The Towers on Capitol Mall
Draft Environmental Impact Report
Volume II Technical Appendix

Prepared for:
City of Sacramento

Prepared by:

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May2005

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APPENDICES

Appendix A

INITIAL STUDY

ENVIRONMENTAL CHECKLIST

I. BACKGROUND

1. Project Title: The Towers on Capitol Mall (P04-221)

2. Lead Agency Name and Address: City of Sacramento
Planning and Building Department
1231 I Street, Room 300
Sacramento, CA 95814

3. Contact Person and Phone Number: Dana Allen
808-2762

4. Project Location: City of Sacramento Central Business District – bounded by 3rd and 4th Streets and L Street and Capitol Mall

5. Project Sponsor's Name and Address: Saca Development
77 Cadillac Drive, Suite 150
Sacramento, CA 95825

6. General Plan Designation: Regional Commercial and Office

7. Zoning: General Commercial District (C-3-SPD)

8. Description of Project: See Attached

9. Surrounding Land Uses and Setting: See Attached

10. Other Public Agencies Whose Approval is Required:

    - Caltrans Division of Aeronautics (DOA) - Will review flight path and helistop location and issue a heliport permit.
    - Federal Aviation Administration (FAA) - Will review flight paths and prepare an Airspace Determination.
    - Sacramento Area Council of Governments (SACOG) –Airport Land Use Commission will review helistop to ensure consistency with regional airport plans.
    - Sacramento Metropolitan Air Quality Management District (SMAQMD) – Will issue a permit to operate required for any commercial and office uses.
    - State Water Resources Control Board – Will issue a Construction Storm Water Discharge permit.

II. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

■ Aesthetics	☐ Agriculture Resources	■ Air Quality
☐ Biological Resources	■ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	■ Noise	☐ Population/Housing
■ Public Services	☐ Recreation	■ Transportation/Traffic
■ Utilities/Service Systems	■ Mandatory Findings of Significance	

III. DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

■ I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR OR NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Dana Allen
Signature

4/29/05
Date

DANA ALLEN
Dana Allen
Associate Planner
City of Sacramento

CITY OF SACRAMENTO
For

IV. ENVIRONMENTAL CHECKLIST

Introduction

The following Checklist contains the environmental checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures recommended as appropriate as part of the proposed project.

For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Potentially Significant With Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
1. AESTHETICS. *Would the project:*				
a. Have a substantial adverse effect on a scenic vista?	■	□	□	□
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	□	□	□	■
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	■	□	□	□
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	■	□	□	□

Discussion

a. Capitol Mall, adjacent to the project site, is defined in the Sacramento Urban Design Plan as a "Protected View Corridor." The Plan's goal regarding protected view corridors is to preserve views of landmarks. Because the proposed project would be constructed along Capitol Mall, there is potential for the proposed project to negatively affect the view of the Capitol Building. This impact is considered ***potentially significant*** and this issue will be addressed in the EIR.

b. There are no designated scenic resources or historic buildings within a State scenic highway in the project area. Therefore, there would be ***no impact***. This issue will not be addressed in the EIR.

c. The City of Sacramento has adopted guidelines for massing of buildings along Capitol Mall to ensure that the views along that corridor are not impeded. Because the proposed project would be the tallest structure in Sacramento (192 feet taller than the existing tallest building at 423 feet), the project would change the visual character of the area. The key concerns with respect to visual quality include: building height; the compatibility of the building's mass to surrounding development; the visual interface with development in the area, specifically the Capitol Building; and the creation of substantial shadows that could affect landscaped and/or residential areas, particularly in winter. For these reasons potential degradation of the existing visual character is considered ***potentially significant*** and this issue will be addressed in the EIR.

d. Glare is caused by light reflections from pavement, vehicles and building materials, such as reflective glass and polished surfaces. During daylight hours, the amount of glare depends on the intensity and direction of sunlight. Glare can create hazards to motorists and nuisances for pedestrians and other viewers. At night, artificial lighting can cause glare or disturb residents. The proposed project would include light fixtures around the buildings which would be visible from surrounding areas. Because the exact location of the lighting and the specific materials used for each building facade is not known at this time, this would be a ***potentially significant impact***. Effects of light and glare will be addressed in the EIR.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
2. AGRICULTURE RESOURCES: *In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:*				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program in the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	■

Discussion

a-c. The project site is located within an urban built-up area in the City's downtown. There are no agricultural resources on the site that would be affected. There would be ***no impact*** on agricultural resources as a result of the proposed project.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
3. AIR QUALITY. *Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations: Would the project:*				
a. Conflict with or obstruct implementation of the applicable air quality plan?	■	□	□	□
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	■	□	□	□
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	■	□	□	□
d. Expose sensitive receptors to substantial pollutant concentrations?	■	□	□	□
e. Create objectionable odors affecting a substantial number of people?	□	□	■	□

Discussion

a-d. The proposed project would include the construction of a 52-story, 615-foot tall building. Short-term construction emissions would be produced that could expose people to substantial pollutant concentrations or violate air quality standards. Similarly, operational emissions, particularly from automobile trips associated with the project, could result in, or contribute to, air quality violations. This would be a ***potentially significant impact*** and will be addressed in the EIR.

e. The proposed project includes a residential component, a hotel, and various other retail uses. Restaurant uses could produce some odors, but restaurant uses already existing in the project vicinity, and restaurants are not generally considered incompatible due to odors. Residential, hotel, and retail uses typically do not produce odors that people would consider objectionable. Therefore, there would be ***less-than-significant impact*** associated with odors.

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
4.	**BIOLOGICAL RESOURCES.** *Would the project:*				
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	■
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	■
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	■	☐	☐
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	■	☐

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

Discussion

Information in this biological resource section was obtained from an arborist assessment conducted on October 27, 2004 and the December 2004 version of the California Natural Diversity Database (CNDDB, Attached).

The project site is located in Downtown Sacramento and because the site is currently developed, there are limited biological resources. The vegetation on the site consists of turf areas and ornamental shrubs, such as privet (*Ligistrum* sp.) and heavenly bamboo (*Nandina domestica*), and 58 ornamental trees. Trees on the site include one Arizona ash (*Fraxinus velutina*), 12 canary Island pine (*Pinus canariensis*), 2 cherry (*Prunus* sp.), 1 Chinese elm (*Ulmus parvifolia*), 10 European birch (*Betula pendula*), 20 honey locust (*Gleditsia triacanthos*), 10 mulberry (*Morus* sp.), and 2 coast redwood (*Sequoia sempervirens*). The majority of the trees on the site are less than ten inches in diameter. The largest tree on the site is a 27-inch Canary Island pine at the southwest corner of the building.

Trees on the interior of the project site, outside of the City's right-of-way, would not be under City jurisdiction and, therefore, would not be subject to the City's Tree Ordinance, as defined by the City of Sacramento Code of Ordinance, Chapter 12.56, Trees Generally, and Chapter 12.64, Heritage Trees (discussed below). However, the proposed project could require the removal of, or result in damage to, street trees, which would require compliance with the ordinance.

Urban wildlife is largely limited to birds like the common crow (*Corvus brachyrhynchos*) and introduced species such as rock dove (*Columba livia*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*). The CNDDB query revealed recorded occurrences of the following within the Sacramento East and Sacramento West 7.5-minute topographic quadrangles (which includes the project site):

- two special-status plants: Sanford's arrowhead (*Sagittaria sanfordii*), rose mallow (*Hibiscus lasiocarpus*);
- four special-status invertebrates: California linderiella (*Linderiella occidentalis*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*);
- two special status fish: Sacramento perch (*Archoplites interruptus*), and Sacramento splittail (*Pogonichthys macrolepidotus*);
- six special-status birds: bank swallow (*Riparia riparia*), burrowing owl (*Athene cunicularia*), Cooper's hawk (*Accipiter cooperii*), purple martin (*Progne subis*), Swainson's hawk (*Buteo swainsoni*) and tricolored blackbird (*Agelaius tricolor*);
- one mammal: American badger (*Taxidea taxus*); and
- two sensitive habitats: elderberry savannah, Great Valley cottonwood riparian forest.

All of the above species except burrowing owl, Cooper's hawk, purple martin and Swainson's hawk have specific habitat requirements (either wetlands or elderberry plants) that are not present on the project site. None of the above species or nests were observed during a site visit conducted in February 2005. Because the site is developed, it provides no foraging habitat for any of the birds, and no nesting habitat for burrowing owls (subterranean burrows). It is possible, but unlikely given the absence of foraging habitat and the high disturbance associated with the urban setting, that the large trees on site could serve as nesting sites for Cooper's hawk or Swainson's hawk.

Regulatory Context

Federal

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 Code of Federal Regulations (CFR) Section 10.13. This international treaty for the conservation and management of bird species that migrate through more than one country is enforced in the United States by the USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50 CFR 20. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors).

State

Fish and Game Code - Sections 3503, 3503.5, 3513

Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Fish and Game Code Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act.

City of Sacramento

General Plan

The City of Sacramento General Plan's conservation strategy focuses on habitat conservation, minimization of impacts on sensitive biological resources, and the preservation of plant and animal diversity as the most effective way to protect individual special status species.

The following City of Sacramento General Plan guiding and implementing policy is applicable to the proposed project.

> Goal A/Policy 2
> Continue to implement the Heritage Tree Program.

Tree Preservation Ordinance

The City of Sacramento has adopted an ordinance to protect trees as a significant resource to the community. It is the City's policy to retain trees when possible regardless of their size. When circumstances will not allow for retention, permits are required to remove trees that are within City jurisdiction. Removal of, or construction around, trees that are protected by the tree ordinance are subject to permission and inspection by City arborists. The City of Sacramento Tree Service Division reviews project plans and works with City of Sacramento Public Works during the construction process to minimize impacts to street trees in the City.

The Sacramento City Code includes the following provisions to protect city trees:

12.56.020 Definitions

"City street tree" means and includes any tree growing on a public street right-of-way. City street trees are maintained by the city.

"Maintenance easement private street tree" means and includes any tree growing within a maintenance easement. No parcel contains more than one maintenance easement private street tree per forty (40) feet of street frontage. If there is more than one tree in the maintenance easement per forty (40) feet of street frontage, only the one closest to the street is a maintenance easement private street tree, and the other(s) are private trees.
"Street tree" means and includes both city street trees and maintenance easement provate trees (Prior code §45.01.002)

12.56.60.1 Protection of trees.

(a) No person shall remove, trim, prune, cut or otherwise perform maintenance on any city street tree without first obtaining a permit from the director pursuant to Chapter 12.56.070. (Prior Code Section 45.01.006).

12.64.020 Definitions

"Heritage tree" means:

(1) any tree of any species with a trunk circumference of one hundred (100) inches or more, which is of good quality in terms of health, vigor of growth, and conformity to generally accepted horticultural standards of shape for its species.

(2) any native species of oak (*Quercus* spp.), California buckeye (*Aesculus californica*), and sycamore (*Platanus racemosa*), having a circumference of 36 inches or greater when a single trunk or cumulative circumference of 36 inches or greater when a multi-trunk tree.

(3) any tree thirty (36) inches in circumference or greater in a riparian zone. The riparian zone is measured from the center line of the water course to thirty (30) feet beyond the high water line.

(4) Any tree, grove of trees or woodland trees designated by resolution of the city council to be of historic or environmental value or of significant community benefit. (Prior code Section 45.04.211)

12.64.040 Protection of heritage trees during construction activity.

During construction activity on any property upon which is located a heritage tree, the following rules shall apply. Unless the express written permission of the director is first obtained, no person shall:

(a) Change the amount of irrigation provided to any heritage tree from that which was provided prior to the commencement of construction activity;

(b) Trench, grade or pave into the drip line area of a heritage tree;

(c) Change, by more than two (2) feet, grade elevations within thirty (30) feet of the drip line area of a heritage tree;

(d) Park or operate any motor vehicle within the drip line area of any heritage tree;

(e) Place or store any equipment or construction materials within the drip line area of any heritage tree;

(f) Attach any signs, ropes, cables or any other items to any heritage tree;

(g) Cut or trim any branch of a heritage tree for temporary construction purposes;

(h) Place or allow to flow into or over the drip line area of any heritage tree any oil, fuel, concrete mix or other deleterious substance.

Where written permission of the director [City Neighborhood Services Director] is sought under this section, the director may grant such permission with such reasonable conditions as may be necessary to effectuate the intent and purpose of this chapter. (Prior code Section 45.04.216)

a. The California Natural Diversity Database (CNDDB) search reveled 10 special-status plant and wildlife species occurring within the Sacramento East and Sacramento West quadrangles, none of which are recorded within the project site.[1] As discussed above, only two special status birds could potentially use the site for nesting. Swainson's hawk has occurred along the Sacramento River, approximately one mile northwest of the site and Cooper's hawk has occurred along the Natomas East Main Drainage Canal near Northgate Boulevard,[2] several miles from the project site.

The lack of available native habitat greatly reduces the potential occurrence of special-status wildlife species in urban areas. In addition, all work to implement the proposed project would take place within existing rights-of-way and on existing paved areas. However, tree removal could result in potentially significant impacts on nesting birds, protected by the Migratory Bird Treaty Act and mitigation would be required. Mitigation Measure B-1 would ensure that tree removal occurs outside of the breeding period. Mitigation Measure B-2 would identify active nests within and adjacent to the proposed project site. If none are found, no additional mitigation would be required. Mitigation Measure B-3 outlines avoidance measures and Mitigation Measure B-4 outlines necessary permits, should the avoidance measures not be feasible. Implementation of these measures would reduce this impact to ***less than significant***. This issue will not be analyzed in the EIR.

Mitigation Measure B-1

To prevent direct impacts on nesting birds, tree removal shall occur between September 16 and February 28.

<u>Mitigation Measure B-2</u>

If construction activities would occur during the breeding season (approximately March 1 through September 15), the project applicant, in consultation with the CDFG and USFWS, shall conduct a pre-construction, breeding season survey of the project site during the same calendar year that construction is planned to begin. The survey shall be constructed by a qualified avian biologist to determine if any birds are nesting on or directly adjacent to the project site.

If phased construction procedures are planned for the proposed project, the results of the above survey shall be valid only for the season when it is conducted.

A report shall be submitted to the project applicant and the City of Sacramento, following the

1 California Department of Fish and Game, *California Natural Diversity Database*, December 5, 2004 version, printed January 14, 2005.

2 California Department of Fish and Game, *California Natural Diversity Database*, December 5, 2004 version, printed January 14, 2005.

completion of the nesting survey that includes, at a minimum, the following information:

- *A description of methodology including dates of field visits, the names of survey personnel with resumes, and a list of references cited, and persons contacted.*
- *A map showing the location(s) of any nests observed within the project site.*

If the above survey does not identify any nesting bird species on the project site, no further mitigation would be required. However, should any active bird nests be found on or within close proximity to the project site, one of the following mitigation measures shall be implemented.

Mitigation Measure B-3

The project applicant, in consultation with CDFG and USFWS, shall avoid all active nest sites within the project area while the nest is occupied with adults and/or young. The occupied nest shall be monitored by a qualified avian biologist to determine when the nest is no longer used. Avoidance shall include the establishment of a non-disturbance buffer zone, to be determined in consultation with CDFG, around the nest site, which will be delineated by highly visible temporary construction fencing.

Active nest trees that would not be removed but are in close proximity to construction activities shall be monitored weekly to determine if construction activities are disturbing the adult or young birds, until the birds have left the nest.

Mitigation Measure B-4

If an active nest site cannot be avoided and would be destroyed, special permits would be required, depending on the bird species.

a. *For a State-listed bird (i.e. Swainson's hawk), the project applicant shall obtain a Section 2081 permit. Standard mitigation for the loss of an active nest tree generally requires planting 15 trees (a mix of cottonwood, sycamore and valley oaks) and monitoring the success of the trees for five years with a 55% success rate. Locating these trees would likely not be feasible so an alternative approach could be to participate in mitigation deemed appropriate by the CDFG.*

b. *For any bird covered by the Migratory Bird Treaty Act, the project applicant would consult with the USFWS to determine appropriate mitigation measures.*

b. The CNDDB search identified two sensitive habitats: elderberry savannah (approximately three miles northeast) and Great Valley cottonwood riparian forest (approximately one mile northwest), within the Sacramento East and Sacramento West quads.[3] There are no streams or creeks located within the vicinity of the proposed construction areas. In addition, construction would occur on currently developed area. Therefore, the proposed project would not have an adverse effect on any sensitive natural communities or riparian habitat, and ***no impact*** would occur. This issue will not be analyzed in the EIR.

c. The project area is currently a paved and developed urban area. Construction would occur within the existing road rights-of-way and on land that is currently developed and would not encroach on any undeveloped areas in the project area. There are no wetlands within the

3 California Department of Fish and Game, *California Natural Diversity Database*, December 5, 2004 version, printed January 14, 2005.

project area. Therefore, the proposed project would have ***no impact*** on wetlands. This issue will not be discussed further in the EIR.

d. There are no streams or rivers within or adjacent to the project area. The wildlife species typically found in an urban habitat include birds and small mammals. As stated under Item 4e, construction activities could potentially affect long-term tree health, which could conceivably affect nesting birds. Impacts to nesting birds are addressed in Item 4a and were found to be less than significant with mitigation.

