delay (s)		0.0			14.9			42.9			28.2	
Approach LOS		A			B			D			C	

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 8 seconds added to lost time to represent LRT.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)
 13: Bannon St & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	264	1938	163	0	0	0	0	272	1219	248	633	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5					4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.91	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583					3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	264	1938	163	0	0	0	0	272	1219	248	633	0
RTOR Reduction (vph)	0	0	91	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	264	1938	72	0	0	0	0	272	1219	248	633	0
Turn Type	Perm		Perm						Free	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						Free			
Actuated Green, G (s)	42.2	42.2	42.2					26.1	100.0	18.2	48.8	
Effective Green, g (s)	42.2	42.2	42.2					26.1	100.0	18.2	48.8	
Actuated g/C Ratio	0.42	0.42	0.42					0.26	1.00	0.18	0.49	
Clearance Time (s)	4.5	4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	747	2146	668					924	1583	322	1727	
v/s Ratio Prot		c0.38						0.08		0.14	0.18	
v/s Ratio Perm	0.15		0.05						c0.77			
v/c Ratio	0.35	0.90	0.11					0.29	0.77	0.77	0.37	
Uniform Delay, d1	19.6	27.0	17.5					29.6	0.0	38.9	16.0	
Progression Factor	0.51	0.48	0.07					1.74	1.00	0.82	0.48	
Incremental Delay, d2	0.1	2.1	0.0					0.3	1.2	7.7	0.4	
Delay (s)	10.0	15.2	1.2					51.7	1.2	39.5	8.0	
Level of Service	B	B	A					D	A	D	A	
Approach Delay (s)		13.7			0.0			10.4			16.9	
Approach LOS		B			A			B			B	

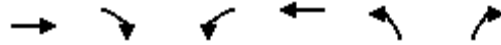
Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.5
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 8 seconds added to lost time to represent LRT.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)
 33: Riverfront Dr & 5th Street 1/12/2007

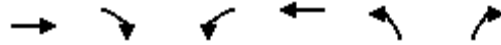


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	100	5	5	50	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	50	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	374					
pX, platoon unblocked						
vC, conflicting volume			105		162	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		162	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		825	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	55	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	906
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.7	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.0
Approach LOS			A

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		16.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis 2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)
 34: Riverfront Dr & 7th Street 1/12/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	100	5	5	50	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	5	5	50	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume			105		162	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105		162	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1486		825	953

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	105	55	15
Volume Left	0	5	5
Volume Right	5	0	10
cSH	1700	1486	906
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.7	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.0
Approach LOS			A

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		16.8%	ICU Level of Service
Analysis Period (min)		15	A

HCM Signalized Intersection Capacity Analysis 2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)
 36: Signature & 7th Street

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗	↖		↕	
Volume (vph)	0	0	536	171	112	15	149	311	60	5	388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Frt		0.86		1.00	0.98		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1611		1770	1830		1770	1863	1583		1862	
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		1611		1770	1830		1770	1863	1583		1856	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	536	171	112	15	149	311	60	5	388	0
RTOR Reduction (vph)	0	344	0	0	6	0	0	0	27	0	0	0
Lane Group Flow (vph)	0	192	0	171	121	0	149	311	33	0	393	0
Turn Type	Perm			Prot			Prot		Perm	Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		17.5		16.3	37.8		12.2	54.2	54.2		38.0	
Effective Green, g (s)		17.5		16.3	37.8		12.2	54.2	54.2		38.0	
Actuated g/C Ratio		0.18		0.16	0.38		0.12	0.54	0.54		0.38	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		282		289	692		216	1010	858		705	
v/s Ratio Prot		c0.12		c0.10	0.07		c0.08	0.17				
v/s Ratio Perm									0.02		c0.21	
v/c Ratio		0.68		0.59	0.18		0.69	0.31	0.04		0.56	
Uniform Delay, d1		38.6		38.8	20.7		42.1	12.6	10.7		24.4	
Progression Factor		1.00		1.00	1.00		0.46	0.53	0.52		1.00	
Incremental Delay, d2		6.6		3.2	0.1		7.3	0.6	0.1		3.2	
Delay (s)		45.2		42.0	20.8		26.8	7.3	5.6		27.6	
Level of Service		D		D	C		C	A	A		C	
Approach Delay (s)		45.2			33.0			12.7			27.6	
Approach LOS		D			C			B			C	

Intersection Summary

HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)

39: Richards Blvd & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					← ← ←		↖	↑			↗	↘
Volume (vph)	0	0	0	50	2128	50	50	356	0	0	263	763
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					0.86		1.00	1.00			1.00	1.00
Frt					1.00		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					6379		1770	1863			1863	1583
Flt Permitted					1.00		0.56	1.00			1.00	1.00
Satd. Flow (perm)					6379		1037	1863			1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	50	2128	50	50	356	0	0	263	763
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2225	0	50	356	0	0	263	763
Turn Type					Perm		Perm					Perm
Protected Phases					8		2				6	
Permitted Phases				8			2					6
Actuated Green, G (s)					37.0		55.0	55.0			55.0	55.0
Effective Green, g (s)					37.0		55.0	55.0			55.0	55.0
Actuated g/C Ratio					0.37		0.55	0.55			0.55	0.55
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					2360		570	1025			1025	871
v/s Ratio Prot								0.19			0.14	
v/s Ratio Perm					0.35		0.05					c0.48
v/c Ratio					0.94		0.09	0.35			0.26	0.88
Uniform Delay, d1					30.5		10.6	12.5			11.8	19.5
Progression Factor					1.11		0.58	0.57			1.00	1.00
Incremental Delay, d2					8.0		0.3	0.9			0.6	12.0
Delay (s)					41.9		6.5	8.1			12.4	31.6
Level of Service					D		A	A			B	C
Approach Delay (s)		0.0			41.9			7.9			26.6	
Approach LOS		A			D			A			C	

Intersection Summary

HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis 2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)
 40: Bannon St & 8th St

1/12/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑						↑		↗	↑	
Volume (vph)	293	3112	0	0	0	0	0	63	50	136	127	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91						1.00		1.00	1.00	
Frt	1.00	1.00						0.94		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085						1751		1770	1863	
Flt Permitted	0.95	1.00						1.00		0.65	1.00	
Satd. Flow (perm)	1770	5085						1751		1204	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	3112	0	0	0	0	0	63	50	136	127	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	293	3112	0	0	0	0	0	111	0	136	127	0
Turn Type	Perm						Perm					
Protected Phases	4						2					
Permitted Phases	4						6					
Actuated Green, G (s)	70.0						22.0					
Effective Green, g (s)	70.0						22.0					
Actuated g/C Ratio	0.70						0.22					
Clearance Time (s)	4.0						4.0					
Vehicle Extension (s)	3.0						3.0					
Lane Grp Cap (vph)	1239			3560			385			410		
v/s Ratio Prot	c0.61						0.06					
v/s Ratio Perm	0.17						c0.11					
v/c Ratio	0.24		0.87				0.29		0.51		0.31	
Uniform Delay, d1	5.4		11.6				32.5		34.3		32.6	
Progression Factor	0.14		0.40				1.00		0.77		0.75	
Incremental Delay, d2	0.0		1.4				1.9		6.6		1.9	
Delay (s)	0.8		6.0				34.4		33.0		26.4	
Level of Service	A		A				C		C		C	
Approach Delay (s)				5.5			0.0			34.4		
Approach LOS				A			A			C		

Intersection Summary

HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
5: Richards Blvd & 7th Street

2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	508	1316	86	230	477	538	138
v/c Ratio	0.58	0.41	0.11	0.74	0.73	0.80	0.09
Control Delay	12.8	8.7	0.6	41.7	34.4	47.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	8.7	0.6	41.7	34.4	47.7	0.1
Queue Length 50th (ft)	84	61	0	134	139	173	0
Queue Length 95th (ft)	389	107	m1	230	198	219	0
Internal Link Dist (ft)		410			540	348	
Turn Bay Length (ft)	200		300	200			
Base Capacity (vph)	877	3176	796	451	944	956	1583
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.41	0.11	0.51	0.51	0.56	0.09

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
13: Bannon St & 7th Street

2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	184	1693	28	301	424	131	851
v/c Ratio	0.26	0.82	0.04	0.30	0.27	0.42	0.48
Control Delay	9.5	13.0	1.4	19.3	0.6	40.9	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	13.0	1.4	19.3	0.6	40.9	14.5
Queue Length 50th (ft)	27	129	1	41	5	91	151
Queue Length 95th (ft)	m34	m187	m0	74	9	153	181
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	735	2110	673	1009	1583	310	1788
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.80	0.04	0.30	0.27	0.42	0.48

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	165	118	123	231	194	92	399
v/c Ratio	0.25	0.60	0.23	0.77	0.16	0.09	0.50
Control Delay	0.9	58.5	27.0	60.0	9.7	2.3	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.9
Total Delay	0.9	58.5	27.0	60.0	9.7	2.3	29.9
Queue Length 50th (ft)	0	80	59	154	55	0	211
Queue Length 95th (ft)	0	137	102	235	95	21	335
Internal Link Dist (ft)	331		1127		348		285
Turn Bay Length (ft)				100			
Base Capacity (vph)	697	223	604	357	1199	1052	811
Starvation Cap Reductn	0	0	0	0	0	0	261
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.53	0.20	0.65	0.16	0.09	0.73

Intersection Summary

Queues

2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)

39: Richards Blvd & 8th St

1/12/2007



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1706	50	548	272	430
v/c Ratio	0.73	0.09	0.53	0.26	0.49
Control Delay	26.7	6.4	10.4	13.3	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	6.4	10.4	13.3	16.6
Queue Length 50th (ft)	150	8	132	88	160
Queue Length 95th (ft)	283	24	344	145	258
Internal Link Dist (ft)	664		574	202	
Turn Bay Length (ft)					
Base Capacity (vph)	2539	565	1029	1029	877
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	0.09	0.53	0.26	0.49

Intersection Summary

Queues
40: Bannon St & 8th St

2030 +Proj (Off) AM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	465	1783	133	68	204
v/c Ratio	0.49	0.65	0.19	0.15	0.29
Control Delay	6.0	5.9	20.2	16.8	17.9
Queue Delay	0.2	0.1	0.0	0.0	0.0
Total Delay	6.1	6.0	20.2	16.8	17.9
Queue Length 50th (ft)	67	94	46	31	98
Queue Length 95th (ft)	m71	93	102	m69	m176
Internal Link Dist (ft)		414	184		574
Turn Bay Length (ft)					
Base Capacity (vph)	1115	3204	690	468	713
Starvation Cap Reductn	153	215	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.60	0.19	0.15	0.29

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
5: Richards Blvd & 7th Street

2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	426	2356	109	265	552	835	260
v/c Ratio	0.59	0.91	0.16	0.81	0.81	0.87	0.16
Control Delay	14.4	19.3	0.4	53.4	43.9	38.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	14.4	19.3	0.4	53.4	43.9	39.2	0.2
Queue Length 50th (ft)	87	172	0	186	195	258	0
Queue Length 95th (ft)	m151	m#542	m0	#293	260	303	m0
Internal Link Dist (ft)		416			540	348	
Turn Bay Length (ft)	200		300	200			200
Base Capacity (vph)	718	2599	675	378	786	1097	1583
Starvation Cap Reductn	0	0	0	0	0	54	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.91	0.16	0.70	0.70	0.80	0.16

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
13: Bannon St & 7th Street

2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	264	1938	163	272	1219	248	633
v/c Ratio	0.35	0.90	0.21	0.29	0.77	0.77	0.37
Control Delay	10.6	16.3	0.5	52.1	19.1	44.8	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	16.3	0.5	52.1	19.1	44.8	8.1
Queue Length 50th (ft)	63	187	1	88	387	172	75
Queue Length 95th (ft)	m65	m193	m1	m92	m392	m#247	96
Internal Link Dist (ft)		1034		779			540
Turn Bay Length (ft)	150				150	150	
Base Capacity (vph)	747	2146	759	924	1583	322	1727
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.90	0.21	0.29	0.77	0.77	0.37

Intersection Summary

Description: 8 seconds added to lost time to represent LRT.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
36: Signature & 7th Street

2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	536	171	127	149	311	60	393
v/c Ratio	0.86	0.59	0.18	0.69	0.31	0.07	0.56
Control Delay	23.4	47.3	17.8	34.8	8.4	2.2	31.0
Queue Delay	0.1	0.6	0.0	0.0	0.6	0.0	1.6
Total Delay	23.5	47.8	17.8	34.8	9.0	2.2	32.6
Queue Length 50th (ft)	68	100	47	22	16	0	208
Queue Length 95th (ft)	205	168	79	m#128	263	m15	325
Internal Link Dist (ft)	331		1127		348		288
Turn Bay Length (ft)				100			
Base Capacity (vph)	692	319	828	227	1011	887	712
Starvation Cap Reductn	0	0	0	0	394	0	166
Spillback Cap Reductn	5	24	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.58	0.15	0.66	0.50	0.07	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

39: Richards Blvd & 8th St



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	2228	50	356	263	763
v/c Ratio	0.94	0.09	0.35	0.26	0.88
Control Delay	42.8	6.7	8.2	12.6	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	6.7	8.2	12.6	32.9
Queue Length 50th (ft)	420	8	69	83	399
Queue Length 95th (ft)	#490	22	134	130	#663
Internal Link Dist (ft)	658		574	51	
Turn Bay Length (ft)					
Base Capacity (vph)	2364	571	1025	1025	871
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	0.09	0.35	0.26	0.88

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues
40: Bannon St & 8th St

2030 +Proj(Off) PM Peak (Mitigated w/ 8th St)

1/12/2007



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	293	3112	113	136	127
v/c Ratio	0.24	0.87	0.29	0.51	0.31
Control Delay	1.0	6.5	34.4	33.8	26.8
Queue Delay	0.0	0.8	0.0	0.0	0.0
Total Delay	1.0	7.3	34.4	33.8	26.8
Queue Length 50th (ft)	4	70	59	80	72
Queue Length 95th (ft)	m18	107	109	m133	m118
Internal Link Dist (ft)		417	37		574
Turn Bay Length (ft)					
Base Capacity (vph)	1239	3560	387	265	410
Starvation Cap Reductn	0	194	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.92	0.29	0.51	0.31

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Roundabout Analysis Worksheets