Nocturnal bird migrants through California's Central Valley include most passerines and many other land birds and waterfowl. Passerines migrating nocturnally at low altitudes through California's Central Valley include the American redstart, American robin, Anna's hummingbird, and western tanager, along with a variety of thrush, warbler, and sparrow species. Evidence suggests that nocturnally migrating birds make use of magnetic cues, but there is also evidence that cues based on vision are important. Visual cues, derived either from celestial or ground-based sources, seem necessary for the correct orientation of nocturnal migrants.[4]

Most nocturnal migrants are diurnal outside their migration period, yet are likely to possess some visual acuity on moon- and starlit nights. However, on nights with minimum moon- or starlight, their spatial resolution is considerably reduced.[5] This reduction of visual acuity with decreasing ambient light levels, while not posing a problem for birds migrating well away from obstacles, could result in a higher risk of collision for birds encountering tall, human-built structures and artificial lighting.[6]

Birds migrating in bad weather conditions can be "trapped" by illuminated structures, and even in the absence of bad weather, nocturnally migrating birds have been observed to be confused by artificial lights below them. Birds are apparently not attracted to artificial light from a distance, but rather enter a lighted area by chance (i.e., aggregation) and are then reluctant to leave (i.e., entrapment). This aggregation and entrapment behavior appears to be stereotyped in nocturnal migrants, in that it is virtually identical at all types of lighted structures. Birds entering an artificially lighted area aggregate around the source of light and injury or death results when birds collide with lighted obstructions or each other. If collision is avoided, exhaustion can occur after birds have fluttered in the light beam for long periods.[7] [8] [9] One solution to this effect is to reduce lighting, especially after midnight when birds begin to descend from their peak migration altitudes. As the proposed project is a residential building, it is assumed that most people will turn off their lights before going to bed. Further, the building will have fewer windows, compared to an office building, thus reducing the area of potential confusion for migrant birds.

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4 Emlen, S.T. 1975. Migration: orientation and navigation. In: D.S. Farner and J.R. King (eds.). *Avian Biology*. vol. 5. Academic Press. London.

5 Able, K.P. 1982. The effects of overcast skies on the orientation of free-flying nocturnal migrants. In: *Avian Navigation*. Papi and Wallraff, eds. Springer-Verlag, Berlin, Heidelberg. Pp. 40-49.

6 Martin, G.R. 1990. The visual problems of nocturnal migration. In: *Bird Migration*, E. Gwinner, ed. Springer Verlag, Berlin, Heidelberg. Pp. 185-197.

7 Evans Ogden, L.J. 1996. *Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds*. World Wildlife Fund Canada and the Fatal Light Awareness Program. Toronto, Ontario, Canada. 45 p.

8 Verheijen, F.J. 1958. The mechanisms of the trapping effect of artificial light sources upon animals. *Netherlands Journal of Zoology* 13: 1-107.

9 Verheijen, F.J. 1981. Bird kills at lighted man-made structures: Not on nights close to full moon. *American Birds* 35: 251-254.

The height at which migrant birds fly is a critical factor affecting collisions with human-built structures and entrapment by artificial light sources. Most migration occurs at less than 1,000 feet above ground level, with a large fraction occurring below 500 feet. Studies suggest, however, that while structures exceeding a height of 300–500 feet can be hazardous to nocturnal migrants, those of 250 feet or less appear not to present a significant collision threat. Researchers believe this is because these structures stand well below the birds' horizon and are not perceived to be a celestial object.[10 11]

The proposed project would be 615 feet tall, the tallest building in the downtown area. However, there are already several tall buildings in the downtown area, including the 430-foot Wells Fargo building and the 19 story West America Bank (Emerald Building) building located just south of the project site. Downtown Sacramento has at least 14 constructed buildings over 200 feet tall, with five approved for construction and two planned for construction.[12]

The number of migrant bird mortalities due to collisions is unknown in Downtown Sacramento and cannot be predicted for this proposed project. Studies conducted in downtown Toronto, Canada in an area with 39 high-rise buildings ranging from 200 to 900 feet tall, documented very rough estimates of 1000 mortalities per year, with varying mortalities per building.[13] Given that Sacramento has only 14 high-rise buildings (approximately a third of the number surveyed in Toronto), the tallest of which is 430 feet, one could estimate approximately 300 mortalities per year, though due to the hundreds of thousands of passerine migrants through the Central Valley each year, this estimate would be a conservative one.

Though birds migrating along a flight corridor through the Sacramento area could conceivably collide with a building of this height, the facts that: (1) the building will have residential uses with limited areas of continuous glass, (2) the location of the project is within an existing urban center with other tall surrounding buildings, and (3) the number of mortalities compared to the number of migrants is minimal, it is unlikely that the addition of this building would substantially interfere with the movement of any nocturnal migratory bird species, and impacts would be ***less than significant***. This issue will not be addressed in the EIR.

e. The City of Sacramento has a tree ordinance that protects Street and Heritage trees, as defined above. Some street trees could be affected by construction activities (removal or pruning for equipment access or scaffolding). Compliance with the City's Tree Ordinance would be required of the proposed project and would ensure that tree removal and/or protection would only occur after initial consultation with the City's Arborist. Compliance with the City's Tree Ordinance would reduce this impact to a ***less-than-significant level***. This issue will not be addressed in the EIR.

f. The project site is not within a habitat or conservation plan area. Therefore, ***no impact*** would result. This issue will not be addressed in the EIR.

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10 Able, K.P. 1970. A radar study of the altitude of nocturnal passerine migration. *Bird Banding* 41(4): 282-290

11 Eastwood, D. and G.C. Rider. 1965. Some radar measurements of the altitude of bird flight. *British Birds* 58: 393-426

12 Emporis buildings database at http://www.emporis.com/en/wm/ci/bu/?id=101358., accessed on March 14, 2005.

13 Evans Ogden, L.J. 1996. *Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds*. World Wildlife Fund Canada and the Fatal Light Awareness Program. Toronto, Ontario, Canada. 45 pp.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
5. CULTURAL RESOURCES. *Would the project:*				
a. Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	■	☐	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	■	☐	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or unique geologic feature?	☐	■	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries.	☐	■	☐	☐

Discussion

a,b. Results of a records search done by the North Central Information Center revealed that there are recorded subsurface historic deposits on the site, as well as 18 recorded archaeological studies within a ¼ mile radius.[14] Several State and federally listed historic resources are also found in the area surrounding the project site. Due to the known resources on site and the overall sensitivity of the surrounding area, there is the potential for historic and/or archaeological resources to be damaged or destroyed during the construction of the proposed project resulting in a ***potentially significant impact***. These issues will be further discussed in the EIR.

c,d. While the project site has previously been disturbed, construction activities, such as construction of the sub-grade components of the project, may uncover paleontological artifacts or unique geologic resources. This would be a *potentially significant impact*. Implementation of Mitigation Measure C-1 would reduce this impact to a ***less-than-significant level***.

Mitigation Measure C-1

Construction contractors involved in earth-moving activities shall be instructed on indicators that subsurface paleontological resources are present and shall be instructed in procedures to follow in the event that resources are encountered and the following measures shall be incorporated into all construction contracts:

(a) In the event any paleontological resources, such as fossils, are uncovered during construction, work within 100 feet of the find shall cease and a

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14 North Central Information Center, *Record Search Results for Towers at Capitol Mall Project letter*, January 20, 2005.

qualified paleontologist shall be contacted by the by the project proponent to determine if the resource is significant. If the find is determined to be of significance, an excavation plan shall be created and resources shall be donated to an appropriate cultural center. All work products and plans shall be reviewed and approved by the City prior to execution.

d. While the project site has previously been disturbed, construction activities, such as construction of the sub-grade components of the project, may uncover human remains. This would be a *potentially significant impact*. Implementation of Mitigation Measure C-2 would reduce this impact to a ***less-than-significant level***.

Mitigation Measure C-2

Construction contractors involved in earth-moving activities shall be instructed on indicators that human remains are present and shall be instructed in procedures to follow in the event that resources are encountered and the following measures shall be incorporated into all construction contracts:

(a) When Native American archaeological, ethnographic, or spiritual resources are involved, all identification and treatment shall be conducted by qualified archaeologists who are either certified by the Register of Professional Archaeologists (RPA) or meet the federal standards as stated in the Code of Federal Regulations (36 C.F.R. 61), and Native American representatives who are approved by the local Native American community as scholars of their cultural traditions.

In the event that no such Native American is available, persons who represent tribal governments and/or organizations in the locale in which resources could be affected shall be consulted.

(b) If human bone or bone of unknown origin is found during construction, all work shall stop in the vicinity of the find and the County Coroner shall be contacted immediately. If the remains are determined to be Native American, the Coroner shall notify the Native American Heritage Commission who shall notify the person it believes to be the most likely descendent. The most likely descendent shall work with the contractor to develop a program for reinternment of the human remains and any associated artifacts. No additional work is to take place within the immediate vicinity of the find until the identified appropriate actions have been carried out.

Issues			Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
6.	**GEOLOGY AND SOILS.** *Would the project:*					
	a.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i.	Rupture of a known earthquake fault, as delineated on the most recent Alquist - Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	■	☐
	ii.	Strong seismic ground shaking?	☐	☐	■	☐
	iii.	Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
	iv.	Landslides?	☐	☐	☐	■
	b.	Result in substantial soil erosion, or the loss of topsoil?	☐	☐	■	☐
	c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	■	☐
	d.	Be located on expansive soils, as defined in Table 18-1-13 of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	■	☐
	e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■

<u>Discussion</u>

Geology

Sacramento is located within the Great Valley geomorphic province of California. The geologic formations of the Great Valley are typified by thick sequences of alluvial sediments derived primarily from the erosion of the Sierra Nevada to the east and, to a lesser extent, erosion of the Klamath Mountains and Cascade Range to the north. The sediments from these mountains were transported downstream and deposited onto the valley floor as river channel and flood plain deposits and alluvial fans.

The subsurface materials beneath the project site have been mapped as recent (Holocene to Pleistocene-aged) alluvial deposits attributed to the Sacramento and American Rivers.[15] The younger alluvial soils are underlain by older (Pleistocene) alluvial fan sediments of the Riverbank Formation. The Riverbank Formation is composed of semi-consolidated gravels, sands and silts. The geotechnical explorations at the project site conditions have confirmed the subsurface geology published by the State.

Seismicity

Reportedly, earthquakes that have occurred in Northern California since the 1800s have had only moderate effects in the Sacramento area with intensities not exceeding about VI on the Modified Mercalli (MM) scale (Figure G-1). For example, the 1906 earthquake on the San Andreas Fault, which had a maximum intensity of XI (MM) and a M_w of about 7.9 in the San Francisco bay area, produced only an intensity of V (MM) in the Sacramento area.

The Health and Safety Element of the General Plan for the County of Sacramento shows two faults as being influential to Sacramento County: the Midland fault zone, located approximately 20 miles west of the site, and the Bear Mountains fault zone, located approximately 24 miles east of the site. These faults are mapped by the California Geological Survey (CGS) as pre-Quaternary and late-Quaternary, respectively.

The Midland fault zone is considered to be a deep pre-Pleistocene subsurface feature extending nearly 50 miles along the west side of the Sacramento Valley. This fault has been only approximately located as a result of natural gas exploration work. Subsurface data indicate that there has been no appreciable movement on the Midland fault in the last 24 to 36 million years, and no evidence of surface expression has yet been found.

The Bear Mountains fault is the westerly-most fault within the Foothills fault zone, which consists of numerous northwesterly trending faults along the western edge of the Sierra Nevada range. The Foothills fault zone is generally bounded by the Bear Mountains and Melones fault zones, located approximately 24 and 37 miles east of the site, respectively. The closest segment of the Bear Mountains fault zone to the site with late-Quaternary fault displacement is mapped 31 miles northeast of the site.4

The Green Valley, Concord, Cleveland Hill, and Hayward faults are considered to be "Active" as defined by the Alquist-Priolo Earthquake Fault Zoning Act, meaning they have experienced activity within the last 11,000 years. The Cleveland Hill fault, located approximately 57 miles north of the site, was last active in 1975, producing a magnitude 5.7 earthquake event. The Green Valley, Concord and Hayward Faults historically rupture by fault creep, that is, they move continually at a slow rate; however, these faults are considered capable of producing significant earthquake events if a large segment of the fault slips at one time.

Soils

The results of a geotechnical investigation and soil test from the project site were presented in the *Geotechnical Investigation, Capitol Towers*, Treadwell & Rollo (February 8, 2005). The results

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15 Wagner D.L., et. al., State of California, Department of Conservation, State Mining and Geology Board, *Geologic Map of the Sacramento Quadrangle*, 1981.

presented in this report confirm that the project site is underlain by fill that extends to a depth of up to 10 feet below street grade. The fill primarily consists of medium stiff to stiff silt with variable amounts of sand. In addition, the fill has interbedded layers of loose to medium dense sand with variable amounts of silt and gravel. Debris, such as brick fragments and wood, was encountered in the fill.

The fill is underlain by soft to stiff silt that extends to depths that range from 21 to 47 feet below street grade. Beneath the silt is a layer of loose to medium dense sand with variable amounts of silt, and with thin interbedded layers of medium stiff sandy silt. The loose to medium dense sand layer extends to a depth between about 52 and 58 feet below street grade. Dense to very dense gravel and medium dense to dense silty sand were encountered below the loose to medium dense sand layer. The top of the gravel layer, which varies between 5 and 27 feet in thickness, is generally encountered between the depths of 52 and 58 feet below street grade. Below this are very dense layers of sand with silt, silty sand, and hard sandy clay, to a depth of 121 feet below street grade.

In addition to soil characteristics, groundwater levels were investigated and reported in the geotechnical report. In general, groundwater in the City responds to the levels of water in the nearby Sacramento and American Rivers. When these rivers are at elevated stages for extended periods of time (several weeks to a month or more during winter months), the groundwater level at the site would be expected to rise. Groundwater levels at the project site are approximately seven feet below street surface.

a.i-iii,c The closest known fault to the project site mapped by the California Department of Conservation's Division of Mines and Geology is the Dunnigan Hills Fault, located approximately 19 miles northwest of Sacramento. There are no known active faults in or adjacent to the City of Sacramento. Construction contractors are required to comply with the CUBC and the California State Building Code (Title 24) to ensure that the project is designed and constructed to meet specific minimum seismic safety and structural design requirements.

Liquefaction is a phenomenon in which saturated, cohesionless soil experiences a temporary loss of strength due to the buildup of excess pore water pressure, especially during cyclic loading, such as that induced by earthquakes. Soil most susceptible to liquefaction is loose, clean, saturated, uniformly graded, fine-grained sand and silt of low plasticity that is relatively free of clay. Flow failure, lateral spreading, differential settlement, loss of bearing strength, ground fissures, lurch cracking, and sand boils are evidence of liquefaction.

The Treadwell & Rollo geotechnical report found that, with a seasonal high groundwater level of seven feet below street grade, the zones of saturated, loose to medium dense sandy fill, sand, and silty sand between the depths of 9.5 and 58 feet below street grade are susceptible to liquefaction during a major earthquake generating a peak ground acceleration of 0.17g at the site. If there were such an event, liquefaction would result in the consolidation or settling of the soil such that there would be vertical displacement of structures (i.e., sidewalks) by about three to 10 inches. Since the proposed project would not result in any slopes, there would be possibility of lateral spreading.