**Township 9 Traffic Study
Baseline Plus Residential Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	623	0	1,200	0.52	1
WB	241	71	1,162	0.21	1
SB	0	312	1,032	0.00	1
EB	131	241	1,070	0.12	1
PM Peak Hour					
NB	469	0	1,200	0.39	1
WB	579	187	1,099	0.53	1
SB	0	766	788	0.00	1
EB	97	579	888	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	71	187	0.13	1
SB	372	676	0.48	1
EB	552	282	0.39	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,205	0	2,400	0.50	2
WB	90	710	818	0.11	1
SB	460	177	1,105	0.42	1
EB	221	550	904	0.24	1
PM Peak Hour					
NB	808	0	2,400	0.34	2
WB	476	690	828	0.57	1
SB	760	696	825	0.92	1
EB	186	1,236	534	0.35	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	623	470	0.45	1
WB	87	220	0.16	1
SB	771	1,422	0.51	2
EB	495	118	0.35	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	5	0	1,200	0.00	1
WB	0	5	1,197	0.00	1
SB	0	5	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	15	0	1,200	0.01	1
WB	0	15	1,192	0.00	1
SB	0	15	1,192	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	5	15	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	59	36	1,181	0.05	1
WB	49	37	1,180	0.04	1
SB	15	49	1,174	0.01	1
EB	54	64	1,166	0.05	1
PM Peak Hour					
NB	88	87	1,153	0.08	1
WB	43	93	1,150	0.04	1
SB	12	43	1,177	0.01	1
EB	128	55	1,170	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	37	93	0.07	1
WB	0	0	0.00	1
SB	82	96	0.07	1
EB	58	82	0.06	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
Baseline Plus Office Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	642	0	1,200	0.54	1
WB	258	79	1,157	0.22	1
SB	0	337	1,019	0.00	1
EB	127	258	1,061	0.12	1
PM Peak Hour					
NB	476	0	1,200	0.40	1
WB	596	186	1,100	0.54	1
SB	0	782	779	0.00	1
EB	101	596	879	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	79	186	0.13	1
SB	385	697	0.50	1
EB	563	290	0.40	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,426	0	2,400	0.59	2
WB	90	931	699	0.13	1
SB	485	379	996	0.49	1
EB	173	575	890	0.19	1
PM Peak Hour					
NB	808	0	2,400	0.34	2
WB	476	690	828	0.57	1
SB	787	689	829	0.95	1
EB	563	1,263	520	1.08	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	642	477	0.46	1
WB	289	213	0.21	1
SB	748	1,826	0.65	2
EB	495	118	0.35	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	6	0	1,200	0.01	1
WB	0	6	1,197	0.00	1
SB	0	6	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	17	0	1,200	0.01	1
WB	0	17	1,191	0.00	1
SB	0	17	1,191	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	6	17	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	54	108	1,142	0.05	1
WB	42	41	1,178	0.04	1
SB	12	42	1,177	0.01	1
EB	238	54	1,171	0.20	1
PM Peak Hour					
NB	206	83	1,155	0.18	1
WB	101	92	1,150	0.09	1
SB	11	101	1,146	0.01	1
EB	123	112	1,140	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	41	92	0.07	1
WB	0	0	0.00	1
SB	184	152	0.13	1
EB	121	197	0.14	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2013 Plus Residential Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	623	0	1,200	0.52	1
WB	251	67	1,164	0.22	1
SB	0	318	1,029	0.00	1
EB	112	251	1,065	0.11	1
PM Peak Hour					
NB	340	0	1,200	0.28	1
WB	596	176	1,105	0.54	1
SB	0	772	784	0.00	1
EB	83	596	879	0.09	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	67	176	0.13	1
SB	363	679	0.49	1
EB	556	164	0.40	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,212	0	2,400	0.51	2
WB	100	713	816	0.12	1
SB	446	190	1,098	0.41	1
EB	203	546	906	0.22	1
PM Peak Hour					
NB	835	0	2,400	0.35	2
WB	494	701	823	0.60	1
SB	759	721	812	0.93	1
EB	172	1,253	525	0.33	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	623	474	0.45	1
WB	90	227	0.16	1
SB	749	1,425	0.51	2
EB	499	134	0.36	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	5	0	1,200	0.00	1
WB	0	5	1,197	0.00	1
SB	0	5	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	15	0	1,200	0.01	1
WB	0	15	1,192	0.00	1
SB	0	15	1,192	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	5	15	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	47	36	1,181	0.04	1
WB	41	36	1,181	0.03	1
SB	32	41	1,178	0.03	1
EB	58	73	1,161	0.05	1
PM Peak Hour					
NB	73	84	1,155	0.06	1
WB	36	89	1,152	0.03	1
SB	26	36	1,181	0.02	1
EB	135	62	1,167	0.12	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	36	89	0.06	1
WB	0	0	0.00	1
SB	95	113	0.08	1
EB	47	68	0.05	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2013 Plus Office Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	641	0	1,200	0.53	1
WB	268	74	1,160	0.23	1
SB	0	342	1,016	0.00	1
EB	108	268	1,056	0.10	1
PM Peak Hour					
NB	347	0	1,200	0.29	1
WB	613	175	1,106	0.55	1
SB	0	788	776	0.00	1
EB	86	613	870	0.10	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	74	175	0.13	1
SB	376	699	0.50	1
EB	567	172	0.41	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,463	0	2,400	0.61	2
WB	100	964	681	0.15	1
SB	471	423	972	0.48	1
EB	158	571	893	0.18	1
PM Peak Hour					
NB	835	0	2,400	0.35	2
WB	494	701	823	0.60	1
SB	785	714	816	0.96	1
EB	530	1,279	511	1.04	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	641	481	0.46	1
WB	323	220	0.23	1
SB	729	1,809	0.65	2
EB	499	134	0.36	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	6	0	1,200	0.01	1
WB	0	6	1,197	0.00	1
SB	0	6	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	17	0	1,200	0.01	1
WB	0	17	1,191	0.00	1
SB	0	17	1,191	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	6	17	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	43	96	1,148	0.04	1
WB	36	39	1,179	0.03	1
SB	26	36	1,181	0.02	1
EB	255	62	1,167	0.22	1
PM Peak Hour					
NB	167	79	1,157	0.14	1
WB	85	87	1,153	0.07	1
SB	25	85	1,154	0.02	1
EB	128	110	1,141	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	39	87	0.06	1
WB	0	0	0.00	1
SB	221	159	0.16	1
EB	100	159	0.11	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2030 Plus Residential Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	553	31	1,183	0.47	1
WB	621	55	1,170	0.53	1
SB	10	661	844	0.01	1
EB	98	594	880	0.11	1
PM Peak Hour					
NB	492	27	1,185	0.42	1
WB	853	129	1,131	0.75	1
SB	10	967	679	0.01	1
EB	75	773	784	0.10	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	15	15	0.01	1
WB	77	204	0.15	1
SB	661	821	0.59	1
EB	529	390	0.38	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,058	5	2,396	0.44	2
WB	526	604	875	0.60	1
SB	730	572	892	0.82	1
EB	211	1,198	555	0.38	1
PM Peak Hour					
NB	872	5	2,396	0.36	2
WB	811	635	858	0.95	1
SB	887	949	689	1.29	1
EB	177	1,571	229	0.77	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	558	497	0.40	1
WB	104	265	0.19	1
SB	1,404	1,743	0.62	2
EB	459	242	0.33	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	10	0	1,200	0.01	1
WB	0	10	1,195	0.00	1
SB	0	5	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	20	0	1,200	0.02	1
WB	0	20	1,189	0.00	1
SB	0	15	1,192	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	5	5	0.00	1
WB	5	15	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	33	45	1,176	0.03	1
WB	47	22	1,188	0.04	1
SB	41	41	1,178	0.03	1
EB	58	82	1,156	0.05	1
PM Peak Hour					
NB	34	90	1,152	0.03	1
WB	49	50	1,173	0.04	1
SB	32	36	1,181	0.03	1
EB	135	68	1,163	0.12	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	28	63	0.05	1
WB	0	0	0.00	1
SB	95	113	0.08	1
EB	56	74	0.05	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2030 Plus Office Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	566	31	1,183	0.48	1
WB	639	60	1,168	0.55	1
SB	10	684	832	0.01	1
EB	94	607	873	0.11	1
PM Peak Hour					
NB	497	27	1,185	0.42	1
WB	867	128	1,131	0.77	1
SB	10	980	672	0.01	1
EB	76	786	777	0.10	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	15	15	0.01	1
WB	87	204	0.15	1
SB	670	835	0.60	1
EB	537	396	0.38	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,241	5	2,396	0.52	2
WB	591	787	776	0.76	1
SB	749	807	765	0.98	1
EB	165	1,217	545	0.30	1
PM Peak Hour					
NB	874	5	2,396	0.36	2
WB	811	637	857	0.95	1
SB	906	945	691	1.31	1
EB	536	1,590	210	2.55	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	571	503	0.41	1
WB	339	261	0.24	1
SB	1,377	2,121	0.76	2
EB	459	242	0.33	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	12	0	1,200	0.01	1
WB	0	12	1,194	0.00	1
SB	0	6	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	22	0	1,200	0.02	1
WB	0	22	1,188	0.00	1
SB	0	17	1,191	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	6	5	0.00	1
WB	6	17	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	28	103	1,145	0.02	1
WB	43	24	1,187	0.04	1
SB	33	36	1,181	0.03	1
EB	255	69	1,163	0.22	1
PM Peak Hour					
NB	127	85	1,154	0.11	1
WB	97	47	1,175	0.08	1
SB	31	85	1,154	0.03	1
EB	128	116	1,138	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	31	59	0.04	1
WB	0	0	0.00	1
SB	221	159	0.16	1
EB	107	165	0.12	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
Baseline Plus Residential Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	623	0	1,200	0.52	1
WB	241	71	1,162	0.21	1
SB	0	312	1,032	0.00	1
EB	131	241	1,070	0.12	1
PM Peak Hour					
NB	469	0	1,200	0.39	1
WB	579	187	1,099	0.53	1
SB	0	766	788	0.00	1
EB	97	579	888	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	71	187	0.13	1
SB	372	676	0.48	1
EB	552	282	0.39	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,205	0	2,400	0.50	2
WB	90	710	818	0.11	1
SB	460	177	2,275	0.20	2
EB	221	550	904	0.24	1
PM Peak Hour					
NB	808	0	2,400	0.34	2
WB	476	690	828	0.57	1
SB	760	696	1,909	0.40	2
EB	186	1,236	534	0.35	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	623	470	0.45	1
WB	87	220	0.16	1
SB	771	1,422	0.51	2
EB	495	118	0.35	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	5	0	1,200	0.00	1
WB	0	5	1,197	0.00	1
SB	0	5	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	15	0	1,200	0.01	1
WB	0	15	1,192	0.00	1
SB	0	15	1,192	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	5	15	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	59	36	1,181	0.05	1
WB	49	37	1,180	0.04	1
SB	15	49	1,174	0.01	1
EB	54	64	1,166	0.05	1
PM Peak Hour					
NB	88	87	1,153	0.08	1
WB	43	93	1,150	0.04	1
SB	12	43	1,177	0.01	1
EB	128	55	1,170	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	37	93	0.07	1
WB	0	0	0.00	1
SB	82	96	0.07	1
EB	58	82	0.06	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
Baseline Plus Office Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	642	0	1,200	0.54	1
WB	258	79	1,157	0.22	1
SB	0	337	1,019	0.00	1
EB	127	258	1,061	0.12	1
PM Peak Hour					
NB	476	0	1,200	0.40	1
WB	596	186	1,100	0.54	1
SB	0	782	779	0.00	1
EB	101	596	879	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	79	186	0.13	1
SB	385	697	0.50	1
EB	563	290	0.40	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,426	0	2,400	0.59	2
WB	90	931	699	0.13	1
SB	485	379	2,132	0.23	2
EB	173	575	1,994	0.09	2
PM Peak Hour					
NB	808	0	2,400	0.34	2
WB	476	690	828	0.57	1
SB	787	689	1,914	0.41	2
EB	563	1,263	1,508	0.37	2

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	642	477	0.46	1
WB	289	213	0.21	1
SB	748	1,826	0.65	2
EB	495	118	0.35	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	6	0	1,200	0.01	1
WB	0	6	1,197	0.00	1
SB	0	6	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	17	0	1,200	0.01	1
WB	0	17	1,191	0.00	1
SB	0	17	1,191	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	6	17	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	54	108	1,142	0.05	1
WB	42	41	1,178	0.04	1
SB	12	42	1,177	0.01	1
EB	238	54	1,171	0.20	1
PM Peak Hour					
NB	206	83	1,155	0.18	1
WB	101	92	1,150	0.09	1
SB	11	101	1,146	0.01	1
EB	123	112	1,140	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	41	92	0.07	1
WB	0	0	0.00	1
SB	184	152	0.13	1
EB	121	197	0.14	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2013 Plus Residential Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	623	0	1,200	0.52	1
WB	251	67	1,164	0.22	1
SB	0	318	1,029	0.00	1
EB	112	251	1,065	0.11	1
PM Peak Hour					
NB	340	0	1,200	0.28	1
WB	596	176	1,105	0.54	1
SB	0	772	784	0.00	1
EB	83	596	879	0.09	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	67	176	0.13	1
SB	363	679	0.49	1
EB	556	164	0.40	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,212	0	2,400	0.51	2
WB	100	713	816	0.12	1
SB	446	190	2,266	0.20	2
EB	203	546	906	0.22	1
PM Peak Hour					
NB	835	0	2,400	0.35	2
WB	494	701	823	0.60	1
SB	759	721	1,891	0.40	2
EB	172	1,253	525	0.33	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	623	474	0.45	1
WB	90	227	0.16	1
SB	749	1,425	0.51	2
EB	499	134	0.36	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	5	0	1,200	0.00	1
WB	0	5	1,197	0.00	1
SB	0	5	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	15	0	1,200	0.01	1
WB	0	15	1,192	0.00	1
SB	0	15	1,192	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	5	15	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	47	36	1,181	0.04	1
WB	41	36	1,181	0.03	1
SB	32	41	1,178	0.03	1
EB	58	73	1,161	0.05	1
PM Peak Hour					
NB	73	84	1,155	0.06	1
WB	36	89	1,152	0.03	1
SB	26	36	1,181	0.02	1
EB	135	62	1,167	0.12	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	36	89	0.06	1
WB	0	0	0.00	1
SB	95	113	0.08	1
EB	47	68	0.05	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2013 Plus Office Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	641	0	1,200	0.53	1
WB	268	74	1,160	0.23	1
SB	0	342	1,016	0.00	1
EB	108	268	1,056	0.10	1
PM Peak Hour					
NB	347	0	1,200	0.29	1
WB	613	175	1,106	0.55	1
SB	0	788	776	0.00	1
EB	86	613	870	0.10	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	74	175	0.13	1
SB	376	699	0.50	1
EB	567	172	0.41	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,463	0	2,400	0.61	2
WB	100	964	681	0.15	1
SB	471	423	2,101	0.22	2
EB	158	571	1,997	0.08	2
PM Peak Hour					
NB	835	0	2,400	0.35	2
WB	494	701	823	0.60	1
SB	785	714	1,896	0.41	2
EB	530	1,279	1,497	0.35	2

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	641	481	0.46	1
WB	323	220	0.23	1
SB	729	1,809	0.65	2
EB	499	134	0.36	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	6	0	1,200	0.01	1
WB	0	6	1,197	0.00	1
SB	0	6	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	17	0	1,200	0.01	1
WB	0	17	1,191	0.00	1
SB	0	17	1,191	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	6	17	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	43	96	1,148	0.04	1
WB	36	39	1,179	0.03	1
SB	26	36	1,181	0.02	1
EB	255	62	1,167	0.22	1
PM Peak Hour					
NB	167	79	1,157	0.14	1
WB	85	87	1,153	0.07	1
SB	25	85	1,154	0.02	1
EB	128	110	1,141	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	39	87	0.06	1
WB	0	0	0.00	1
SB	221	159	0.16	1
EB	100	159	0.11	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2030 Plus Residential Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	553	31	1,183	0.47	1
WB	621	55	1,170	0.53	1
SB	10	661	844	0.01	1
EB	98	594	880	0.11	1
PM Peak Hour					
NB	492	27	1,185	0.42	1
WB	853	129	1,131	0.75	1
SB	10	967	679	0.01	1
EB	75	773	784	0.10	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	15	15	0.01	1
WB	77	204	0.15	1
SB	661	821	0.59	1
EB	529	390	0.38	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,058	5	2,396	0.44	2
WB	526	604	1,974	0.27	2
SB	730	572	1,996	0.37	2
EB	211	1,198	555	0.38	1
PM Peak Hour					
NB	872	5	2,396	0.36	2
WB	811	635	1,952	0.42	2
SB	887	949	1,730	0.51	2
EB	177	1,571	229	0.77	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	558	497	0.40	1
WB	104	265	0.19	1
SB	1,404	1,743	0.62	2
EB	459	242	0.33	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	10	0	1,200	0.01	1
WB	0	10	1,195	0.00	1
SB	0	5	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	20	0	1,200	0.02	1
WB	0	20	1,189	0.00	1
SB	0	15	1,192	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	5	5	0.00	1
WB	5	15	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	33	45	1,176	0.03	1
WB	47	22	1,188	0.04	1
SB	41	41	1,178	0.03	1
EB	58	82	1,156	0.05	1
PM Peak Hour					
NB	34	90	1,152	0.03	1
WB	49	50	1,173	0.04	1
SB	32	36	1,181	0.03	1
EB	135	68	1,163	0.12	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	28	63	0.05	1
WB	0	0	0.00	1
SB	95	113	0.08	1
EB	56	74	0.05	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2030 Plus Office Option
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	566	31	1,183	0.48	1
WB	639	60	1,168	0.55	1
SB	10	684	832	0.01	1
EB	94	607	873	0.11	1
PM Peak Hour					
NB	497	27	1,185	0.42	1
WB	867	128	1,131	0.77	1
SB	10	980	672	0.01	1
EB	76	786	777	0.10	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	15	15	0.01	1
WB	87	204	0.15	1
SB	670	835	0.60	1
EB	537	396	0.38	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	1,241	5	2,396	0.52	2
WB	591	787	1,844	0.32	2
SB	749	807	1,830	0.41	2
EB	165	1,217	1,541	0.11	2
PM Peak Hour					
NB	874	5	2,396	0.36	2
WB	811	637	1,950	0.42	2
SB	906	945	1,733	0.52	2
EB	536	1,590	1,278	0.42	2

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	571	503	0.41	1
WB	339	261	0.24	1
SB	1,377	2,121	0.76	2
EB	459	242	0.33	1

37 - New Street "C"/New Street "B"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	12	0	1,200	0.01	1
WB	0	12	1,194	0.00	1
SB	0	6	1,197	0.00	1
EB	0	0	1,200	0.00	1
PM Peak Hour					
NB	22	0	1,200	0.02	1
WB	0	22	1,188	0.00	1
SB	0	17	1,191	0.00	1
EB	0	0	1,200	0.00	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	6	5	0.00	1
WB	6	17	0.01	1
SB	0	0	0.00	1
EB	0	0	0.00	1

38 - New Street "C"/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	28	103	1,145	0.02	1
WB	43	24	1,187	0.04	1
SB	33	36	1,181	0.03	1
EB	255	69	1,163	0.22	1
PM Peak Hour					
NB	127	85	1,154	0.11	1
WB	97	47	1,175	0.08	1
SB	31	85	1,154	0.03	1
EB	128	116	1,138	0.11	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	31	59	0.04	1
WB	0	0	0.00	1
SB	221	159	0.16	1
EB	107	165	0.12	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2013 Plus Residential Option (Mitigated with 8th St)
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	221	0	1,200	0.18	1
WB	172	67	1,164	0.15	1
SB	0	239	1,071	0.00	1
EB	112	172	1,107	0.10	1
PM Peak Hour					
NB	234	0	1,200	0.20	1
WB	200	176	1,105	0.18	1
SB	0	376	998	0.00	1
EB	83	200	1,092	0.08	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	67	176	0.13	1
SB	284	283	0.20	1
EB	154	58	0.11	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	408	0	2,400	0.17	2
WB	21	311	1,033	0.02	1
SB	367	111	1,140	0.32	1
EB	203	388	991	0.20	1
PM Peak Hour					
NB	623	0	2,400	0.26	2
WB	98	595	880	0.11	1
SB	363	325	1,025	0.35	1
EB	172	461	952	0.18	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	221	368	0.26	1
WB	90	227	0.16	1
SB	591	633	0.23	2
EB	97	28	0.07	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2013 Plus Office Option (Mitigated w/ 8th Street)
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	239	0	1,200	0.20	1
WB	189	74	1,160	0.16	1
SB	0	263	1,058	0.00	1
EB	108	189	1,098	0.10	1
PM Peak Hour					
NB	241	0	1,200	0.20	1
WB	217	175	1,106	0.20	1
SB	0	392	989	0.00	1
EB	86	217	1,083	0.08	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	0	0	0.00	1
WB	74	175	0.13	1
SB	297	303	0.22	1
EB	165	66	0.12	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	659	0	2,400	0.27	2
WB	21	562	897	0.02	1
SB	392	344	1,015	0.39	1
EB	158	413	978	0.16	1
PM Peak Hour					
NB	623	0	2,400	0.26	2
WB	98	595	880	0.11	1
SB	389	318	1,029	0.38	1
EB	530	487	938	0.57	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	239	375	0.27	1
WB	323	220	0.23	1
SB	571	1,017	0.36	2
EB	97	28	0.07	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2030 Plus Residential Option (Mitigated w/ 8th Street)
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	191	31	1,183	0.16	1
WB	271	55	1,170	0.23	1
SB	10	311	1,033	0.01	1
EB	98	244	1,069	0.09	1
PM Peak Hour					
NB	315	27	1,185	0.27	1
WB	340	129	1,131	0.30	1
SB	10	454	956	0.01	1
EB	75	260	1,060	0.07	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	15	15	0.01	1
WB	77	204	0.15	1
SB	311	308	0.22	1
EB	167	213	0.15	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	334	5	2,396	0.14	2
WB	176	242	1,070	0.16	1
SB	380	222	1,080	0.35	1
EB	211	498	932	0.23	1
PM Peak Hour					
NB	518	5	2,396	0.22	2
WB	298	458	953	0.31	1
SB	374	436	965	0.39	1
EB	177	545	907	0.20	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	196	320	0.23	1
WB	104	265	0.19	1
SB	704	717	0.26	2
EB	97	65	0.07	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

**Township 9 Traffic Study
2030 Plus Office Option (Mitigated w/ 8th Street)
Roundabout Operations Estimate**

35 - 7th St/New Street "A"

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	204	31	1,183	0.17	1
WB	289	60	1,168	0.25	1
SB	10	334	1,020	0.01	1
EB	94	257	1,062	0.09	1
PM Peak Hour					
NB	320	27	1,185	0.27	1
WB	354	128	1,131	0.31	1
SB	10	467	949	0.01	1
EB	76	273	1,053	0.07	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	15	15	0.01	1
WB	87	204	0.15	1
SB	320	322	0.23	1
EB	175	219	0.16	1

36 - 7th St/Signature St

Entry Lane Requirements

Entry	Entry Flow	Circulatory Flow	Entry Capacity	Entry Flow / Capacity	Entry Lanes
AM Peak Hour					
NB	517	5	2,396	0.22	2
WB	241	425	971	0.25	1
SB	399	457	954	0.42	1
EB	165	517	922	0.18	1
PM Peak Hour					
NB	520	5	2,396	0.22	2
WB	298	460	952	0.31	1
SB	393	432	967	0.41	1
EB	536	564	896	0.60	1

Exit Lane Requirements

Exit	Exit Flow		Exit Flow / Capacity	Exit Lanes
	AM	PM		
NB	209	326	0.23	1
WB	339	261	0.24	1
SB	677	1,095	0.39	2
EB	97	65	0.07	1

Source: *Roundabouts: An Informational Guide* (FHWA 2000)

Note: No adjustments were made for diameter of roundabout or pedestrian effects on entry capacity.