Project construction would require demolition, grading, excavation, pile driving, and trenching activities. It is anticipated that buildings would be supported on concrete piles below the existing surface level. It is also anticipated that groundwater would be encountered during construction. Dewatering activities may be required for excavation of basement levels to maintain adequate construction conditions. The foundation would be a deep foundation that could include, but would not be limited to, steel H-piles or precast, presetressed concrete piles, as described in the Geotechnical Investigation, Capitol Towers, Treadwell & Rollo (February 8, 2005), or other methods deemed appropriate and effective by the City of Sacramento.

Common structural engineering methods would be implemented by the proposed project and would reduce the potential for liquefaction to affect project structures and reduce potential impacts associated with unstable soil conditions during dewatering activities. The project applicant would have the engineering and design of foundational structures reviewed and approved of by the City of Sacramento Engineering Department prior to approval of grading and construction plans for the proposed project. The following will be included in the project design.

- Design and engineering of the building structures that is compliant with the California Uniform Building Code for structures built in Seismic Zone 3.

- The proposed project construction would include an indicator pile, pile load test, and pile driving analyzer program, as recommended in the Geotechnical Investigation, Capitol Towers, Treadwell & Rollo (February 8, 2005), to evaluate the driving behavior of piles across the project site, the driving refusal depth of piles, and to determine the maximum load capacity of piles for support of the towers. Results of these tests shall be used to determine the appropriate number and depth of support piles to prevent structural failure due to liquefaction.

- For below grade construction, preparation of a site-specific geotechnical investigation (by a State licensed and qualified engineer or geologist) prior to the start of excavation to determine the exact depth to groundwater in the site, and the need for subsurface drainage and the potential for excavation walls to become unstable or fail.

- Dewatering of the site during the seasonal rise in the groundwater levels under the project site according to the subdrain plan. A subdrain plan could include subdrains, reinforced concrete retaining walls, and/or waterproofing methods shall be used to eliminate the effects of subsurface groundwater conditions on subgrade foundations.

- Preparation of a subdrain plan based on recommendations from a State licensed and qualified engineer or geologist that would form part of the final plans for the project.

- Design below-grade walls and foundation for a water level at a minimum elevation of approximately seven feet below street grade, and check the foundation system for potential uplift conditions during and after building construction.

- Any dewatering would comply with applicable requirements established by the Central Valley Regional Water Quality Control Board and shall be coordinated with the City's Flood Control and Sewer Division.

- Where required due to high groundwater, excavations would be shored as required by the Office of Safety and Health Administration (OSHA) to preclude slope failures during the construction period. Shoring would use standard stabilizing methods, such as tiebacks, as necessary to retain excavation areas.

Compliance with the above construction methods would ensure that hazards associated with construction in unstable soils would be reduced to a ***less-than-significant level***. This issue will not be further addressed in the EIR.

iv. The project site and surrounding areas are flat and do not contain any steep slopes or other features that could result in landslide or mudflow hazards. It is not anticipated that landslides or mudflows would result due to project implementation. Therefore, ***no impact*** would occur. This issue will not be addressed in the EIR.

b. The project site encompasses an area that is mostly developed or paved for parking with little original topsoil remaining. The project would include clearing the site to allow construction of the proposed project. However, because the site has already been developed, there would be a ***less-than-significant impact*** on topsoil. This issue will not be addressed in the EIR.

d. Soils with expansive properties contain a high percentage of clay particles. The proposed project would be located on sandy and silty soils with very low percentages of clay particles. Therefore, the soils would not be subject to substantial expansion and there would be a ***less-than-significant impact***. This issue will not be further addressed in the EIR.

e. The proposed project would not include the use of septic tanks or alternative wastewater disposal systems, so there would be ***no impact***. This issue will not be addressed in the EIR.

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
7.	**HAZARDS AND HAZARDOUS MATERIALS.** *Would the project:*				
	a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	□	□	■	□
	b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	□	■	□	□
	c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	□	□	□	■
	d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	□	□	■	□
	e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	□	□	■	□
	f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	□	□	■	□
	g. Impair implementation of or physically interfere with an adopted emergency response	□	□	■	□

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
	plan or emergency evacuation plan?				
h.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	■

Discussion

a. Hazardous materials would be used in varying amounts during construction and occupancy of the proposed project. Products and materials typically used during construction that could contain hazardous substances include paints, solvents, cements, glues, and fuels. Exposure of construction workers or site occupants to hazardous materials could occur in the following manner: improper handling or use of hazardous materials or hazardous wastes during construction or occupancy of the proposed project; transportation accident; environmentally unsound disposal methods; or fire, explosion or other emergencies.

Construction workers and future site residents could be exposed to hazards associated with accidental releases of hazardous materials, which could result in adverse health effects. Hazardous materials that could be present during occupancy of the residential and commercial areas in the project site are expected to include items such as household-type and maintenance products (e.g., paints, solvents, pool chemicals, pesticides/herbicides). Office and commercial activities could use a variety of products such as cleaning agents, solvents, paints, materials used in printing, pesticides, and chemicals for landscaping. The types and amounts of hazardous materials would vary according to the location and nature of the activity. However, all allowable uses would be subject to code requirements, as necessary, which would ensure compliance with applicable permits and inspections.

Hazardous materials regulations, which are codified in Titles 8, 22, and 26 of the California Code of Regulations (CCR), and their enabling legislation set forth in Chapter 6.95 of the California Health and Safety Code, were established at the State level to ensure compliance with federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. These regulations must be implemented by employers/businesses, as appropriate, and are monitored by the State (e.g., Cal OSHA in the workplace or DTSC for hazardous waste) and/or local jurisdictions (e.g., the City of Sacramento Fire Department and Sacramento County Emergency Management Department (SCEMD)).

By ensuring that businesses in or adjacent to the project site comply with the above regulations, the City would reduce impacts associated with the potential for accidental release of hazardous materials during occupancy of the proposed project that would result in increased risk of exposure to accidental release of hazardous materials, and the potential for an increased demand for incident emergency response. This would be accomplished by ensuring that regulated activities (e.g., businesses) are managed in accordance with applicable regulations such as Hazardous Materials Release Response Plans and

Inventories (Business Plans), the California Accidental Release Prevention (CalARP) Program, and the California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements.

Compliance with Title 26, Division 6, of the CCR, which would be monitored by the City, would reduce impacts associated with potential for accidental release during construction or occupancy of the project site and the potential for an increased demand for incident emergency response. Compliance with this regulation would ensure that businesses and public facilities where hazardous materials are used or stored adhere to regulations designed to prevent leakage and spills of material in transit and provide detailed information to clean-up crews in the event of an accident.

Workplace regulations addressing the use, storage, and disposal of hazardous materials in Title 8 of the CCR would apply to businesses and public facilities in and adjacent to the project site. Compliance with these regulations would be monitored by the City of Sacramento Fire Department and the SCEMD when they perform inspections for flammable and hazardous materials storage. Other mechanisms in place to enforce the Title 8 regulations include compliance audits and reporting to local and State agencies. Implementation of the workplace regulations would further reduce the potential for hazardous materials releases.

Implementation of Title 49, Parts 171-180, of the Code of Federal Regulations would reduce any impacts associated with the potential for accidental release during construction or occupancy of the proposed project or by transporters delivering hazardous materials to the project site or picking up hazardous waste. These regulations establish standards by which hazardous materials would be transported, within and adjacent to the proposed project. Where transport of these materials occurs on roads, the CHP is the responsible agency for enforcement of regulations.

Implementation of and compliance with applicable federal and State laws and regulations that are administered and enforced by the SCDEM, and City of Sacramento Fire Department standards (the local agency that implements applicable hazardous materials-related sections of the Uniform Fire Code and Uniform Building Code) would reduce impacts associated with the routine use, storage, and transportation of hazardous materials in the proposed project to a ***less-than-significant level***. This issue will not be addressed in the EIR.

b. **Asbestos-Containing Materials and Lead-Based Paint**

Several regulations and guidelines pertain to abatement of and protection from exposure to asbestos-containing building materials (ACBM) and lead-based paint. These include Sacramento Metropolitan Air Quality Management District (SMAQMD) rules 902 and 304 (pertaining to asbestos abatement and related fees), Construction Safety Orders 1529 (pertaining to ACBM) and 1532.1 (pertaining to lead-based paint) from Title 8 of the CCR, Part 61, Subpart M of the CFR (pertaining to ACBM), and lead-based paint exposure guidelines provided by the U.S. Department of Housing and Urban Development (HUD). In California, ACBM and lead-based paint abatement must be performed and monitored by contractors with appropriate certification from the California Department of Health Services. The proposed project would include the demolition of existing structures that were built when ACBM and lead-based paints were widely used. All demolition activities in the City are required to apply for permits which include requirements for the testing and removal, if any, of ACBM and lead-based paint based on the aforementioned federal and State regulations.

Phase I Environmental Site Assessments

The proposed project site and surrounding environment is dominated by urban land uses. Urban land uses are associated with hazardous materials use and storage because of the application of pesticides and fertilizers for landscaping and the use of petroleum-related compounds and other chemicals for general maintenance of facilities and equipment. Phase I Environmental Site Assessments (ESAs) are used to assess whether potentially hazardous materials are located on a property. Standards for Phase I ESAs have been developed by the American Society for Testing and Materials (ASTM) and are used routinely to determine the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products, onto the surface or into the ground, groundwater or surface water of the property. If a Phase I ESA finds that hazardous materials found on the property may have been released, then certain recommendations (e.g., further monitoring or clean-up or Phase 2 ESA) is usually recommended. A Phase 2 ESA typically includes collection and analysis of soil and water samples. Based on the results, the Phase 2 ESA may recommend additional testing, remediation, or other controls to address contamination.

Three Phase 1 ESAs were completed for the project site since 1994. The Phase 1 ESAs identified historical uses on the project site that could have resulted in releases of hazardous materials in the soil or groundwater. These include a Regal gas station, once located on the southwest portion of the project site at least from the early 1950s to sometime in the 1960s, and a former underground storage tank (UST) once located in the northeast corner of the project site. In addition, records indicate the storage and use of inks and solvents in the project site from previous newspaper operations. The Phase 1 ESAs also identified releases of petroleum compounds (oils, fuel, and residues) and volatile organic compounds (mostly solvents) in the vicinity which could impact the soil and groundwater underlying the project site. The most notable site indicated in the Phase 1 ESAs is the Union Pacific Railroad Company (UPRR) rail yard located approximately 0.3 miles north-northeast of the project site in the vicinity of 4th and I streets.

The Phase 1 ESAs concluded that potential environmental impacts to the project site could include groundwater and soil contamination from the former Regal service station and the off-site UPRR site. As a result, limited soil and groundwater samples were taken and analyzed in December 2002 to address these potential environmental impacts. The analysis indicated that there were petroleum hydrocarbons from motor oil and diesel found in soil and groundwater samples. The levels of contaminants in the soil and groundwater prompted the Central Valley Regional Water Quality Control Board (CVRWQCB) to order a quarterly groundwater monitoring program. Four semi-permanent wells were installed; one located in the southwestern corner; two located in the northern portion of the project site along L Street; and the third on the eastern portion of the site along 4th Street.

Soil samples were taken from varying depths during the drilling and installation of the wells. Samples from two of the wells indicated petroleum compounds above laboratory detection limits but within limits acceptable by SCEMD for soils. Analyses for metals in soil samples at one well location indicated that levels of lead and zinc are above the residential preliminary remediation goals (PRGs), but below the industrial PRGs.

Groundwater samples collected from all four wells from the three sampling rounds indicate levels of some petroleum compounds in the groundwater that are within acceptable regulatory concentrations. Most compounds were non-detectable with the laboratory techniques required by specific regulatory testing standards. The four groundwater wells were destroyed in place according to SCEMD standards for monitoring well destruction. A letter from the SCEMD dated February 2, 2005 indicates that the County and the CVRWQCB stated that no further action is required for the groundwater under the project site. Therefore, there is regulatory closure of the groundwater issues from former land uses in the project site. In relation to the soils on the project site, the final Phase 1 ESA and an environmental document review recommended that further testing of the underlying soils in the project site be conducted prior to excavation to further characterize the extent of contamination, if any, from petroleum, lead, and zinc. If there is contamination, the Phase 1 ESA recommended removal of contaminated soils to the appropriate solid waste disposal facility. Residual contamination in the soil could be present and could require active remediation to allow unrestricted land use.

Dewatering during construction activities could result in the movement of the nearby groundwater contamination plume from the UPRR rail yard northwest of the project site. If groundwater was actively pumped from site for construction and operation, the plume could move towards the project site. Special dewatering recommendations may be required for excavations that extend below the foundation subgrade level during periods when groundwater is high. Active dewatering would require the installation of a series groundwater wells and pumps surrounding the project site. This active system would require a high amount of pumping to reduce the groundwater level in the project site. Further, active pumping for dewatering would lower groundwater levels in areas adjacent to the project site, and could affect the movement of the underlying UPRR contamination plume.

Use of a passive dewatering system would be less intensive and would not require the pumping of groundwater in quantities that could affect the current extent of the plume. Passive dewatering techniques would be sensitive to changes in groundwater level and the depth of the excavation, especially if excavations extend below the foundation subgrade level, such as for elevator pits. The advantage of a passive dewatering system is that the flow rate of water entering the excavation would be controlled by the Sacramento and American River levels and the permeability of the silty, sandy, and gravelly soil adjacent to and beneath the proposed excavation. During periods of low river levels, little or no dewatering would be required. As the rivers rise, the flow rate of water entering the excavation would be relatively slow due to the low permeability of the soil in and around the project site. Consequently, the rate in which water would need to be collected and removed from the proposed excavation would be less than a comparable active dewatering system that is designed to locally suppress the groundwater table.

Implementation of the following mitigation measure would reduce impacts to ***less-than-significant levels*** by ensuring that any unidentified contaminated soils are contained and disposed of properly and that dewatering activities do not move the plume of groundwater contamination towards the project.

<u>Mitigation Measure H-1</u>

- *The proposed project shall prepare and conduct a program of random soil sampling and analyses to characterize the extent, if any, of soil contaminants listed in the Phase 1 reports. The program and analyses shall be prepared by a State licensed and qualified engineer. Further, a report of the program results shall be made by a State licensed and qualified engineer and submitted to the Sacramento County Emergency Management Department (SCEMD) and Department of Toxic Substances Control (DTSC).*

- *If the findings of the soil analyses indicate levels of contaminants above those acceptable by the SCEMD or DTSC, then a remediation program shall be prepared by a State licensed and qualified engineer to excavate and remove the contaminated soils to the appropriate solid waste disposal facility.*

- *Construction and operation of the proposed project shall implement a dewatering regime detailed in a subdrain plan. The subdrain plan shall use a passive dewatering system including, but not limited to, a series of subdrains, sumps, and pumps, to prevent any influence on the movement or extent of the existing UPRR rail yards groundwater plume. The passive dewatering system and subdrain plan shall be written, managed, and updated by a qualified State licensed engineer.*

c. The project site is not located within one-quarter mile of an existing or proposed school site. Therefore, there would be ***no impact*** due to exposure of a school to hazardous materials, substances, or waste. This issue will not be addressed in the EIR.

d. The project site is not listed on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, impacts to the public or the environmental would be ***less than significant***. This issue will not be addressed in the EIR.

e,f. The project site is not within an airport land use plan or within two miles of a public airport or private airport, so the project would not result in a safety hazard for people residing or working in the project area. The proposed project includes a helistop on each tower, in compliance Sacramento City Code 15.100.040, which requires an emergency helistop for every highrise building in which there are habitable floors above one hundred fifty (150) feet in height. The project helistop would be used for emergency or evacuation purposes and available for private use. Sacramento City Code 15.100.040 states that helistops for other than emergency use shall be provided with a fuel containment system capable of holding two hundred (200) gallons and be designed so that no fuel shall enter the building drain system. These features would be incorporated into the building design. The helistops would be designed as required by the Department of Transportation, Federal Aviation Administration, Helicopter Design Advisory Circular 150/5390-2, and Title 21, Division of Aeronautics and designed to support a minimum ten thousand (10,000) pounds. The project would also be required to obtain a Heliport Site Approval Permit from Caltrans Division of Aeronautics, which would include a review of flight approach and departure paths. Compliance with the requirements of the permit and design standards from the above agencies would ensure that the helistops would not pose a substantial risk to people in the area. Therefore, this would be considered a ***less-than-significant impact*** and this issue will not be addressed in the EIR.

g. As stated in Item 7e, there would be no modifications to the street system such that streets would be permanently blocked. The proposed project includes alteration of 3rd Street from one-way to two-way. This change would be designed in coordination with the City Development Engineering and Finance Division to ensure this road segment would be consistent with City safety standards. Therefore, the proposed project would not physically interfere with adopted emergency response or emergency evacuation plans. This would be considered ***less than significant*** and will not be further addressed in the EIR.

h. The project site is within an urbanized area, so the proposed project would not expose people or structures to a risk involving wildland fires. There would be ***no impact*** and this issue will not be addressed in the EIR.

	Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
8.	**HYDROLOGY AND WATER QUALITY** *Would the project:*				
a.	Violate any water quality standards or waste discharge requirements?	☐	☐	■	☐
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	■	☐
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	■	☐
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	■	☐
e.	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	■	☐	☐	☐
f.	Otherwise substantially degrade water quality?	☐	☐	■	☐
g.	Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	■	☐
h.	Place within a 100-year floodplain structures which would impede or redirect flood flows?	☐	☐	■	☐

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	■	☐
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	■	☐

Discussion

a,f. The project site is in an urban setting and is mostly covered in impervious surfaces (i.e., an existing office building and parking lots) with approximately one-quarter of the site covered by landscape areas. The project site is completely surrounded by other urban development and impervious surfaces. Because the amount of impervious surface would not substantially increase, the current absorption rates or drainage patterns, and the rate and amount of surface runoff would not change substantially. However, construction activities would expose soils that could result in rainfall-generated runoff into the City's storm system. Urban contaminants such as oil, grease, heavy metals, and pesticides and herbicides from proposed development could be present in runoff as well. Sediments and other contaminants could ultimately be discharged to the Sacramento River through the storm drain system, or migrate to groundwater via infiltration, which could violate water quality standards or waste discharge requirements.

The proposed project would be required to apply for a National Pollution Discharge Elimination System (NPDES) General Construction Permit to prevent potential discharges of runoff from construction activities into the City's storm system. The NPDES General Construction Permit would require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) to be kept on the project site during construction activities. The SWPPP must include Best Management Practices (BMPs), such as drop inlet protection devices, vegetation erosion control measures (i.e., mulching, grassy swales, or seeding/plantings), physical stabilization (i.e., dust control, outlet protection, etc.), and sediment control measures (i.e., silt fences, straw bale barriers, sandbag barriers, etc.), or equally effective BMPs, which would protect receiving waters from potential discharges of contaminants and soil during project construction. Other BMPs that could be implemented as part of the SWPPP include, but would not be limited to:

- reduction of the area and length of time that the site is cleared and graded;
- revegetation/stabilization of cleared areas as soon as possible; and
- implementation of comprehensive erosion, dust, and sediment controls.

Compliance with measures identified in the SWPPP would reduce contaminants reaching waterways. Therefore, the proposed project would not violate any water quality standards or otherwise degrade water quality and impacts from construction of the proposed project would be ***less than significant***. This issue will not be addressed in the EIR.

b. The depth to groundwater on the project site ranges from 7 to 20 feet. Excavation would be required in order to accommodate below grade parking. In the event that excavation on the project site reached the groundwater table, dewatering would be required. Because the City is an urbanized area and largely covered in impervious surfaces, groundwater recharge to the local aquifers is through open space land uses surrounding the City and from the

American and Sacramento Rivers. Because the groundwater aquifer that would be affected does not supply water to the city for its domestic water needs, it is not anticipated that the loss of this water would constitute a significant impact.

In addition to excavation, building piles would be constructed to support the structures; however, the building piles are not anticipated to interfere with the movement of groundwater either horizontally or vertically. In this instance, groundwater would be displaced rather than removed. As discussed in Item 7b, some dewatering may be necessary, but it would be temporary, so ground-water supplies would not be substantially depleted.

The proposed project would be served water through the City's water supply system, which relies entirely on Sacramento and American River water. The proposed project would not use groundwater resources during project operation. Therefore, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. This would be ***less than significant*** and will not be addressed in the EIR.

c,d. The proposed project is located in an urban setting with pre-existing drainage utilities that serve the area. As previously stated, the project site is largely covered with impervious surfaces, so development of proposed project would not substantially alter the existing drainage pattern of the site or area. The project site is in an urban area that would not be subject to substantial erosion or siltation. As discussed in Item 7a,f, the proposed project would be required to apply for a NPDES General Construction Permit and prepare a SWPPP with BMPs to protect receiving waters from potential discharges of contaminants and soil during project construction. Therefore, the proposed project would not result in a significant increase in rate or volume of runoff or in erosion or siltation, and impacts would be ***less than significant***. This issue will not be addressed in the EIR.

e. Stormwater runoff from the project site would enter Sump 52, which flows to the Sacramento River. Wastewater from the proposed project would flow to the City's combined stormwater runoff and sanitary sewer system (CSS). During heavy storms, flows to the CSS can exceed its capacity, causing the system to overflow onto streets (outflows) or allow untreated combined wastewater to be discharged to the Sacramento River (combined sewer overflows, or CSOs). Local flooding can occur during moderate and large storms when the CSS is full and stormwater runoff cannot enter the collection system. Much of the flooding is due to undersized laterals and collectors, and is widespread in the CSS service area. The City has identified and implemented several projects to rehabilitate and improve the CSS system to remedy these problems, but has not completed the improvements to date. Because the proposed project could increase flows to the CSS by generating a significantly higher stream of wastewater than is currently produced by on-site uses, it could exceed the CSS capacity and exacerbate backflow and flooding conditions in the City. Thus, the proposed project would result in a ***significant impact*** that will be addressed in the Public Services and Utilities section of the EIR.

g,h,i. The project site is located in the 100-year flood plain as mapped by the Federal Emergency Management Agency. By allowing for construction of residential and non-residential uses in this flood zone, the proposed project could bring people into an area at risk of flooding from the 100-year flood. However, the current status of this floodplain is to be revised early in 2005 by FEMA such that areas adjacent to and within the project site would be outside of the 100-year floodplain. This is a direct result of recent levee stabilization along the American River, undertaken by the Sacramento Area Flood Control Agency and the US Army Corps of Engineers. Since the proposed project would not be completed until 2006, well after the change of the floodplain zone, impacts would be ***less than significant***. This issue will not be addressed in the EIR.

j. Due to the flat topography in the City, the possibility of a mudslide is nonexistent. Although there is potential for inundation from a major seiche from water bodies well upstream of the City (i.e., Folsom and Nimbus Dams) and from the Sacramento River, the probability of seiche is very low. Further, the project site is not located in an area subject to tsunami waves. Therefore, exposure of people or structures to a significant risk involving flooding as a result of inundation by seiche, tsunami, or mudflow would be ***less-than-significant.*** This issue will not be addressed in the EIR.

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
9.	**LAND USE AND PLANNING** *Would the project:*				
	a. Physically divide an established community?	☐	☐	☐	■
	b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating on environmental effect?	☐	☐	■	☐
	c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	■

Discussion

a. The project site currently developed, but unoccupied. The site is within the City of Sacramento's CBD, with I-5 to the west and business uses on the north, east, and west. The development of the project site would occur within the existing block and would not remove access to the project site or the surrounding area. Therefore, there would be ***no impact***.

b. The proposed project would require Special Permits to allow residential uses in the CBD and to permit building heights in excess of standards for General Commercial District (C-3-SPD) and a design review to allow a reduction of the setbacks and stepbacks required in the Sacramento Urban Design Plan – Capitol Mall Massing Guidelines. Because variation from existing zoning is allowed, following City review and approval, this would be considered a ***less-than-significant impact***. However, consistent with City of Sacramento practice, the EIR will include a discussion of City land use plans in the Land Use and Planning section.

c. The project site is located within an urban area in the City's downtown. There are no habitat or natural community conservation plans applicable to the project site. There would be ***no impact***. This issue will not be addressed in the EIR.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
10. MINERAL RESOURCES. *Would the project:*				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	■
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	■

Discussion

a,b. There are no known mineral resources on the project site. In addition, the project location, within the City's CBD, would likely preclude any resource recovery operations, if mineral resources were present. Therefore, project implementation would not result in the loss of availability of a known mineral resource or otherwise affect mineral resources and there would be ***no impact***. This issue will not be addressed in the EIR.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
11. NOISE. *Would the project result in:*				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	■	☐	☐	☐
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	■	☐	☐	☐
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	■	☐	☐	☐
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	■	☐	☐	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	■	☐	☐	☐
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	■	☐	☐	☐

Discussion

a-d. The proposed project would include the construction and operation of a residential and hotel development. Construction activities could result in substantial amounts of noise and vibration. Residents and visitors to the project would increase the amount of vehicle trips to and from the site, which would increase noise in the project vicinity. The increases in noise would result in a ***potentially significant impact*** and will be addressed in the EIR.

e,f. The project site is not within an airport land use plan or within two miles of a public or private airstrip. However, the proposed project would include a helistop for emergency purposes.

Noise associated with the helistop could result in increased noise levels that could affect noise levels in the vicinity. This would be considered a ***potentially significant impact*** and will be addressed in the EIR.

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
12.	**POPULATION AND HOUSING.** *Would the project:*				
	a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	■	□	□	□
	b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	□	□	□	■
	c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	□	□	□	■

Discussion

a. The proposed project includes the construction of up to 800 condominium units, which would directly result in an increased population of approximately 2,056, assuming 2.57 persons per household[16]. The population generated by the proposed project could result in physical environmental effects. This is considered a ***potentially significant impact***. Where the increased population resulting from the proposed project has the potential to result in physical effects on the environment, those effects will be addressed in the appropriate technical sections of the EIR. In addition, the potential growth inducing effects of the project will be addressed in the CEQA Considerations chapter of the EIR.

b,c. The project site currently contains a vacant office building. Development of the proposed project would not displace any housing or people such that new housing would be required to be constructed elsewhere. There would be ***no impact***. This issue will not be addressed in the EIR.

16 Based on 2000 US Census, U.S. Census Bureau, American Fact Finder, Sacramento City, California, http://factfinder.census.gov, Accessed January 10, 2005.

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
13.	**PUBLIC SERVICES.** *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*				
	a. Fire protection?	☐	☐	■	☐
	b. Police protection?	☐	☐	■	☐
	c. Schools?	☐	☐	■	☐
	d. Parks?	☐	☐	■	☐
	e. Other public facilities?	☐	☐	■	☐

Discussion

a. All new buildings that have floors used for human occupancy located more than 75 feet above the lowest level of fire department access are required to comply with the City's high-rise regulations (Chapter 15.100), which are enforced by the fire department and the building inspections division. Prior to issuance of certificate of compliance, elements of the life safety system must be installed in accordance with approved plans and specifications and must be tested, certified, and proved to be in proper working condition to the satisfaction of the building inspections division and fire department. The following systems are required (Chapter 15.100.40):

- Standby and emergency electrical power systems;
- Fire alarm and related equipment;
- Firefighters phone and voice communication systems;
- Enclosed stairway pressurization system;
- Smoke evacuation and control systems (mechanical equipment);
- Other fire protection and extinguishing systems;
- Fire department breathing air system;
- Fire hydrant system;
- Automatic fire sprinkler system;
- Fire apparatus access roadways;
- Elevators and controls;
- All equipment and their rooms;

- All applicable requirements in Titles 19 and 24, California Code of Regulations and the Uniform Building Code, Uniform Fire Code, and N.F.P.A. codes and standards shall also apply;
- All systems required by this title, including building, mechanical and electrical equipment;
- Complete exit systems.

The proposed project would include all features required by the code, such as fire department equipment storage rooms, fire suppression systems, automatic sprinklers, smoke detection systems, and fire separation doors, to ensure occupant safety in the case of a fire. The towers would each have dedicated stairways from the top of the building to the bottom floor for fire personnel access, as well as a helistop on each tower that could be used in emergencies for evacuations and fire department access.

While the proposed project would increase the demand for fire protection services, because the proposed project would include fire protection features required in the City's ordinance, the proposed project would not create an inordinate demand for protection services such that new or altered facilities would be required. In addition, the proposed project would be required to pay all applicable City fees toward the provision of fire protection services to meet demands created by the project. Therefore, this would be considered ***less than significant***. This issue will not be addressed in the EIR.

b. The project site would be served by the City of Sacramento Police Department (SPD). The addition of 800 residential units would increase the demand for police services in the Central City area. The proposed project could require changes to patrols in the area, but it would not require the construction of a new station or expansion of an existing station. The Sacramento General Plan does not contain standard ratios of officers per capita. However, the proposed project would be required to pay all applicable development fees toward the provision of police services to meet demands created by the project. Therefore, the impact on police services would be ***less than significant.*** This issue will not be addressed in the EIR.

c. The developer would be required to contribute towards school facilities funding. Funding for new school construction is provided through State and local revenue sources. However, due to the passage of Proposition 1A in November 1998, Senate Bill (SB) 50 (Chapter 407, Statutes of 1998) was enacted to change the way school districts can levy developer fees. SB 50 has resulted in full State preemption of school mitigation. SB 50 enables the district to collect a fee that is equal to the current statutory Level I fees. Where justified, SB 50 allows the district to collect additional fees in an amount that would approximate 50 percent of the cost of additional facilities. The collection of the 50 percent mitigation fees is with the assumption that the State School Facility funding program remains intact and that State funds are still available for partial funding of new school facilities. If the funds are not available, Districts may collect up to 100 percent mitigation fees under certain circumstances. Satisfaction of the statutory requirements by a developer (payment of fees) is deemed to be full and complete mitigation. Therefore, the proposed project would pay all applicable fees, ensuring the impact would be ***less than significant.*** This issue will not be addressed in the EIR.

d. Please see Item 14 a,b.

e. The proposed project would include lighting and other energy conservation measures and will construct all structures with up-to-date energy-saving equipment. Lighting conservation efforts in new construction include installation of occupancy sensors to automatically turn off lights when not in use, lighting reflectors, electronic ballasts, and energy-efficient lamps. Conservation efforts are also expected to involve improved HVAC systems with microprocessor-controlled energy management systems. In addition, all development would be required to comply with specifications contained in Table 24 of the CCR.

With respect to operational activities, compliance with all applicable building codes, planning policies, and standard conservation features, would ensure that all natural resources are conserved to the maximum extent possible. It is also possible that new technologies or systems will emerge, or will become more cost-effective or user-friendly, to further reduce the reliance upon nonrenewable natural resources. Nonetheless, construction activities related to the proposed project would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil), natural gas, and gasoline for automobiles and construction equipment.

The proposed project is a high-density mixed-use project in an urban area, in close proximity to transit, activity centers, and other existing and planned infrastructure. This type of project in such an environment would result in energy savings (vehicle fuel) due to reductions in vehicle miles traveled. While the energy savings due to reduced trips cannot be easily quantified, there would be a reduction compared to an equally intense development in a less dense urban area.

Electricity for the proposed project would be provided by the Sacramento Municipal Utility District (SMUD). SMUD has indicated that there will be minimal impact to the electrical system due to the proposed project and no new energy generation would be required.[17] SMUD further indicated that there is substation capacity to serve the project, so the project would not result in the need for accelerated system improvements, although there may be some minor line work required to efficiently serve the project, the location of which is not known at this time.

The natural gas provider for the proposed project site, Pacific Gas and Electric Company (PG&E), has indicated that existing facilities in the area could adequately serve the proposed project and no new natural gas supplies would need to be obtained.[18] However, while existing natural gas facilities may be adequate to serve the proposed project, it is possible that the project could demand service levels that exceed PG&E's standard pressure (¼ pounds per square inch). In that case, PG&E would perform the necessary upgrade of gas facilities at the project proponent's expense, which could include an upsizing of existing pipelines in 4th Street, that would extend a maximum of two blocks to the south. If required, the line upgrade could result in short-term traffic impacts and air quality impacts associated with equipment (backhoe). However, due to the limited extent of the potential improvements, these impacts would not be substantial.

Although resources would be permanently and continually consumed by project implementation, the amount and rate of consumption of these resources would not result in the unnecessary, inefficient, or wasteful use of these resources. Therefore, this would be considered a ***less-than-significant impact***.

17 David Fuke, Network Planner, SMUD, written communication, March 31, 2005.
18 B. Hall Hackney, Planning Engineer, PG&E, personal communication, March 31, 2005.