Roadway Analysis Summary Tables

Roadway Level of Service (Mitigated)

Baseline Conditions											
Roadway Segment	Lanes	Baseline No Project			Scenario A Residential			Scenario B Office			
		ADT	LOS	V/C	ADT	LOS	V/C	ADT	LOS	V/C	
N. 5th Street north of Richards Boulevard	2	1100	A	0.07	7,800	A	0.52	9,740	B	0.65	
N. 7th Street north of Richards Boulevard	4	11900	A	0.40	22,300	C	0.74	26,340	D	0.88	
Richards Boulevard east of Bercut Drive	4	33,760	E	0.94	41,520	F	1.15	44,730	F	1.24	
Richards Boulevard east of Dos Rios Drive	4	25,100	B	0.70	29,710	D	0.83	31,420	D	0.87	

Source: Dowling Associates, Inc., December 2006.
 ADT = Averaged daily traffic
 LOS = Level of service
 V/C = Volume/Capacity

Year 2013 Near Term Conditions											
Roadway Segment	Lanes	Year 2013 No Project			Scenario A Residential			Scenario B Office			
		ADT	LOS	V/C	ADT	LOS	V/C	ADT	LOS	V/C	
N. 5th Street north of Richards Boulevard	2	1,260	A	0.08	8,290	A	0.55	10,510	C	0.70	
N. 7th Street north of Richards Boulevard	4	12,560	A	0.42	22,590	C	0.75	26,440	D	0.88	
Richards Boulevard east of Bercut Drive	4	37,180	F	1.03	41,600	F	1.16	43,220	F	1.20	
Richards Boulevard east of Dos Rios Drive	4	30,220	D	0.84	34,870	E	0.97	36,580	F	1.02	

Source: Dowling Associates, Inc., December 2005
 ADT = Averaged daily traffic
 LOS = Level of service
 V/C = Volume/Capacity

Year 2030 Long Term Conditions											
Roadway Segment	Lanes	Year 2030 No Project			Scenario A Residential			Scenario B Office			
		ADT	LOS	V/C	ADT	LOS	V/C	ADT	LOS	V/C	
N. 5th Street north of Richards Boulevard	2	5330	A	0.36	9,860	B	0.66	13,740	E	0.92	
N. 7th Street north of Richards Boulevard	4	18420	B	0.61	26,160	D	0.87	26,170	D	0.87	
Richards Boulevard east of Bercut Drive	4	33,730	E	0.94	35,530	E	0.99	37,130	F	1.03	
Bannon Street east of Bercut Drive	4	32,400	D	0.90	33,410	E	0.93	35,290	E	0.98	
Richards Boulevard east of Dos Rios Drive	4	13,410	A	0.37	14,270	A	0.40	16,800	A	0.47	
Bannon Street east of Dos Rios Drive	4	28,960	D	0.80	29,730	D	0.83	31,270	D	0.87	

Source: Dowling Associates, Inc., 2006
 ADT = Averaged daily traffic
 LOS = Level of service
 V/C = Volume/Capacity

**Roadway Level of Service for Project Scenarios
with the Construction of 8th Street**

Year 2013 Near Term Conditions										
Roadway Segment	Lanes	Year 2013 No Project			Scenario A (Residential)			Scenario B (Office)		
		ADT	LOS	V/C	ADT	LOS	V/C	ADT	LOS	V/C
N. 7th Street north of Richards Boulevard	4	2,510	A	0.08	12,540	A	0.42	16,390	A	0.55
N. 8th Street north of Richards Boulevard	2	na	na	na	10,050	B	0.67	10,050	B	0.67
Source: Dowling Associates, Inc., December 2005. ADT = Averaged daily traffic LOS = Level of service V/C = Volume/Capacity										
Year 2030 Long Term Conditions										
Roadway Segment	Lanes	Year 2030 No Project			Scenario A (Residential)			Scenario B (Office)		
		ADT	LOS	V/C	ADT	LOS	V/C	ADT	LOS	V/C
N. 7th Street north of Richards Boulevard	4	4,610	A	0.15	11,350	A	0.38	16,130	A	0.54
N. 8th Street north of Richards Boulevard	2	na	na	na	14,320	E	0.95	14,320	E	0.95
Source: Dowling Associates, Inc., 2006. ADT = Averaged daily traffic LOS = Level of service V/C = Volume/Capacity										

Freeway Analysis Worksheets

**Capacity Analysis of Freeway Mainline Segments
2000 Highway Capacity Manual**

Capacity based on 2010 vphpl for freeway lanes, 1500 vphpl for auxiliary lanes

Mainline Segment	Dir	Fwy Lanes	Aux Lanes	Existing Conditions		Baseline Conditions				Near Term - Year 2013				Long Term - Year 2030									
				Without Project		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office							
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM						
Freeway Traffic Volume																							
I-5, North of J Street off-ramp	NB	3	0	5,994	6,073	6,396	6,229	6,443	6,349	6,545	6,351	6,676	7,638	6,676	7,638	6,676	7,638	8,451	9,239	8,451	9,239	8,451	9,239
I-5, South of Richards Blvd off-ramp	NB	4	1	6,478	8,255	7,271	8,710	7,333	8,868	7,460	8,872	7,375	10,162	7,375	10,162	7,375	10,162	9,461	12,370	9,461	12,370	9,461	12,370
I-5, North of Richards Blvd on-ramp	NB	4	1	6,198	9,216	6,373	9,831	6,603	10,011	6,596	10,171	6,767	12,084	6,997	12,264	6,990	12,424	9,137	14,416	9,367	14,596	9,360	14,756
SR 160 at American River Bridge ¹	NB	3/4 ¹	0	1,680	4,556	1,900	5,402	2,141	5,590	2,133	5,758	2,488	6,916	2,729	7,104	2,721	7,272	3,552	8,820	3,793	9,009	3,786	9,175
Volume to Capacity (V/C)																							
I-5, North of J Street off-ramp	NB	3	0	0.99	1.01	1.06	1.03	1.07	1.05	1.09	1.05	1.11	1.27	1.11	1.27	1.11	1.27	1.40	1.53	1.40	1.53	1.40	1.53
I-5, South of Richards Blvd off-ramp	NB	4	1	0.68	0.87	0.76	0.91	0.77	0.93	0.78	0.93	0.77	1.07	0.77	1.07	0.77	1.07	0.99	1.30	0.99	1.30	0.99	1.30
I-5, North of Richards Blvd on-ramp	NB	4	1	0.65	0.97	0.67	1.03	0.69	1.05	0.69	1.07	0.71	1.27	0.73	1.29	0.73	1.30	0.96	1.51	0.98	1.53	0.98	1.55
SR 160 at American River Bridge ¹	NB	3/4 ¹	0	0.27	0.73	0.30	0.87	0.34	0.90	0.34	0.92	0.40	1.11	0.44	1.14	0.44	1.17	0.43	1.06	0.46	1.08	0.46	1.10
Level of Service:																							
I-5, North of J Street off-ramp	NB			E	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
I-5, South of Richards Blvd off-ramp	NB			C	D	D	E	D	E	D	E	D	F	D	F	D	F	E	F	E	F	E	F
I-5, North of Richards Blvd on-ramp	NB			C	E	C	F	C	F	C	F	C	F	C	F	C	F	E	F	E	F	E	F
SR 160 at American River Bridge ¹	NB			A	C	A	D	B	D	B	E	B	F	B	F	B	F	B	F	B	F	B	F

Freeway Capacity Source: 2000 Highway Capacity Manual

Ideal Freeway Capacity =	2400 (p. 23-4)	V/C	LOS
Free-Flow Speed =	70 mph	0.32	A
Peak Hour Factor =	0.92	0.53	B
I-5 Percent Trucks =	9.6%	0.74	C
I-5 Actual Capacity / Ideal Capacity =	84%	0.90	D
I-5 Adjusted Freeway Capacity =	2010	1.00	E

Ideal Freeway Capacity =	2400 (p. 23-4)
Free-Flow Speed =	70 mph
Peak Hour Factor =	0.92
SR 160 Percent Trucks =	6.0%
SR 160 Actual Capacity / Ideal Capacity =	87%
SR 160 Adjusted Freeway Capacity =	2080

Note:

¹ SR 160 has four travel lanes on each direction under Long Term scenarios.

Capacity Analysis of Freeway Mainline Segments
2000 Highway Capacity Manual
 Capacity based on vphpl for freeway lanes, 0 vphpl for auxiliary lanes

Mainline Segment	Dir	Fwy Lanes	Aux Lanes	Existing Conditions				Baseline Conditions				Near Term - Year 2013						Long Term - Year 2030					
				Without Project		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Freeway Traffic Volume																							
I-5, North of Richards Blvd off-ramp	SB	4	1	9,977	6,952	10,677	7,353	10,777	7,615	10,967	7,617	12,173	8,243	12,274	8,505	12,462	8,507	15,282	11,469	15,383	11,731	15,571	11,733
I-5, South of Richards Blvd on-ramp	SB	4	1	9,322	7,032	9,579	7,667	9,704	7,762	9,701	7,888	10,454	8,149	10,454	8,149	10,454	8,149	13,070	11,223	13,070	11,223	13,070	11,223
I-5, North of I Street on-ramp	SB	4	0	7,259	5,741	7,305	6,076	7,397	6,146	7,395	6,234	8,208	6,644	8,208	6,644	8,208	6,644	9,933	9,082	9,933	9,082	9,933	9,082
SR 160 at American River Bridge ¹	SB	3/4 ¹	0	3,475	2,136	4,059	2,326	4,164	2,599	4,361	2,602	5,093	3,778	5,198	4,051	5,395	4,054	5,929	4,835	6,034	5,109	6,231	5,111
Volume to Capacity (V/C)																							
I-5, North of Richards Blvd off-ramp	SB	4	1	1.05	0.73	1.12	0.77	1.13	0.80	1.15	0.80	1.28	0.86	1.29	0.89	1.31	0.89	1.60	1.20	1.61	1.23	1.63	1.23
I-5, South of Richards Blvd on-ramp	SB	4	1	0.98	0.74	1.00	0.80	1.02	0.81	1.02	0.83	1.10	0.85	1.10	0.85	1.10	0.85	1.37	1.18	1.37	1.18	1.37	1.18
I-5, North of I Street on-ramp	SB	4	0	0.90	0.71	0.91	0.76	0.92	0.76	0.92	0.78	1.02	0.83	1.02	0.83	1.02	0.83	1.24	1.13	1.24	1.13	1.24	1.13
SR 160 at American River Bridge ¹	SB	3/4 ¹	0	0.56	0.34	0.65	0.37	0.67	0.42	0.70	0.42	0.82	0.61	0.83	0.65	0.86	0.65	0.71	0.58	0.73	0.61	0.75	0.61
Level of Service:																							
I-5, North of Richards Blvd off-ramp	SB			F	C	F	D	F	D	F	D	F	D	F	D	F	D	F	F	F	F	F	F
I-5, South of Richards Blvd on-ramp	SB			E	C	F	D	F	D	F	D	F	D	F	D	F	D	F	F	F	F	F	F
I-5, North of I Street on-ramp	SB			E	C	E	D	E	D	E	D	F	D	F	D	F	D	F	F	F	F	F	F
SR 160 at American River Bridge ¹	SB			C	B	C	B	C	B	C	B	D	C	D	C	D	C	C	C	C	C	D	C

Freeway Capacity Source: 2000 Highway Capacity Manual

Ideal Freeway Capacity =	2400 (p. 23-4)	V/C	LOS	Ideal Freeway Capacity =	2400 (p. 23-4)
Free-Flow Speed =	70 mph	0.32	A	Free-Flow Speed =	70 mph
Peak Hour Factor =	0.92	0.53	B	Peak Hour Factor =	0.92
Percent Trucks =	9.6%	0.74	C	SR 160 Percent Trucks =	6.0%
Actual Capacity / Ideal Capacity =	84%	0.90	D	SR 160 Actual Capacity / Ideal Capacity =	87%
Adjusted Freeway Capacity =	2010	1.00	E	SR 160 Adjusted Freeway Capacity =	2080

Note:

¹ SR 160 has four travel lanes on each direction under Long Term scenarios.

NB I-5 - Weaving from P St to J St

Highway Capacity Manual
2000 Edition
Capacity Analysis of Freeway Ramps

Weaving Analysis Type B

Type B
Existing Upstrm Frwy Lanes / Aux. Lanes 4
Existing Dnstrm Frwy Lanes / Aux. Lanes 4
Sacramento Factor. [Note: Capacity is fixed hence adjust volume] 1

eg. 2200/2400

	Existing		Baseline				2013				2030					
	Without Project		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office			
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
PHF (Peak Hour Factor) =	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
f_{HV} (Adjustment factor for heavy vehicles) =	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
f_p (Adjustment factor for driver population) =	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
P_T (Proportion of trucks/buses in the traffic stream) =	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
P_R (Proportion of RVs in the traffic stream) =	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E_T (Passenger-car equivalents for trucks/buses in the traffic stream) =	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R (Passenger-car equivalents for RVs in the traffic stream) =	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
L - Length of weaving segment (ft)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
N - Total number of lanes in the weaving segment	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
N_{u1} - Number of lanes to be used by weaving vehicles if unconstrained operation is to be achieved. note: Type-B, Ex 24-7	2.132429	0.332007	2.135853	0.345162	2.149234	0.359581	2.162506	0.359208	2.464065	0.394143	2.51453	0.480639	2.608268	0.481458	2.778763	0.630231
$N_{u(max)}$ - Maximum number of lanes that can be used by weaving vehicles for a given configuration. note: A:1.4, B:3.5, C:3.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
N_{nw} - Number of lanes used by nonweaving vehicles. note: $Nw < Nw(max)$ implies unconstrained, and $Nw \geq Nw(max)$ implies constrained	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
v_1 - Total flow rate in the weaving segment (p/h)	7782	6534	8314	6800	8396	7014	8550	7016	9162	8913	9244	9127	9398	9129	11783	10883
v_{o1} - Larger of the two outer, or nonweaving, flow rates in the weaving segment (p/h)	5807	5388	6209	5544	6256	5664	6358	5666	6459	6925	6459	6925	6459	6925	7963	7918
v_{o2} - Smaller of the two outer, or nonweaving, flow rates in the weaving segment (p/h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_{w1} - Larger of two weaving flow rates in the weaving segment (p/h)	1788	461	1918	571	1953	665	2005	665	2486	1275	2568	1489	2722	1491	3332	1644
v_{w2} - Smaller of two weaving flow rates in the weaving segment (p/h)	187	685	187	685	187	685	187	685	217	713	217	713	217	713	488	1321
v_w - Total weaving flow rate in the weaving segment (p/h) ($v_w = v_{w1} + v_{w2}$)	1975	1146	2105	1256	2140	1350	2192	1350	2703	1988	2785	2202	2939	2204	3820	2965
v_{nw} - Total nonweaving flow rate in the weaving segment (p/h) ($v_{nw} = v_{o1} + v_{o2}$)	5807	5388	6209	5544	6256	5664	6358	5666	6459	6925	6459	6925	6459	6925	7963	7918
VR - Volume ratio; the ratio of weaving flow rate to total flow rate in the weaving segment ($VR = v_w/v_1$)	0.253791	0.17539	0.253187	0.184706	0.254883	0.192472	0.256374	0.192417	0.295023	0.223045	0.301277	0.241262	0.312726	0.241428	0.324196	0.272443
R - Weaving ratio; the ratio of the smaller weaving flow rate to total weaving flow rate ($R = v_{w2}/v_w$)	0.094684	0.597731	0.088836	0.545382	0.087383	0.507407	0.08531	0.507407	0.080281	0.358652	0.077917	0.323797	0.073835	0.323503	0.127749	0.445531
S_w - Speed of weaving vehicles in the weaving segment (mi/h)	48.77528	43.87888	48.18279	43.25698	48.05306	42.76127	47.85049	42.75992	46.31293	39.69907	46.08563	39.03226	45.66801	39.0262	43.242	36.65979
S_{nw} - Speed of nonweaving vehicles in the weaving segment (mi/h)	56.70917	65.42137	56.06141	65.04149	55.87402	64.71559	55.60679	64.71554	52.78647	62.52741	52.33614	61.7712	51.49774	61.76404	47.94103	59.23141
S - Speed of all vehicles in the weaving segment (mi/h) [Eq 24-5, HCM2000]	54.46091	60.23466	53.83274	59.50627	53.64847	58.89562	53.38815	58.89661	50.69588	55.41939	50.28156	54.15906	49.52082	54.14747	46.30956	50.72291
D - Density of all vehicles in the weaving segment (pc/mi/ln) [Eq 24-6, HCM2000]	23.81525	18.07929	25.74022	19.04561	26.08338	19.84867	26.69132	19.854	30.12079	26.8047	30.64079	28.08702	31.62979	28.09919	42.40665	35.75964
W_w - Weaving intensity factor for prediction of weaving speed	0.62841	0.904506	0.657486	0.946422	0.663991	0.981178	0.674252	0.981274	0.756463	1.226805	0.769306	1.28859	0.7934	1.289167	0.947454	1.539267
W_{nw} - Weaving intensity factor for prediction of nonweaving speed	0.318655	0.090807	0.339457	0.090988	0.345598	0.106293	0.354453	0.106294	0.455548	0.157227	0.473104	0.175937	0.506943	0.176117	0.66965	0.24346
S_{min} - Minimum speed expected in a weaving segment (mi/h)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
S_{max} - Maximum speed expected in a weaving segment (mi/h) a (weaving) [Exhibit 24-6, AM:Unconstrained, PM:Constrained]	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15
b (weaving)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
c (weaving)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
d (weaving)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
a (non-weaving)	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001
b (non-weaving)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
c (non-weaving)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
d (non-weaving)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
LOS	C	B	C	B	C	B	C	B	D	C	D	D	D	D	E	E