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
14.	**RECREATION.**				
	a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	■	☐
	b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	■	☐

Discussion

a,b. The project site is located within the City's Central City Planning Area, which contains 20 parks with a total of over 83 developed acres[19] and approximately 185 parks city-wide.[20] The proposed project also includes recreation facilities, such as a pool, gymnasium, and basketball court, for use by tenants and hotel guests. In addition, the project proponent would be required to pay in-lieu fees, in accordance with the provisions of the Quimby Act, requiring residential developers to dedicate land or in-lieu funds toward park development. While residents and guests of the project would likely use some of the park facilities in the vicinity of the project site and other city-wide facilities, the population generated by the proposed project would not increase the use of the parks such that there would be substantial physical deterioration of the facility or that additional or expanded recreation facilities would be required. Therefore, this would be considered a ***less-than-significant impact*** and this issue will not be addressed in the EIR.

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19 City of Sacramento website, Central City Parks table, http://www.cityofsacramento.org/parksandrecreation/parks/central.htm, accessed March 1, 2005.

20 City of Sacramento website, Alpha List of park Sites, http://www.cityofsacramento.org/parksandrecreation/parks/alphalist.htm, accessed March 1, 2005.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
15. TRANSPORTATION/TRAFFIC *Would the project:*				
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	■	□	□	□
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	■	□	□	□
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	□	□	■	□
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	■	□	□	□
e. Result in inadequate emergency access?	■	□	□	□
f. Result in inadequate parking capacity?	■	□	□	□
g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	□	□	■	□

Discussion

a,b,d,e. The proposed project includes up to 800 dwelling units, 275 hotel rooms, and retail uses, all of which would generate traffic beyond that generated at the site. The additional traffic could exceed the capacity of the existing roadway system and result in congestion on local streets. The proposed project also includes a conversion of 3rd Street from one-way to two-way. This would be considered a ***potentially significant impact***. Changes in traffic volumes in the context of the local streets, potential hazards associated with design features, and emergency access will be addressed in the EIR.

c. The proposed project would not increase air traffic in the area or result in a change in location of air traffic that would result in potential safety risks. The proposed project would include helistops on each of the towers; however, the helistops would be required to be permitted by the FAA to ensure that the project would not result in air traffic conflicts or safety issues. This would be considered a ***less-than-significant impact*** and will not be addressed in the EIR.

f. The proposed project includes 1,100 parking spaces for 800 condominium units, 275 hotel rooms, and the restaurant and retail uses for the project. This could result in a ***potentially significant impact*** on parking in the downtown area. This issue will be addressed in the EIR.

g. The proposed project would not alter any transit facilities or in any way hinder alternate transportation methods. The project would add population near retail and employment uses and transit facilities which would encourage the use of these facilities and decrease congestion. Therefore, this would be considered a ***less-than-significant impact*** and will not be addressed in the EIR.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
16. UTILITIES AND SERVICE SYSTEMS. *Would the project:*				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	■	☐	☐	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	■	☐	☐	☐
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	■	☐	☐	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	■	☐	☐	☐
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	■	☐	☐	☐
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	■	☐	☐	☐
g. Comply with federal, state, and local statutes, and regulations related to solid waste?	■	☐	☐	☐

Discussion

a,c,e. The project site contains an existing building with some areas off landscaping. The proposed project would develop the entire block, converting the site to entirely impervious surfaces. This would increase the amount of storm water entering the storm drain system, the capacity of which is periodically exceeded. Wastewater generated by the proposed project would enter the City's CSS, which is also at capacity in the area. Any additional flows to these systems could result in overflows, which would be considered a ***potentially significant impact*** and will be discussed in the EIR.

b,d. See item a,c,e for the discussion of wastewater facilities. The proposed project would create a demand for water that could exceed available supplies or exceed capacity of the existing infrastructure. This would be considered a ***potentially significant impact*** and will be discussed in the EIR.

f,g. The proposed project would generate solid waste that could exceed the capacity of a landfill. This would be considered a ***potentially significant impact*** and will be discussed in the EIR.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
17. MANDATORY FINDINGS OF SIGNIFICANCE.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	■	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	■	☐	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	■	☐	☐	☐

Discussion

a. As indicated in the biological discussion, there are no anticipated potential impacts resulting in degradation of the quality of the environment.

b. It is anticipated that there may be cumulatively considerable impacts associated with the proposed project, which will be discussed in the EIR.

c. Potential adverse environmental effects have been identified in this environmental checklist relating to Aesthetics, Air Quality, Cultural Resources, Land Use and Planning, Noise, Public Services, Transportation, and Utilities.

Appendix B

Notice of Preparation (NOP) and NOP Responses

NOP
December 29, 2004

DEVELOPMENT SERVICES DEPARTMENT

CITY OF SACRAMENTO
CALIFORNIA

1231 I STREET
ROOM 300
SACRAMENTO, CA
95814-2998

ENVIRONMENTAL
PLANNING SERVICES
916-808-7856
FAX 916-264-7185

DATE: December 29, 2004

TO: Interested Persons

FROM: James Regan-Vienop
Environmental Planning Services

SUBJECT: **NOTICE OF PREPARATION FOR AN ENVIRONMENTAL IMPACT REPORT (EIR) FOR *THE TOWERS ON CAPITOL MALL* PROJECT (P04-221)**

PUBLIC REVIEW PERIOD: January 3, 2005 through February 2, 2005

Introduction

The City of Sacramento, Development Services Department, will be the *Lead Agency* for the preparation of an Environmental Impact Report (EIR) for The Towers on Capitol Mall project (proposed project). The California Environmental Quality Act (CEQA), Section 15082, states that once a decision is made to prepare an EIR, the lead agency must prepare a Notice of Preparation (NOP) to inform all responsible agencies of that decision. The purpose of the NOP is to provide responsible agencies and interested persons with sufficient information describing the proposed project and its potential environmental effects to enable them to make a meaningful response as to the scope and content of the information to be included in the EIR.

The NOP is being released to request comments on the scope of the EIR for the proposed project. The responses to this NOP will help the City of Sacramento determine the scope of the EIR and ensure an appropriate level of environmental review.

The EIR will evaluate the potential environmental impacts of the proposed project and recommend mitigation measures, as required. The EIR will provide a project-specific evaluation of the environmental effects of the Towers on Capitol Mall project, pursuant to Section 15161 of the State CEQA Guidelines.

Project Location

The Towers on Capitol Mall project is located in the Central Business District of downtown Sacramento (see figure 1). The 2.42-acre project site is at 301 Capitol Mall (occupying the block between 3rd and 4th, Capitol Mall and L streets, see figure 2). The project site is within a Special Planning District and is zoned for general commercial use (C-3-SPD). There is an existing four-story office building on the site that would be demolished to accommodate the proposed project.

Commercial and office uses surround the site to the north, south, and east. An undeveloped lot is west of the project site.

Project Description

The proposed project is a 1,800,000-square foot, mixed-use, residential project. The proposed project includes two high-rise towers on a ten-story podium with a total height of up to 615 feet (see figure 3). The podium would contain 85,000 square feet of retail use, 40,000 square feet of gym use, 10,000 feet of spa use, a roof top swimming pool, 830 above-grade parking spaces, and 270 below-grade parking spaces.

Tower One would be 52 stories (including the podium floors) with a full-service, 276-key hotel on floors 11 through 22 (which includes ballrooms, meeting rooms, restaurant, lounge, and kitchen), and 300 condominium units on floors 23 through 51 (with penthouse units on the 52nd floor), and, potentially, a heliport. Tower Two would also be 52 stories high and would house 400 condominiums on floors 10 through 51 (with penthouse units on the 52nd floor).

A three-lane porte-cochere would provide access along 3rd Street, with a major gateway entry at the southeast corner of the site (the corner of 3rd and Capitol Streets). Access to the parking garages (above and below grade) and loading dock would be from L Street. Pedestrian and visitor access to Tower Two would be on 4th Street.

The proposed project could require the following actions:

- Special Permit: To allow residential use in the Central Business District (CBD).
- Special Permit: To permit building heights in excess of standards for General Commercial District (C-3-SPD).
- Design Review: Reduction in setback guidelines to allow room for required parking and building tower view adjacency offsets. The Tower Two setback would be reduced to 120 feet from 140 feet, and portions of the 15-foot setback along 3rd and 4th would be reduced to accommodate dimensional requirements for podium parking levels and Tower Two floor plates.
- Certification of the EIR.

Environmental Effects

The technical sections of the Draft EIR will describe the existing conditions in the proposed project area and surrounding lands. Relevant federal, State and local laws and regulations, including City of Sacramento General Plan policies, will be summarized. The methods and standards of significance used for impacts of the project will be described in each of the technical sections of the EIR, including any assumptions that are important to understand the conclusions of the analysis. The standards for determining impact significance will be based on existing State and federal rules, regulations and laws, City ordinances and policies, and past practices. The standards will be used both to determine whether an impact is significant and the effectiveness of recommended mitigation. Any feasible mitigation measures will be identified for each significant impact. The description of mitigation measure will identify the specific actions to be taken, the timing of the action, and the parties responsible for implementation of the measure.

At this time, it is anticipated that the following issue areas will be addressed in the EIR:

- Aesthetics
- Air Quality

- Cultural Resources
- Geology & Soils
- Hazards & Hazardous Materials
- Hydrology & Water Quality
- Land Use & Planning
- Noise
- Population & Housing
- Public Services
- Recreation
- Transportation & Traffic
- Utilities & Service Systems
- Mandatory Findings of Significance

During the scoping process, it may be determined that the proposed project would have a less-than-significant impact in one or more of the technical issue areas. Those technical discussions will be included in an Initial Study, which will be attached as an appendix to the Draft EIR. At this time, it is anticipated that the following issue areas will be addressed in the Initial Study:

- Agricultural Resources
- Biological Resources
- Mineral Resources

Alternatives

The EIR will examine a range of feasible alternatives to the proposed project. A discussion of alternatives that were considered but rejected without full analysis will also be included. At this time, it is anticipated that the alternatives would include:

- No Project Alternative
- Reduced Intensity Development /Single Tower Alternative
- Reduced Height Alternative
- Off-Site Alternative

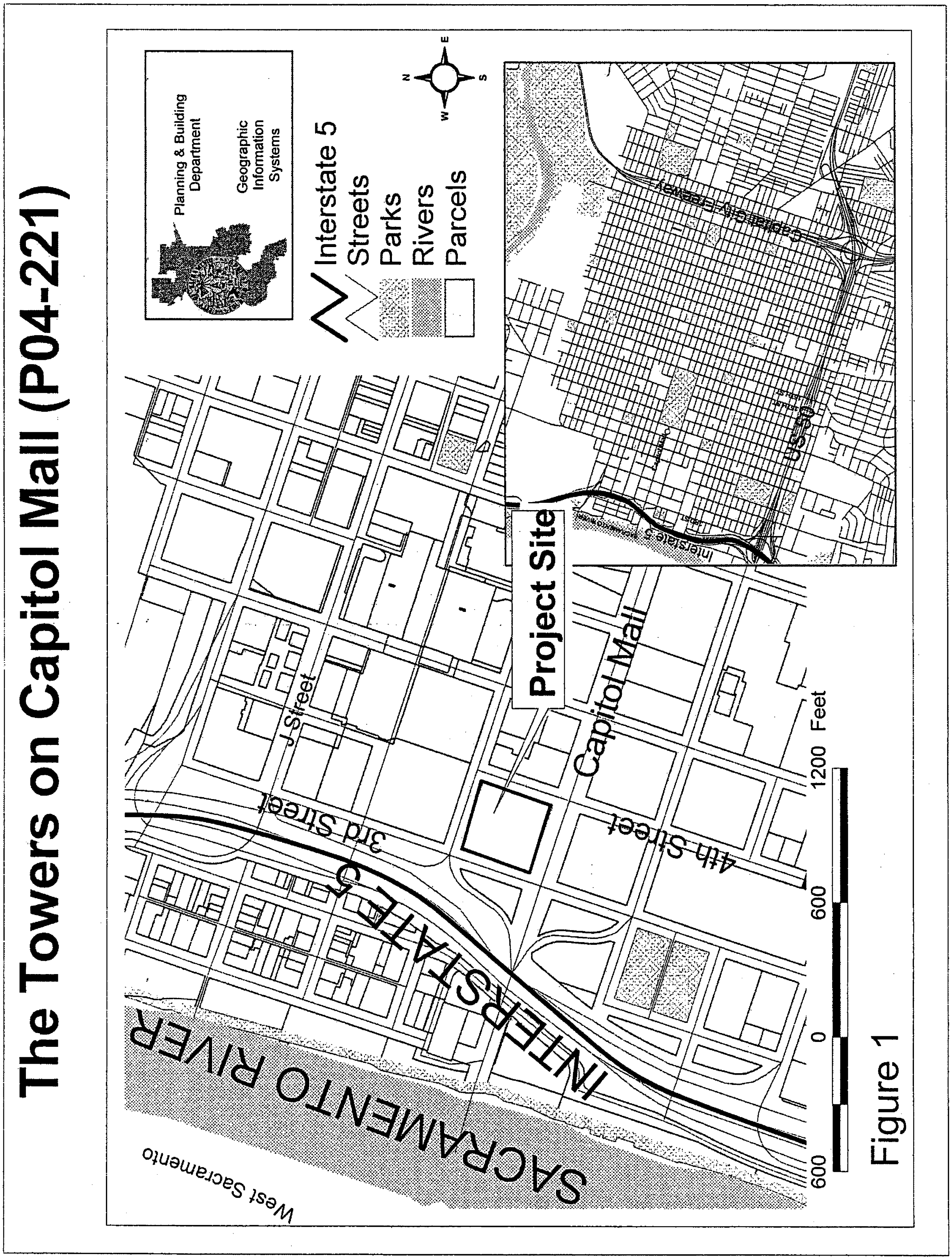
Submitting Comments

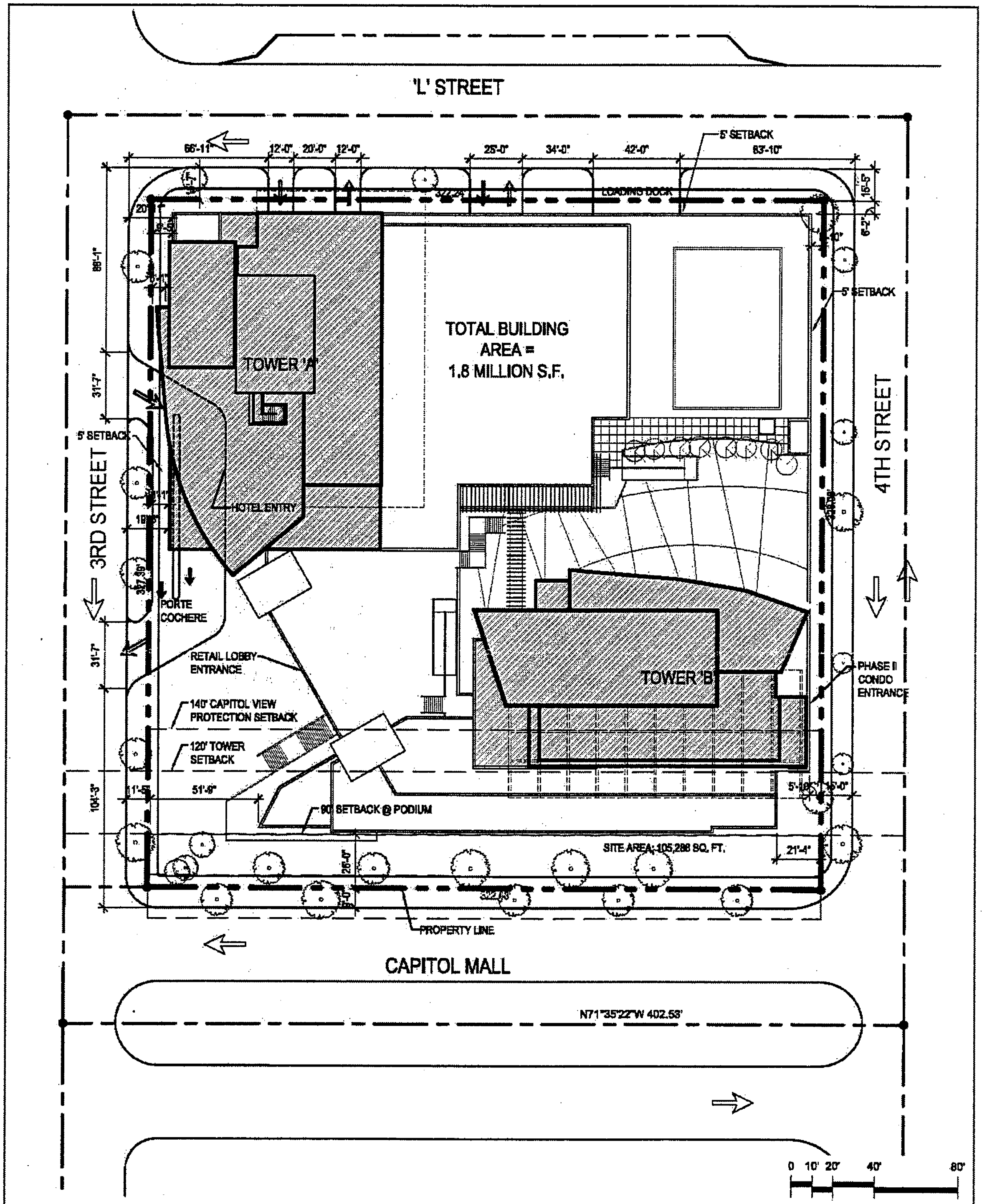
To ensure that the full range of project issues of interest to responsible government agencies and the public are addressed, comments and suggestions are invited from all interested parties. Written comments or questions concerning the EIR for the proposed project should be directed to the following address by **5:00 p.m. on February 2, 2005:**

City of Sacramento, Development Services Department
Attn: James Regan-Vienop
1231 I Street, Room 300
Sacramento, CA 95814
(916) 808-7856
(916) 264-7185 (fax)

All comments must include full name and address in order for staff to respond appropriately.