SB I-5 - Weaving from I St to Q St

Highway Capacity Manual
2000 Edition
Capacity Analysis of Freeway Ramps

Weaving Analysis Type B

Type B
Existing Upstrm Frwy Lanes / Aux. Lanes 4
Existing Dnstrm Frwy Lanes / Aux. Lanes 5
Sacramento Factor. [Note: Capacity is fixed hence adjust volume] 1

eg. 2200/2400

	Existing		Baseline						2013						2030					
	Without Project		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
PHF (Peak Hour Factor) =	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
f _{HV} (Adjustment factor for heavy vehicles) =	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
f _p (Adjustment factor for driver population) =	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
P _T (Proportion of trucks/buses in the traffic stream) =	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
P _R (Proportion of RVs in the traffic stream) =	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E _T (Passenger-car equivalents for trucks/buses in the traffic stream) =	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R (Passenger-car equivalents for RVs in the traffic stream) =	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
L - Length of weaving segment (ft)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
N, Total number of lanes in the weaving segment	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
N _{uw} , Number of lanes to be used by weaving vehicles if unconstrained operation is to be achieved. note: Type-B, Ex 24-7	1.399193	1.60831	1.401202	1.615504	1.448566	1.655456	1.446979	1.669711	1.78347	2.30127	1.669785	2.207021	1.780442	2.384546	1.875891	2.043407	1.977377	2.194291	1.977377	2.194291
N _{u(max)} , Maximum number of lanes that can be used by weaving vehicles for a given configuration. note: A:1.4, B:3.5, C:3.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
N _{uw} , Number of lanes used by nonweaving vehicles. note: Nw < Nw(max) implies unconstrained, and Nw >= Nw(max) implies constrained	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
v, Total flow rate in the weaving segment (pc/h)	7547	6788	7602	7151	7790	7298	7785	7429	8955	8715	8767	8568	8950	8846	10527	10966	10710	11244	10710	11244
v _{o1} , Larger of the two outer, or nonweaving, flow rates in the weaving segment (pc/h)	6512	5627	6555	5911	6647	5981	6645	6069	7151	6319	7151	6319	7151	6319	8288	8396	8288	8396	8288	8396
v _{o2} , Smaller of the two outer, or nonweaving, flow rates in the weaving segment (pc/h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v _{w1} , Larger of two weaving flow rates in the weaving segment (pc/h)	747	114	750	165	750	165	750	165	1057	325	1057	325	1057	325	1645	686	1645	686	1645	686
v _{w2} , Smaller of two weaving flow rates in the weaving segment (pc/h)	288	1047	297	1075	393	1152	390	1195	747	2071	559	1924	742	2202	594	1884	777	2162	777	2162
v _w , Total weaving flow rate in the weaving segment (pc/h) (v _w = v _{w1} + v _{w2})	1035	1161	1047	1240	1143	1317	1140	1360	1804	2396	1616	2249	1799	2527	2239	2570	2422	2848	2422	2848
v _{nw} , Total nonweaving flow rate in the weaving segment (pc/h) (v _{nw} = v _{o1} + v _{o2})	6512	5627	6555	5911	6647	5981	6645	6069	7151	6319	7151	6319	7151	6319	8288	8396	8288	8396	8288	8396
VR, Volume ratio; the ratio of weaving flow rate to total flow rate in the weaving segment (VR = v _w /v)	0.137141	0.171037	0.137727	0.173402	0.146727	0.18046	0.146435	0.183066	0.201452	0.274928	0.184328	0.262488	0.201006	0.285666	0.212691	0.234361	0.226144	0.253291	0.226144	0.253291
R, Weaving ratio; the ratio of the smaller weaving flow rate to total weaving flow rate (R = vw2/vw)	0.278261	0.901809	0.283668	0.866935	0.343832	0.874715	0.342105	0.878676	0.41408	0.864357	0.345916	0.855491	0.412451	0.871389	0.265297	0.733074	0.320809	0.759129	0.320809	0.759129
S _w , Speed of weaving vehicles in the weaving segment (mi/h)	51.7609	51.87744	51.68503	51.37696	51.26198	51.03753	51.27443	50.82195	48.717	47.24422	49.31957	47.68953	48.73276	46.8578	46.94853	46.03921	46.46062	45.34736	46.46062	45.34736
S _{nw} , Speed of nonweaving vehicles in the weaving segment (mi/h)	61.92818	61.43229	61.8566	60.95759	61.34649	60.52388	61.36227	60.27809	57.83786	54.44031	58.82428	55.27245	57.86424	53.70217	55.65261	54.03853	54.75041	52.68892	54.75041	52.68892
S, Speed of all vehicles in the weaving segment (mi/h) [Eq 24-5, HCM2000]	60.3037	59.55616	60.22425	59.04823	59.62542	58.55966	59.64393	58.29252	55.37573	52.25218	56.80634	53.05796	55.76394	51.55114	53.54136	51.92416	52.62691	50.61343	52.62691	50.61343
D, Density of all vehicles in the weaving segment (pc/mi/ln) [Eq 24-6, HCM2000]	20.85831	18.99607	21.03804	20.18407	21.77483	20.77084	21.7541	21.24058	26.77816	27.79788	25.72189	26.91396	26.74967	28.59943	32.76906	35.19877	33.91801	37.02575	33.91801	37.02575
W _w , Weaving intensity factor for prediction of weaving speed	0.496155	0.491427	0.499249	0.511946	0.51674	0.526187	0.516219	0.535372	0.631225	0.705732	0.602584	0.682496	0.630463	0.726422	0.721519	0.771952	0.748217	0.812349	0.748217	0.812349
W _{nw} , Weaving intensity factor for prediction of nonweaving speed	0.172004	0.18452	0.173794	0.196756	0.186713	0.208157	0.18631	0.214716	0.283911	0.394512	0.255012	0.365698	0.283121	0.421109	0.352927	0.408865	0.383634	0.459315	0.383634	0.459315
S _{min} , Minimum speed expected in a weaving segment (mi/h)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
S _{max} , Maximum speed expected in a weaving segment (mi/h)	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
a (weaving) [Exhibit 24-6, Unconstrained]	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
b (weaving)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
c (weaving)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
d (weaving)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
a (non-weaving)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
b (non-weaving)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
c (non-weaving)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
d (non-weaving)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
LOS	C	B	C	C	C	C	C	C	C	C	C	C	C	D	D	E	D	E	D	E

I-5 NB Off-ramp to Richards Blvd

Highway Capacity Manual
 2000 Edition
 Capacity Analysis of Freeway Ramps

Ramp Analysis Type: 10 lane freeway, Single Lane Off-Ramp

Existing Upstrm Frwy Lanes / Aux. Lanes 5
 Existing Dnstrm Frwy Lanes / Aux. Lanes 4

	Existing				Baseline				2013				2030							
	Without Project		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office		Without Project		Scenario A: Residential		Scenario B: Office	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Freeway Volume (Upstream):	6,478	8,255	7,271	8,710	7,333	8,868	7,460	8,872	7,375	10,162	7,375	10,162	7,375	10,162	9,461	12,370	9,461	12,370	9,461	12,370
Ramp Volume:	731	379	1,412	610	1,474	768	1,601	772	1,421	970	1,421	970	1,421	970	1,782	1,437	1,782	1,437	1,782	1,437
L_D	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Ramp Design Speed (mph):	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Sacto Adjusted Freeway Volume (Upstream):	7,067	9,005	7,932	9,502	8,000	9,674	8,138	9,679	8,045	11,086	8,045	11,086	8,045	11,086	10,321	13,495	10,321	13,495	10,321	13,495
Sacto Adjusted Ramp Volume:	797	413	1,540	665	1,608	838	1,747	842	1,550	1,058	1,550	1,058	1,550	1,058	1,944	1,568	1,944	1,568	1,944	1,568
Sacto Adjusted Freeway Volume (Downstream):	6,270	8,592	6,392	8,837	6,392	8,836	6,391	8,837	6,495	10,028	6,495	10,028	6,495	10,028	8,377	11,927	8,377	11,927	8,377	11,927
V_f (Maximum total flow approaching a major diverge area on the freeway) =	7,102	9,050	7,972	9,550	8,040	9,722	8,179	9,727	8,085	11,141	8,085	11,141	8,085	11,141	10,373	13,562	10,373	13,562	10,373	13,562
V_{R12} (Off-ramp demand flow rate (pc/h)) =	801	415	1,548	668	1,616	842	1,756	846	1,558	1,063	1,558	1,063	1,558	1,063	1,954	1,576	1,954	1,576	1,954	1,576
Upstream Freeway Capacity:	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Upstream Freeway V/C:	0.59	0.75	0.66	0.80	0.67	0.81	0.68	0.81	0.67	0.93	0.67	0.93	0.67	0.93	0.86	1.13	0.86	1.13	0.86	1.13
Downstream Freeway Capacity:	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
Downstream Freeway V/C:	0.65	0.90	0.67	0.92	0.67	0.92	0.67	0.92	0.68	1.04	0.68	1.04	0.68	1.04	0.87	1.24	0.87	1.24	0.87	1.24
Ramp Capacity:	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800
Ramp V/C:	0.21	0.11	0.41	0.18	0.43	0.22	0.46	0.22	0.41	0.28	0.41	0.28	0.41	0.28	0.51	0.41	0.51	0.41	0.51	0.41
V_{12} (Maximum total flow entering the ramp, diverge influence area, two-lane volume):	2,929	4,180	3,653	4,541	3,716	4,714	3,843	4,718	3,699	5,457	3,699	5,457	3,699	5,457	4,720	6,802	4,720	6,802	4,720	6,802
Density (pc/mi/ln):	20.44	31.20	26.67	34.30	27.21	35.79	28.30	35.83	27.06	42.19	27.06	42.19	27.06	42.19	35.84	53.75	35.84	53.75	35.84	53.75
V_5	1,420	1,810	1,594	1,910	1,608	1,944	1,636	1,945	1,617	2,228	1,617	2,228	1,617	2,228	2,075	2,712	2,075	2,712	2,075	2,712
VF_{4eff}	5,682	7,240	6,377	7,640	6,432	7,778	6,543	7,782	6,468	8,913	6,468	8,913	6,468	8,913	8,298	10,850	8,298	10,850	8,298	10,850
Level of Service:	C	D	C	D	C	E	D	E	C	F	C	F	C	F	E	F	E	F	E	F

Proportion in lanes 1,2 (P_{FD}):	0.436
PHF (Peak Hour Factor) =	1
f_{HV} (Adjustment factor for heavy vehicles) =	1.00
f_p (Adjustment factor for driver population) =	1
P_T (Proportion of trucks/buses in the traffic stream) =	0.01
P_R (Proportion of RVs in the traffic stream) =	0
E_T (Passenger-car equivalents for trucks/buses in the traffic stream) =	1.5
E_R (Passenger-car equivalents for RVs in the traffic stream) =	1.5

I-5 NB On-Ramp from Richards Blvd

Highway Capacity Manual
2000 Edition
Capacity Analysis of Freeway Ramps

Analysis Type: Single Lane On-Ramp, Enters Own Lane

Existing Upstrm Frwy Lanes / Aux. Lanes 4
Existing Dnstrm Frwy Lanes / Aux. Lanes 5

	Existing		Without Project		Baseline		No Arena		Without Project		2013		No Arena		Without Project		2030		Program No Arena	
	Without Project		Without Project		With Project		No Arena		Without Project		With Project		No Arena		Without Project		With Program		Program No Arena	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Ramp Volume:	451	1,340	514	1,731	744	1,911	737	2,071	813	2,892	1,043	3,072	1,036	3,232	1,458	3,483	1,688	3,663	1,681	3,823
Ramp Design Speed (mph):	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Adjusted Ramp Volume:	492	1,462	561	1,888	812	2,085	804	2,259	887	3,155	1,138	3,351	1,130	3,526	1,591	3,800	1,841	3,996	1,834	4,171
Service Flow Rate @ LOS "A"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Flow Rate @ LOS "B"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Flow Rate @ LOS "C"	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Service Flow Rate @ LOS "D"	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700
Service Flow Rate @ LOS "E"	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Level of Service:	C	D	C	E	C	F	C	F	C	F	C	F	C	F	D	F	E	F	E	F

I-5 SB off-ramp to Richards Blvd

Highway Capacity Manual
2000 Edition
Capacity Analysis of Freeway Ramps

Ramp Analysis Type: Major Diverge, 2 Lane Off-Ramp, P_{FD}=0.260

Existing Upstrm Frwy Lanes / Aux. Lanes 5
Existing Dnstrm Frwy Lanes / Aux. Lanes 4

	Existing				Baseline Residential				Scenario B: Office				2013 Residential				Scenario B: Office				2030 Residential				Scenario B: Office			
	Without Project		Without Project		Residential		Scenario B: Office		Without Project		Residential		Scenario B: Office		Without Project		Residential		Scenario B: Office		Without Project		Residential		Scenario B: Office			
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
Freeway Volume (Upstream):	9,977	6,952	10,677	7,353	10,777	7,615	10,967	7,617	12,274	8,505	12,173	8,243	12,462	8,507	15,282	11,469	15,383	11,731	15,571	11,733								
Ramp Volume:	1,011	572	1,531	791	1,632	1,053	1,820	1,055	2,352	2,043	2,251	1,781	2,540	2,045	3,138	2,385	3,239	2,647	3,427	2,649								
Ramp Design Speed (mph):	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40								
Sacto Adjusted Freeway Volume (Upstream):	10,884	7,584	11,648	8,021	11,757	8,307	11,964	8,309	13,390	9,278	13,280	8,992	13,595	9,280	16,671	12,512	16,781	12,797	16,987	12,800								
Sacto Adjusted Ramp Volume:	1,103	624	1,670	863	1,780	1,149	1,985	1,151	2,566	2,229	2,456	1,943	2,771	2,231	3,423	2,602	3,533	2,888	3,739	2,890								
Sacto Adjusted Freeway Volume (Downstream):	9,781	6,960	9,978	7,158	9,977	7,158	9,979	7,158	10,824	7,049	10,824	7,049	10,824	7,049	13,248	9,910	13,248	9,909	13,248	9,910								
V _p (Maximum total flow approaching a major diverge area on the freeway) =	10,938	7,622	11,706	8,061	11,816	8,349	12,024	8,351	13,457	9,324	13,346	9,037	13,663	9,326	16,754	12,575	16,865	12,861	17,072	12,864								
V _{R12} (Off-ramp demand flow rate (pc/h)) =	1,109	627	1,678	867	1,789	1,155	1,995	1,157	2,579	2,240	2,468	1,953	2,785	2,242	3,440	2,615	3,551	2,902	3,758	2,904								
Upstream Freeway Capacity:	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000								
Upstream Freeway V/C:	0.91	0.64	0.98	0.67	0.98	0.70	1.00	0.70	1.12	0.78	1.11	0.75	1.14	0.78	1.40	1.05	1.41	1.07	1.42	1.07								
Downstream Freeway Capacity:	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600								
Downstream Freeway V/C:	1.02	0.73	1.04	0.75	1.04	0.75	1.04	0.75	1.13	0.73	1.13	0.73	1.13	0.73	1.38	1.03	1.38	1.03	1.38	1.03								
Ramp Capacity:	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800								
Ramp V/C:	0.29	0.17	0.44	0.23	0.47	0.30	0.52	0.30	0.68	0.59	0.65	0.51	0.73	0.59	0.91	0.69	0.93	0.76	0.99	0.76								
V ₁₂ (Maximum total flow entering the ramp, diverge influence area, two-lane volume):	3,664	2,446	4,286	2,738	4,396	3,025	4,602	3,027	5,407	4,082	5,297	3,795	5,613	4,084	6,902	5,204	7,012	5,492	7,219	5,494								
Density (pc/mi/ln):	23.85	16.62	25.52	17.57	25.76	18.20	26.21	18.20	29.34	20.33	29.10	19.70	29.79	20.33	36.52	27.41	36.77	28.04	37.22	28.04								
V ₅	2,188	1,524	2,341	1,612	2,363	1,670	2,405	1,670	2,691	1,865	2,669	1,807	2,733	1,865	3,351	2,515	3,373	2,572	3,414	2,573								
VF _{4eff}	8,751	6,098	9,365	6,449	9,453	6,679	9,619	6,680	10,766	7,460	10,677	7,230	10,930	7,461	13,403	10,060	13,492	10,289	13,658	10,291								
Level of Service:	F	B	F	B	F	B	F	B	F	C	F	B	F	C	F	F	F	F	F	F								

Proportion in lanes 1,2 (P _{FD}):	0.260
PHF (Peak Hour Factor) =	1
f _{HV} (Adjustment factor for heavy vehicles) =	1.00
f _p (Adjustment factor for driver population) =	1
P _T (Proportion of trucks/buses in the traffic stream) =	0.01
P _R (Proportion of RVs in the traffic stream) =	0
E _T (Passenger-car equivalents for trucks/buses in the traffic stream) =	1.5
E _R (Passenger-car equivalents for RVs in the traffic stream) =	1.5

I-5 SB On-Ramp from Richards Blvd

Highway Capacity Manual
 2000 Edition
 Capacity Analysis of Freeway Ramps

Ramp Analysis Type: Single Lane On-Ramp, Enters Own Lane

Existing Upstrm Frwy Lanes / Aux. Lanes 4
 Existing Dnstrm Frwy Lanes / Aux. Lanes 5

	Existing		Without Project		Baseline Residential		Scenario B: Office		Without Project		2013 Residential		Scenario B: Office		Without Project		2030 Residential		Scenario B: Office	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	Ramp Volume:	356	652	433	1,105	559	1,200	554	1,326	532	1,687	532	1,687	532	1,687	926	2,139	926	2,139	926
Ramp Design Speed (mph):	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Adjusted Ramp Volume:	388	711	472	1,205	610	1,309	604	1,447	580	1,840	580	1,840	580	1,840	1,010	2,333	1,010	2,333	1,010	2,333
Service Flow Rate @ LOS "A"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Flow Rate @ LOS "B"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Flow Rate @ LOS "C"	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Service Flow Rate @ LOS "D"	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700
Service Flow Rate @ LOS "E"	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Level of Service:	C	C	C	C	C	C	C	D	C	E	C	E	C	E	C	F	C	F	C	F