A public scoping meeting will also be held – See attached Flyer. Responsible agencies and members of the public are invited to attend and provide input on the scope of the EIR.


The Towers on Capitol Mall (P04-221)
Planning & Building Department
Geographic Information Systems
Interstate 5
Streets
Parks
Rivers
Parcels
N
E
S
W
Capitol City Freeway
US 50
Interstate 5
Project Site
Capitol Mall
J Street
3rd Street
4th Street
INTERSTATE 5
SACRAMENTO RIVER
West Sacramento
600
0
600
1200
Feet
Figure 1

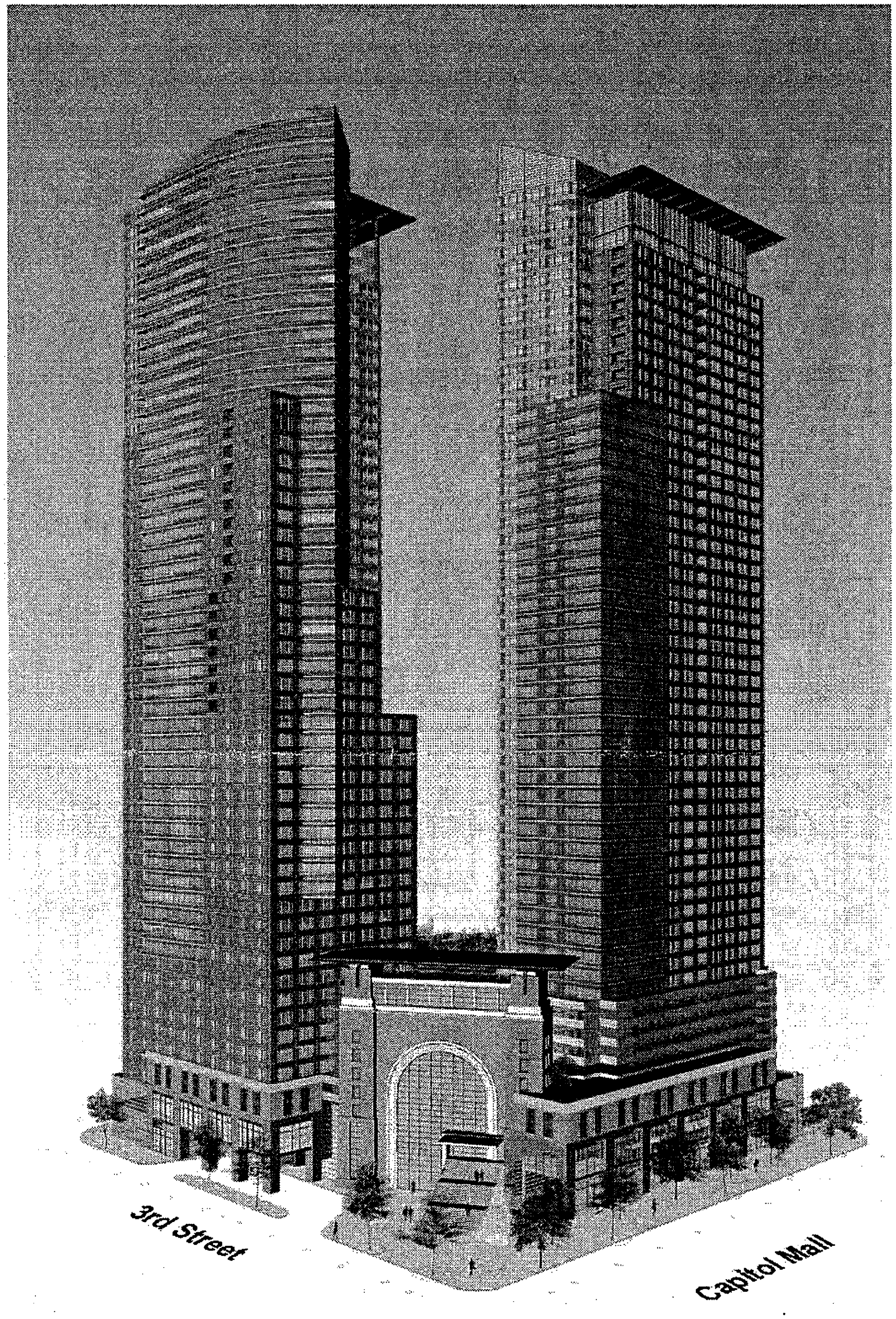


Site Plan Figure 2

10960-00

Source: Mulvanny G2 Architecture Saca Development

EIP ASSOCIATES



Not to Scale

The Towers on Capitol Mall – Perspective View Figure 3

10960-00 *Source:* Mulvanny G2 Architecture Saca Development

EIP ASSOCIATES

Errata to the NOP
February 2, 2005

DEVELOPMENT SERVICES
DEPARTMENT

CITY OF SACRAMENTO
CALIFORNIA

1231 I STREET
ROOM 300
SACRAMENTO, CA
95814-2998

ENVIRONMENTAL PLANNING
SERVICES
916-808-2762
FAX 916-264-7185

February 2, 2005

TO: Interested Persons

FROM: Dana Allen, Environmental Planning Services

SUBJECT: ***ERRATA*** **TO THE NOTICE OF PREPARATION FOR AN ENVIRONMENTAL IMPACT REPORT (EIR) FOR** ***THE TOWERS ON CAPITOL MALL PROEJCT*** **(P04-221)**

PUBLIC REVIEW
PERIOD: January 3, 2005 through February 2, 2005 – extended to February 11, 2005

The City of Sacramento, Development Services Department received additional information related to the proposed project. The additional information was not included in the previously released Notice of Preparation on December 29, 2004. This additional information will be evaluated for potential environmental impacts in conjunction with the project information previously released in the NOP (December 29, 2004).

The proposed project is proposing to change the one-way traffic direction of 3rd Street between L Street and Capitol Mall to two-way. Additionally, the project is proposing to have left turn traffic movements in the eastbound direction of Capitol Mall at the intersection of 3rd and 4th Streets.

Comments on the additional information should be submitted **NO LATER THAN 5:00 P.M., Friday, February 11, 2005.** Written comments should be submitted to:

Dana Allen, Associate Planner
City of Sacramento, Development Services Department
Environmental Planning Services
1231 I Street, Room 300
Sacramento, CA 95814

Or: FAX#: (916) 264-7185

NOP Responses

DEPARTMENT OF TRANSPORTATION
DISTRICT 3 – Sacramento Area Office
VENTURE OAKS, MS 15
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (916) 274-0614
FAX (916) 274-0648
TTY (530) 741-4501

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January 6, 2005

04SAC0176
03-SAC-275 PM 2.250
The Towers on Capitol Mall
Universal Development Application

Ms. Stacia Cosgrove
City of Sacramento
1231 I Street, Room 300
Sacramento, CA 95814

Dear Ms. Cosgrove:

Thank you for the opportunity to review and comment on the Towers on Capitol Mall. Our comments are as follows:

A) Caltrans commends the City for a mixed-use project of this scale in Downtown Sacramento. However, we anticipate that this project will have impacts on the State highway system.

B) A Traffic Impact Study (TIS) should be prepared to assess the project's impacts to State Route 275 and adjacent offramps and ramp intersections for Interstate 5 at J and Q Streets. During the scoping phase of the TIS, we would appreciate the opportunity to work with your staff to ensure that our concerns are addressed prior to the study's approval. The "Guide for the Preparation of Traffic Impact Studies" can be found at: http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf, and can be used as reference.

- The TIS should incorporate the following scenarios:
  - Existing conditions without the project
  - Existing conditions plus the project
  - Cumulative conditions (without the project)
  - Cumulative conditions (with project build-out)

- The traffic analyses should provide a Level of Service (LOS) analysis for the interchange freeway ramps and ramp terminal intersections. A merge/diverge analysis should be performed for freeway and ramp junctions and all analysis should be based on AM and PM peak hour volumes. The analysis should include the (individual, not averaged) LOS and traffic volumes applicable to all intersection road approaches and turn movements. The procedures contained in the Year 2000 Highway Capacity Manual should also be used as a guide for the traffic study.

C) Any work performed within State right of way will require an encroachment permit. For permit assistance, please contact Bruce Capaul at (530) 741-4408.

D) The construction activities associated with this project will likely impact State Route 275 and Interstate 5's mainline and ramps. Therefore, a Traffic Management Plan should be develop during the project development process and implemented during the project's construction phase.

Please provide our office with copies of any further action regarding the Towers on Capitol Mall. With the possible impacts that this project may have on State owned and operated transportation facilities, we would appreciate the opportunity to be involved throughout your project development process. If you have any questions regarding these comments, please contact Marlon Flournoy at (916) 274-0596.

Sincerely,

Katherine Eastham

KATHERINE EASTHAM, Chief
Office of Transportation Planning – Southwest and East

bc: John Holzhauser, Office of Traffic Operations, Sacramento
Mel Laraway, Office of Traffic Operations, Sacramento
Marlon Flournoy, Transportation Planning – Southwest
Jeff Pulverman, Office of Transportation Planning
Ken Champion, Office of Transportation Planning - Southwest

DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS – M.S.#40
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-4959
FAX (916) 653-9531
TTY (916) 651-6827

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January 20, 2005

Mr. James Regan-Vienop
City of Sacramento
1231 I Street, Room 300
Sacramento, CA 95814

Dear Mr. Vienop:

Re: City of Sacramento's Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR), Towers at Capitol Mall Project (P04-221): SCH# 2004122137

The California Department of Transportation (Caltrans), Division of Aeronautics, reviewed the above-referenced document with respect to airport-related noise and safety impacts and regional aviation land use planning issues pursuant to the California Environmental Quality Act (CEQA). The Division of Aeronautics has technical expertise in the areas of airport operations safety and airport land use compatibility. We are a funding agency for airport projects and we have permit authority for public and special use airports and heliports. We offer the following comments for your consideration.

1. The proposal is for two 52-story 615-feet tall high-rise towers on Capitol Mall between 3rd and 4th Streets in downtown Sacramento. Tower One will have a 276-key hotel on floors 11-22 (which includes ballrooms, meeting rooms, restaurant, lounge, and kitchen), and 300 condominium units on floors 23-51 (with penthouse units on the 52nd floor), and "potentially a heliport." Tower Two will have 400 condominiums on floors 10-51 (with a penthouse on the 52nd floor). Both towers will be constructed on a ten-story "podium" that will include 85,000 square feet of retail use, 40,000 square feet of gym se, 10,000 feet of spa use, a roof-top swimming pool, 830 above-grade parking spaces and 270 below-grade parking spaces.

2. The heliport, if constructed, may require a State Heliport Permit from the Division of Aeronautics. Heliports that are required by building code as an Emergency Use Facility (i.e. to be used only for emergency medical or evacuation purposes) are exempt from the State's heliport permit requirements. The California Code of Regulations, Section 3527 defines an Emergency Use Facility to be, "An area for accommodating helicopters in support of emergency public safety operations, but is not used as a heliport for any other purpose."

3. The Public Utility Code, Section 21663, states in part that it is unlawful for any person to operate an airport (or heliport) unless an appropriate airport (or heliport) permit required by rule of the department (Caltrans) has been issued by the department. The Heliport Site Approval Permit-Application is available on-line at http://www.dot.ca.gov/hq/planning/-aeronaut/htmlfile/heliportpermit.php. The heliport owner should also be advised to contact the Division of Aeronautics to obtain additional Heliport Permit related guidance.

4. Prior to issuing the State Heliport Permit, the Division of Aeronautics, as Responsible Agency, must ensure that the proposal is in full compliance with CEQA. The issues of primary concern to us include heliport-related noise and safety impacts on the surrounding community. To ensure that the community will not be adversely impacted by helicopter operations, flight paths should avoid noise-sensitive and people intensive uses. Environmental documentation should include diagrams showing the proposed landing site and the approach/departure flight paths. The diagrams should also depict the proximity of the proposed flight paths to any existing or proposed noise sensitive or people intensive uses. Consideration given to the issue of compatible land uses in the vicinity of a heliport should help to relieve future conflicts between the heliport and its neighbors.

5. Public Utilities Code, Section 21659, "Hazards Near Airports Prohibited" prohibits structural hazards near airports. To ensure compliance with Federal Aviation Regulation, Part 77, "Objects Affecting Navigable Airspace," submission of a Notice of Proposed Construction or Alteration (Form 7460-1) to the Federal Aviation Administration (FAA) **will** be required. For further technical information, please refer to the FAA's web site at http://www.faa.gov/-ats/ata/ATA400/oeaaa.html.

6. Please note the Federal Aviation Administration (FAA) will also require the filing of a Notice of Landing Area Proposal (Form 7480-1). A copy of the form is available on the FAA website at http://www.faa.gov/ARP/ane/forms/7480-1.pdf.

These comments reflect the areas of concern to the Caltrans Division of Aeronautics with respect to airport-related noise and safety impacts and regional airport land use planning issues. We advise you to contact our district office concerning surface transportation issues.

The proposal should also be submitted to the Sacramento County Airport Land Use Commission (ALUC) represented by the Sacramento Area Council of Governments (SACOG) for review.

Thank you for the opportunity to review and comment on this proposal. If you have any questions, please call me at (916) 654-5314.

Sincerely,

Sandy Hesnard

SANDY HESNARD
Aviation Environmental Planner

c: State Clearinghouse, Gregory Chew-SACOG

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 3 – Sacramento Area Office
VENTURE OAKS, MS 15
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (916) 274-0614
FAX (916) 274-0648
TTY (530) 741-4501

RECEIVED
JAN 24 2005
PLANNING DEPARTMENT

Flex your power!
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January 20, 2005

05SAC0003
03-SAC-275 PM 2.250
The Towers on Capitol Mall
Notice of Preparation (NOP)
SCH# 2004122137

Mr. James Regan-Vienop
City of Sacramento
1231 I Street, Room 300
Sacramento, CA 95814

Dear Mr. Regan-Vienop:

Thank you for the opportunity to review and comment on the Towers on Capitol Mall NOP. Our comments are as follows:

A) Our previous comments dated January 6, 2005 are still valid and are enclosed. As the previous letter states, the Towers on Capitol Mall will require a traffic impact study, encroachment permit, and transportation management plan.

B) The "potential heliport" on tower one, if used for commercial purposes, will require a Heliport Site Approval Permit. Section 21663 of the Public Utility Code states in part that it is unlawful for any person to operate an airport (or heliport) unless an appropriate airport (or heliport) permit required by rule of the department has been issued by the department. The permit application can be found at http://www.dot.ca.gov/hq/planning/aeronaut/htmlfile/heliportpermit.php. Otherwise, if used for emergency or evacuation purposes, the heliport is exempt from the State's heliport permit requirements. Section 3527 of the California Code of Regulations defines an emergency use facility as "an area for accommodating helicopters in support of emergency public safety operations, but is not used as a heliport for any other purpose".

Please provide our office with copies of any further action regarding the Towers on Capitol Mall. With the possible impacts that this project may have on State owned and operated transportation facilities, we would appreciate the opportunity to be involved throughout your project development process. If you have any questions regarding these comments, please contact Marlon Flournoy at (916) 274-0596.

Sincerely,

Katherine Eastham

KATHERINE EASTHAM, Chief
Office of Transportation Planning – Southwest and East

cc: State Clearinghouse

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Larry Greene
AIR POLLUTION CONTROL OFFICER

RECEIVED
JAN 10 2005
PLANNING DEPARTMENT

January 5, 2005

Ms Stacia Cosgrove
Associate Planner
Planning and Building Department
City of Sacramento
1231 I Street., Room 300
Sacramento, CA 95814-2998

RE: The Towers on Capitol Mall, P04-221
SAC200400313

Dear Ms. Cosgrove:

Thank you for the opportunity to comment on the Towers on Capitol Mall project. Due to the size of the proposed project, the potential air quality impacts are clearly significant and we look forward to working with the City and the project proponents to reduce the air quality impacts to the maximum extent feasible. We offer the following initial comments for your consideration:

1. SMAQMD recommends that the URBEMIS 2002 model be used for analysis of the operational and construction related ozone precursor (ROG and NOx) emissions from the project.

2. SMAQMD expects that construction related NOx emissions will likely exceed the adopted CEQA threshold of significance. Significant emissions are expected in phase 2 of the URBEMIS construction analysis. Equipment inputs for the phase 2 analysis will be particularly important. If you find the emissions to be significant, we recommend that the SMAQMD standard construction mitigation be included as a mitigation measure in the DEIR. Recommended mitigation language can be found at www.airquality.org.

3. If the operational aspects of the project are found to exceed the adopted CEQA threshold of significance, we recommend that the project applicant prepare an air quality plan designed to reduce operational emissions by a minimum of 15 percent as a feasible mitigation measure. We would be happy to assist the proponent in choosing appropriate measures for the plan. Preparation of the plan as early as possible is essential to provide the maximum flexibility in the potential measures available for implementation.

Thank you for the opportunity to comment on this project. If you have any questions regarding these comments, please contact me at 916.874.4885 or jborkenhagen@airquality.org.

Sincerely,

Jeane Borkenhagen

Jeane Borkenhagen
Mobile Source Division

cc: Ron Maertz

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

RECEIVED
FEB 18 2005
EIP Associates

Larry Greene
AIR POLLUTION CONTROL OFFICER

February 8, 2005

Mr Jim Regan-Vienop
Development Services Department
Environmental Planning Services
City of Sacramento
1231 I Street., Room 300
Sacramento, CA 95814-2998

RE: Notice of Preparaton for and EIR for The Towers on Capitol Mall Project, P04-221
SAC200400313B

Dear Mr Regan-Vienop:

Thank you for the opportunity to comment on this Notice of Preparation for the EIR for the Towers on Capitol Mall project. Due to the size of the proposed project, the potential air quality impacts will be clearly significant and we look forward to working with the City and the project proponents to reduce the air quality impacts to the maximum extent feasible. We offer the following initial comments for your consideration:

1. SMAQMD recommends that the URBEMIS 2002 model be used for analysis of the operational and construction related ozone precursor (ROG and NOx) emissions from the project.

2. SMAQMD expects that construction related NOx emissions will likely exceed the adopted CEQA threshold of significance. Significant emissions are expected in phase 3 of the URBEMIS construction analysis. Equipment inputs for the phase 3analysis will be particularly important as the default values in URBEMIS will probably need to be replaced. If you find the emissions to be significant, we recommend that the SMAQMD standard construction mitigation be included as a mitigation measure in the DEIR. Recommended mitigation language can be found at www.airquality.org.

3. If the operational aspects of the project are found to exceed the adopted CEQA threshold of significance, we recommend that the project applicant prepare an air quality plan designed to reduce operational emissions by a minimum of 15 percent as a feasible mitigation measure. We would be happy to assist the proponent in choosing appropriate measures for the plan. Preparation of the plan as early as

possible is essential to provide the maximum flexibility in the potential measures available for implementation.

Thank you for the opportunity to comment on this project. If you have any questions regarding these comments, please contact me at 916.874.4885 or jborkenhagen@airquality.org.

Sincerely,

Jeane Borkenhagen

Jeane Borkenhagen
Mobile Source Division

cc: Ron Maertz

10545 Armstrong Avenue

Mather, CA 95655

Tele: [916] 876-6000

Fax: [916] 876-6160

Website: www.srcsd.com

January 21, 2005
E225.000

James Regan-Vienop
City of Sacramento Planning Division
1231 I Street, Room 300
Sacramento, CA 95814

Dear Mr. Regan-Vienop:

Subject: **Notice of Preparation of an Environmental Impact Report (EIR) for the Towers on Capitol Mall Project Control No. P04-221**

County Sanitation District 1 (CSD-1) and Sacramento Regional County Sanitation District (SRCSD) have reviewed the Notice of Preparation (NOP) of the Environmental Impact Report (EIR) for the subject project. The project is within the boundary limits of SRCSD and the Urban Services Boundary (USB). The project is outside the boundary of CSD-1. SRCSD facilities do not exist within the project area and the master plan does not propose any projects within the area. Therefore, we do not foresee any impact to the SRCSD facilities.

If you have any questions regarding these comments, please call me at (916) 876-6094.

Sincerely,

Wendy Haggard

Wendy Haggard, P.E.
Department of Water Quality
Development Services

WH: cc

cc: Maria Cablao
Steve Hong (Infrastructure Finance Section) (01-304)

rgan-vienop012105.ltr.doc

William D. Kopper
Attorney at Law
417 E Street
Davis, CA 95616
(530) 758-0757
Fax (530) 758-2844

RECEIVED
JAN 06 2005
PLANNING DEPARTMENT

Paralegals
Kristin Rauh
Jan Scott

January 5, 2005

City of Sacramento
Environmental Planning Services.
1231 I Street, Room 300
Sacramento, CA 95814-2998

Re: Notice of preparation for an Environmental Impact Report
Towers on Capitol Mall Project (PO4-221)

Dear Staff:

Thank you for the letter dated December 29, 2004 regarding preparation of the EIR for the Towers Project. I ask that the Environmental Impact Report include a discussion of the following issues:

1) The aesthetic impact of the Towers Project from the viewpoint of Old Sacramento;
2) A discussion of the traffic impacts of this project on the I-80 extension west of the Tower Bridge, traffic impacts on access to Interstate 5, and traffic impacts on local streets;
3) Energy consumption impacts of this project, and a discussion of all feasible energy conservation technologies for the Towers;
4) A discussion of incorporating solar electric cells on the surface of the building to help offset the enormous use of electricity by a project of this type

Thank you for your consideration of these matters.

Sincerely,

WILLIAM D. KOPPER

WDK:js

William D. Kopper

Attorney at Law
417 E Street
Davis, CA 95616
(530) 758-0757
Fax (530) 758-2844

Paralegals
Kristin Rauh
Jan Scott

February 7, 2005

Dana Allen, Associate Planner
City of Sacramento, Development Serv.
Environmental Planning Services
1231 I Street, Room 300
Sacramento, CA 95814

Re: Towers of Capitol Mall (PO4-221)

Dear Ms. Allen:

With respect to the request for public input to the Environmental Impact Report, I ask that the City consider the impact of this project on energy use, the creation of air pollution, and the use of water. The City should consider requiring the highest level of sustainability, water efficiency, and energy efficiency. These technologies were implemented in the new Bank of America tower in New York City. I have enclosed several articles that should be addressed in the Environmental Impact Report. The technologies include the following:

1) Use of recycled and recyclable building materials;
2) Use of filtered under-floor displacement air ventilation;
3) Use of double wall technology and use of translucent insulating glass in floor to ceiling windows;
4) Provision of a cogeneration plant on site to provide clean, efficient power sources;
5) Use of a gray water system to capture and reuse all rain and waste water;
6) Use of planted roofs to reduce the heat island effect;
7) Use of a thermal storage system to store cold water for daytime cooling to reduce the building's peak demand loads on the City's electrical grid;
8) Use of daylight dimming and LED lights to reduce electric usage in the building.

Thank you for your consideration of these matters.

Sincerely,

Wm D Kopper

WILLIAM D. KOPPER

WDK:js

Appendix C

AIR QUALITY BACKGROUND DATA/WIND STUDY

URBEMIS calculations

URBEMIS 2002 For Windows 7.5.0

File Name: P:\Projects - All Employees\10960-00 The Towers\Matt J\AQ Modeling\URBEMIS\Towers Constructio
Project Name: The Towers Construction and Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2006 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	120.52	917.53	892.24	7.19	174.52	41.43	133.09
TOTALS (lbs/day, mitigated)	120.52	730.63	892.24	7.19	174.52	41.43	133.09

*** 2007 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	120.37	877.30	919.26	0.00	38.18	37.88	0.30
TOTALS (lbs/day, mitigated)	120.37	698.59	919.26	0.00	38.18	37.88	0.30

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	909.08	838.23	969.87	0.00	34.96	34.36	0.60
TOTALS (lbs/day, mitigated)	909.08	667.71	969.87	0.00	34.96	34.36	0.60

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	35.17	7.94	5.64	0.00	0.02

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	78.96	87.64	860.75	0.47	80.33
TOTALS (lbs/day, mitigated)	73.27	79.85	784.61	0.42	73.18

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	114.13	95.58	866.39	0.47	80.35

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

URBEMIS 2002 For Windows 7.5.0

File Name: P:\Projects - All Employees\10960-00 The Towers\Matt J\AQ Modeling\URBEMIS\Towers Constructio
Project Name: The Towers Construction and Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: June, 2006
Construction Duration: 27
Total Land Use Area to be Developed: 5 acres
Maximum Acreage Disturbed Per Day: 5 acres
Single Family Units: 0 Multi-Family Units: 700
Retail/Office/Institutional/Industrial Square Footage: 273000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	131.25	-	131.25
Off-Road Diesel	5.75	43.34	42.90	-	1.94	1.94	0.00
On-Road Diesel	24.74	410.17	91.24	7.19	12.43	10.59	1.84
Worker Trips	0.07	0.08	1.47	0.00	0.00	0.00	0.00
Maximum lbs/day	30.56	453.59	135.61	7.19	145.62	12.53	133.09
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	50.00	-	50.00
Off-Road Diesel	9.02	62.74	71.65	-	2.75	2.75	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.02	0.01	0.27	0.00	0.00	0.00	0.00
Maximum lbs/day	9.04	62.75	71.92	0.00	52.75	2.75	50.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	118.30	916.20	864.02	-	41.41	41.41	0.00
Bldg Const Worker Trips	2.22	1.33	28.22	0.00	0.32	0.02	0.30
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	120.52	917.53	892.24	0.00	41.73	41.43	0.30
Max lbs/day all phases	120.52	917.53	892.24	7.19	174.52	41.43	133.09
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	118.30	876.05	892.74	-	37.86	37.86	0.00
Bldg Const Worker Trips	2.06	1.26	26.52	0.00	0.32	0.02	0.30
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	120.37	877.30	919.26	0.00	38.18	37.88	0.30
Max lbs/day all phases	120.37	877.30	919.26	0.00	38.18	37.88	0.30

*** 2008***

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	118.30	835.89	920.43	-	34.31	34.31	0.00
Bldg Const Worker Trips	1.90	1.17	24.72	0.00	0.32	0.02	0.30
Arch Coatings Off-Gas	786.98	-	-	-	-	-	-
Arch Coatings Worker Trips	1.90	1.17	24.72	0.00	0.32	0.02	0.30
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	909.08	838.23	969.87	0.00	34.96	34.36	0.60
Max lbs/day all phases	909.08	838.23	969.87	0.00	34.96	34.36	0.60

Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Jun '06
Phase 1 Duration: 1.3 months
Building Volume Total (cubic feet): 2500000
Building Volume Daily (cubic feet): 312500
On-Road Truck Travel (VMT): 17361
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Cranes	190	0.430	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jul '06
Phase 2 Duration: 2.7 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Dozers	352	0.590	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Oct '06
Phase 3 Duration: 23 months
Start Month/Year for SubPhase Building: Oct '06
SubPhase Building Duration: 23 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
20	Concrete/Industrial saws	84	0.730	8.0
39	Other Equipment	190	0.620	8.0
20	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Jun '08
SubPhase Architectural Coatings Duration: 2.3 months
SubPhase Asphalt Turned OFF

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.60	7.92	3.30	-	0.01
Wood Stoves - No summer emissions					
Fireplaces - No summer emissions					
Landscaping	0.33	0.02	2.34	0.00	0.01
Consumer Prdcts	34.25	-	-	-	-
TOTALS(lbs/day,unmitigated)	35.17	7.94	5.64	0.00	0.02

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Condo/townhouse high rise	30.05	27.84	284.31	0.15	25.89
Racquetball/health	9.98	12.80	123.66	0.07	11.67
Hotel	17.54	19.14	184.91	0.10	17.45
Strip mall	21.39	27.85	267.87	0.15	25.32
TOTAL EMISSIONS (lbs/day)	78.96	87.64	860.75	0.47	80.33

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2007 Temperature (F): 85 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Condo/townhouse high rise	4.18 trips / dwelling units	700.00	2,926.00
Racquetball/health	32.93 trips / 1000 sq. ft.	50.00	1,646.50
Hotel	8.92 trips / rooms	276.00	2,461.92
Strip mall	42.94 trips / 1000 sq. ft.	85.00	3,649.90

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.20	1.80	97.80	0.40
Light Truck < 3,750 lbs	15.10	3.30	94.00	2.70
Light Truck 3,751- 5,750	16.10	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.10	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Racquetball/health				5.0	2.5	92.5
Hotel				5.0	2.5	92.5
Strip mall				2.0	1.0	97.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

Phase 1 mitigation measure Off-Road Diesel Exhaust: Use aqueous diesel fuel
has been changed from off to on.
Phase 1 mitigation measure Off-Road Diesel Exhaust: Use diesel oxidation catalyst
has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use aqueous diesel fuel
has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use lean-NOx catalyst
has been changed from off to on.
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Phase 3 mitigation measure Off-Road Diesel Exhaust: Optimum conditions
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Phase 3 mitigation measure Off-Road Diesel Exhaust: Optimum conditions
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has been changed from off to on.

Changes made to the default values for Area

The wood stove option switch changed from on to off.
The fireplcase option switch changed from on to off.

Changes made to the default values for Operations

The operational emission year changed from 2004 to 2007.
The double counting internal work trip limit changed from to 278.419.
The double counting shopping trip limit changed from to 139.2095.
The double counting other trip limit changed from to 1506.89.
The travel mode environment settings changed from both to: none
The default/nodefault travel setting changed from nodefault to: nodefault
Side Walks/Paths: No Sidewalks
changed to: Side Walks/Paths: Complete Coverage
Street Trees Provide Shade: No Coverage
changed to:Street Trees Provide Shade: Moderate Coverage
Pedestrian Circulation Access: No Destinations
changed to:Pedestrian Circulation Access: Some Destinations
Visually Interesting Uses: No Uses Within Walking Distance
changed to:Visually Interesting Uses: Large Number and Variety
Street System Enhances Safety: No Streets
changed to: Street System Enhances Safety: Few Streets
Pedestrian Safety from Crime: No Degree of Safety
changed to:Pedestrian Safety from Crime: Moderate Degree of Safety
Visually Interesting Walking Routes: No Visual Interest
changed to:Visually Interesting Walking Routes: High Level
Transit Service: Dial-A-Ride or No Transit Service
changed to: Transit Service: Light Rail/Trolley w/in 1/2 mile
Interconnected Bikeways: No Bikeway Coverage
changed to: Interconnected Bikeways: Low Coverage
Safe Vehicle Speed Limits: No Routes Provided
changed to:Safe Vehicle Speed Limits: Some Destinations
Uses w/in Cycling Distance: No Uses w/in Cycling Distance
changed to:Uses w/in Cycling Distance: Large Number and Variety

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	118.30	835.89	920.43	-	34.31	34.31	0.00
Bldg Const Worker Trips	1.90	1.17	24.72	0.00	0.32	0.02	0.30
Arch Coatings Off-Gas	786.98	-	-	-	-	-	-
Arch Coatings Worker Trips	1.90	1.17	24.72	0.00	0.32	0.02	0.30
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	909.08	838.23	969.87	0.00	34.96	34.36	0.60
Max lbs/day all phases	909.08	838.23	969.87	0.00	34.96	34.36	0.60

Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Jun '06
Phase 1 Duration: 1.3 months
Building Volume Total (cubic feet): 2500000
Building Volume Daily (cubic feet): 312500
On-Road Truck Travel (VMT): 17361
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Cranes	190	0.430	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jul '06
Phase 2 Duration: 2.7 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Dozers	352	0.590	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Oct '06
Phase 3 Duration: 23 months
Start Month/Year for SubPhase Building: Oct '06
SubPhase Building Duration: 23 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
20	Concrete/Industrial saws	84	0.730	8.0
39	Other Equipment	190	0.620	8.0
20	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Jun '08
SubPhase Architectural Coatings Duration: 2.3 months
SubPhase Asphalt Turned OFF

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.60	7.92	3.30	-	0.01
Wood Stoves - No summer emissions					
Fireplaces - No summer emissions					
Landscaping	0.33	0.02	2.34	0.00	0.01
Consumer Prdcts	34.25	-	-	-	-
TOTALS(lbs/day,unmitigated)	35.17	7.94	5.64	0.00	0.02

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Condo/townhouse high rise	30.05	27.84	284.31	0.15	25.89
Racquetball/health	9.98	12.80	123.66	0.07	11.67
Hotel	17.54	19.14	184.91	0.10	17.45
Strip mall	21.39	27.85	267.87	0.15	25.32
TOTAL EMISSIONS (lbs/day)	78.96	87.64	860.75	0.47	80.33

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

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Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
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Wind Study

RWDI
CONSULTING ENGINEERS
& SCIENTISTS

PEDESTRIAN WIND ASSESSMENT
FOR THE PROPOSED
TOWERS ON CAPITOL MALL
SACRAMENTO, CALIFORNIA

Project Number:	05-1242
Date:	February 17, 2005
Project Team:	Rowan Williams Davies & Irwin, Inc.
	Project Engineer - Hanqing Wu, Ph.D., P.Eng.
	Project Manager - Guy Ferguson, P.Eng.
	Project Director - Bill Waechter, C.E.T.

Submitted To:	Saca Commercial
	cc: Miyamoto International, Inc.
	Mulvanny G2
	EIP Associates

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U.S. Contacts:
RWDI LLC
California (213) 489-4100

1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Saca Commercial to assess the wind effects on pedestrian areas around the proposed Towers on Capital Mall in Sacramento, California. This assessment is based on the local wind climate, surrounding information, current design of the development, as well as our experience with similar projects and best engineering judgement.

A desk-top analysis, using software developed by RWDI to evaluate wind flow around general building forms, was conducted in combination with local wind data to estimate the potential pedestrian wind conditions. Although this specific development was not modeled in a wind tunnel, the computer analysis was developed from our extensive experience of wind tunnel modelling of similar developments, including projects in Sacramento. To confirm and quantify these estimates, scale model tests in our boundary-layer tunnel facility can be conducted at a more advanced design stage of the proposed development.

2. SITE INFORMATION

Figure 1 shows the layout of the proposed development. The proposed development consists of a large podium and two 52 storey hotel and condominium towers, approximately 577 ft in height. Tower 'A' and the complete podium structure will be constructed in Phase I of the development and Tower 'B' will follow in Phase II. Outdoor pedestrian areas on and around the development site include the entrances to the proposed buildings, sidewalks and the podium terraces.

The proposed development is located on a street block bounded by Capitol Mall to the south, 3rd Avenue to the west, 'L' Street to the north and 4th Avenue to the east. Several tall buildings exist on the south side of Capitol Mall and lower Downtown Plaza buildings situate on the north side of 'L' Street. The proposed development is located on the west edge of downtown Sacramento. To the north and west of the development are Sacramento River and relatively low buildings.

Long-term wind statistics were analysed to determine the local wind climate, using data collected from several meteorological stations in the area, including the Sacramento Executive Airport, Mather Air Force Base, McClellan Air Force Base and Sacramento International Airport. A similar wind directionality was observed between these meteorological stations. Due to the relatively close proximity to the study site, the Sacramento Executive Airport data was chosen for this assessment. Figure 2 shows the directional distributions of wind frequency for the Summer (May through October) and Winter (November through April) seasons, based on the data collected between 1947 and 1999 from the Sacramento Executive Airport.

When all wind records are considered, as indicated by the left wind roses in Figure 2, winds from the south through southwest directions are predominant in the summer. In the winter, winds from the southeast through south, north-northwest and northwest directions are frequent.

Strong winds with a mean speed greater than 20 mph occur at the airport for approximately 2% and 4% of the time during the summer and winter seasons, respectively. The southwest, south-southwest and north-northwest winds are prevalent for the summer season, and the south-southeast and north-northwest winds for the winter, as demonstrated by the two right-hand wind roses in Figure 2. Winds of such a magnitude may potentially cause uncomfortable or even severe wind conditions.

Based on the above analysis, winds from the south-southeast, west-northwest and southwest directions are considered to be most important in the assessment of pedestrian wind conditions, although other wind directions have also been taken into account in our computer analysis.

3. WIND COMFORT CRITERIA

Pedestrian wind comfort criteria developed at RWDI are used in this assessment. They are categorized by three typical pedestrian activities:

- **Sitting:** Low wind speeds at which one could read a newspaper without having it blown away. Suitable for outdoor cafes and other sitting areas - typically gust speeds up to 11 mph at pedestrian level.

- **Standing:** Slightly higher wind speeds that would be strong enough to rustle leaves. These winds speeds are typically comfortable at building entrances, bus stops or other areas where people may want to linger but not necessarily sit for extended periods of time - typically gust speeds up to 16 mph.

- **Walking:** Winds that would lift leaves, cause movement to litter, hair and loose clothing. Appropriate for sidewalks, plazas, parks or playing fields where people are more likely to be active and receptive to some wind activity - typically gust speeds up to 20 mph.

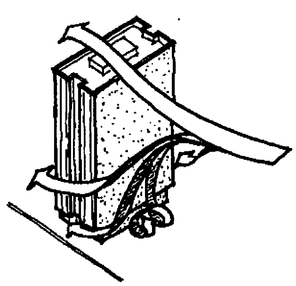
Wind conditions are considered suitable for sitting, standing or walking if the wind speeds are within the ranges for at least 4 out of 5 days (80% of the time). An **uncomfortable** designation means that the criterion for walking is not satisfied. **Safety** is also considered by the criteria. Excessive gust wind speeds greater than 55 mph can adversely affect a pedestrian's balance and footing. If winds sufficient to affect a person's balance occur more than two times per season, the wind conditions are considered severe. Wind control measures are typically required at locations where winds are rated as uncomfortable or severe.

4. ASSESSMENT OF WIND CONDITIONS

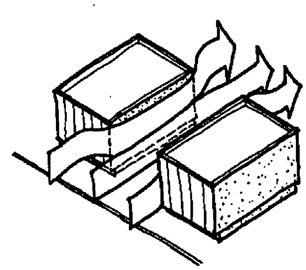
4.1 General

Predicting wind speeds and occurrence frequencies is complicated, involving building geometry, dimensions, orientation, surrounding buildings, upstream terrain and local wind climate. Over the years, RWDI has conducted more than 1200 wind tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge allows, in many situations, for a screening level computer estimation of pedestrian wind conditions without wind tunnel testing.

Throughout our discussion of anticipated wind conditions, reference will be made to the following generalized wind flows. Large buildings tend to intercept the stronger winds at higher elevations and redirect them down to the ground level. Such a *Downwashing Flow* is the main cause for the pedestrian-level wind acceleration around tall buildings. Also, when two buildings are situated side by side, wind flow tends to accelerate through the gap between the buildings due to the *Channelling Effect*. If these building/wind combinations occur for prevailing winds, there is an increased potential for even higher wind activity.



Downwashing Flow



Channelling Effect

Generally, wind conditions suitable for walking are appropriate for sidewalks; wind speeds comfortable for standing are preferred for building entrances where pedestrians are more apt to linger; and lower wind speeds comfortable for sitting are desired for podium terraces, particularly during the summer season.

The proposed towers are sheltered by the tall surrounding buildings for winds from the southeast through south directions. However, they are exposed to the predominant north-northwest and southwest winds, that may be deflected off the building facade down to the podium and ground levels, resulting in elevated wind activity in localized areas. The large podium of the development is a positive design feature for wind control, as it reduces the potential impact of a downwashing wind flow at ground level. The following discussion describes the predicted wind conditions by area, keyed with a corresponding letter in Figure 1.

4.2 Predicted Wind Conditions

4.2.1 Existing Conditions

The existing building on the study site is relatively low and is sheltered by the taller surroundings for the winds from the northeast through south directions. Trees on and around the study site are also expected to reduce the wind speeds in the area. The site, however, is exposed to the north-northwest winds and the southwest winds may also accelerate around the towers across Capitol Mall and affect the study area. Given the local climate, the overall existing wind conditions on the site are predicted to be comfortable for standing throughout the year. Higher wind activity may exist in localized areas on Capitol Mall sidewalks, due to the effect of a channelling flow (southeast and south winds) between the existing tall buildings on the south side of the street.

4.2.2 Phase I and Phase II Conditions

Phase I of the development consists of Tower 'A' and the general podium areas. Phase II consists of Tower 'B'.

A. Hotel Entry and Porte Cochere

The hotel entry and porte cochere to Tower 'A' is located in an arcade at the southwest corner of the tower, which is considered a positive design feature for wind control (Location A in Figure 1). The proposed podium and the steps at the southwest corner of the development will shelter the entrance area from the southeast and south-southeast winds. The large arcade is expected to reduce the downwashing effect of winds from the southwest direction in the summer and from the north-northwest direction in the winter. It is predicted that the wind conditions immediately adjacent to the hotel entry would be comfortable for standing for both the summer and winter seasons. Slightly higher wind speeds comfortable for walking can be expected in the more exposed porte cochere area. These wind conditions are considered appropriate and would not be significantly affected by the construction of Tower 'B'.

If lower wind speeds are desired for the porte cochere area, wind control measures, such as wind screens or tall hedges, can be included along the west side of the porte cochere area to reduce the direct impact of winds from the north-northwest and southwest directions. In addition, a large canopy may be considered around the southwest corner of Tower 'A' to redirect any downwashing air flow away from the entrance area. The need for these measures can be assessed during a detailed wind tunnel study at a later date.

B. Retail Entrance

The retail entrance is located at the southwest corner of the development and recessed from the towers and podium. The wind activity adjacent to the retail entrance and on the steps (Location B in Figure 1) is likely to be comfortable for standing throughout the year. The sidewalk area at the southwest corner, however, is more exposed, where uncomfortable wind conditions may occur on windy days (see Section C. Sidewalks).

C. Sidewalks

In general, the proposed development is expected to shelter the adjacent sidewalks (Location C in Figure 1) from one or more predominant wind directions, but the two proposed towers may also intercept strong winds at higher elevations and deflect them down to the podium and ground levels. Overall, the resultant wind conditions on the sidewalks around the development are predicted to be comfortable for standing or walking for both summer and winter seasons. Exceptions are sidewalks at the southwest and northwest corners of the development (Locations C_1 and C_2 in Figure 1), where uncomfortable wind conditions may occasionally occur on windy days. This is caused by the predominant winds being deflected off the towers and accelerating around the corners.

If desired, wind control measures, such as landscaping and wind screens, may be considered in the open plaza and on sidewalks around location C1 to reduce the wind activity. For Location C2, potential wind control measures may include, for example, a larger canopy wrapping around the northwest corner of Tower A, or an arcade around the building base as an alternate walkway for pedestrians on windy days. Wind tunnel testing is recommended to better quantify these wind conditions and to determine the need, if any, for wind control measures in these areas.

D. Phase II Condominium Entrance

This entrance to the Phase II condominium is located on 4th Avenue and will be protected by the podium from the north-northwest and southwest winds. As a result, suitable wind conditions are expected for the entrance area in the future.

E. Podium Terraces

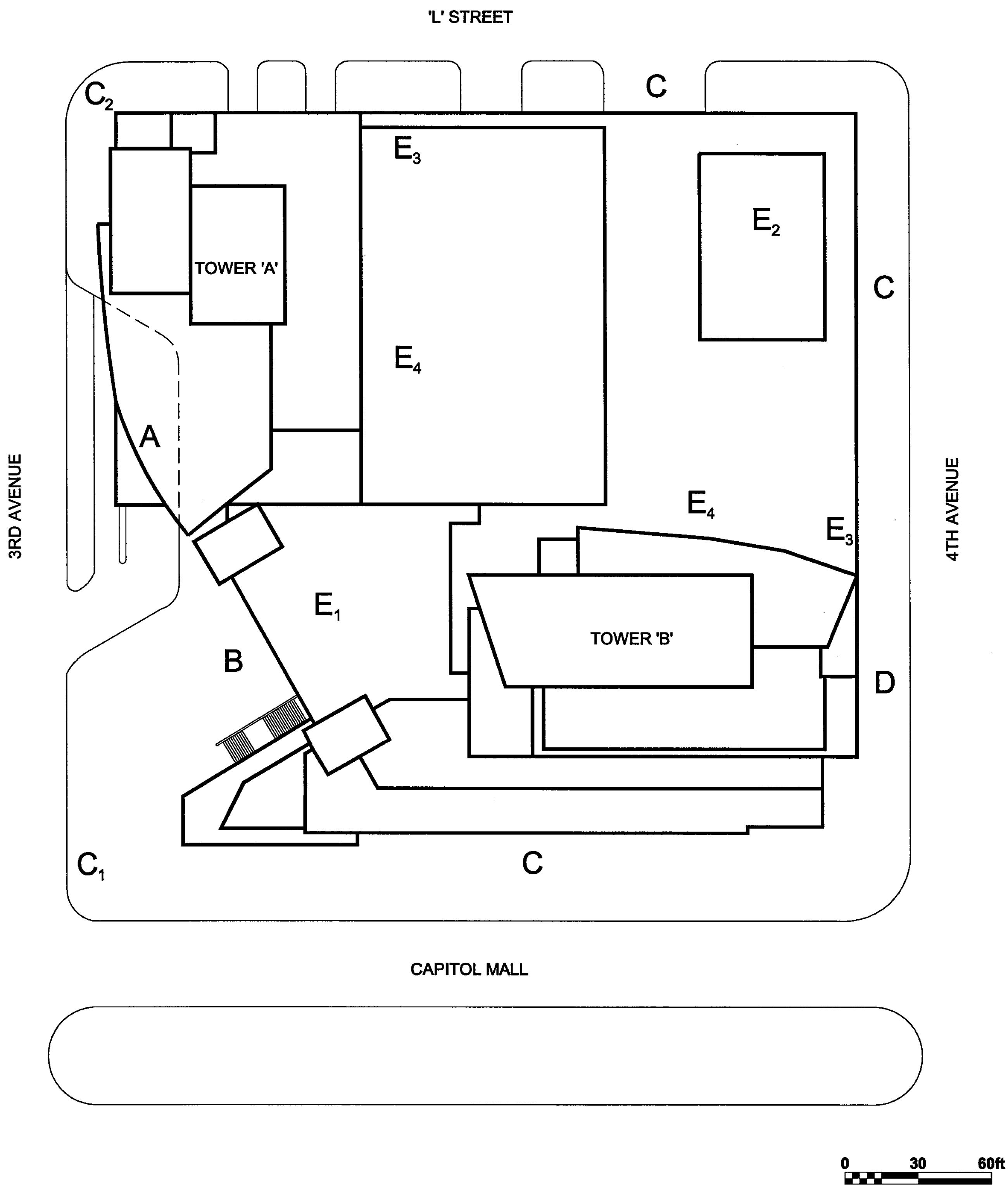
At the current design stage, detailed information of pedestrian usage of the podium terraces is not available. The potential wind activity is expected to be higher than that on the ground level and will vary from location to location on the podium. For instance, the southwesterly winds will channel through the gap between the two towers (Location E_1 in Figure 1), resulting in uncomfortable wind conditions from time to time. The southwesterly winds are dominant in the summer, when the podium terraces are more likely to be frequented. Wind control measures, such as tall wind screens, should be included along the southwest edge of the podium (above the retail entrance), if this area is accessible to the public. Trees may also be beneficial wind control measures to include on the terrace. In addition, uncomfortable wind conditions are also predicted at the northeast portion of the podium (Location E_2 in Figure 1) and around the northeast corners of the proposed towers (E_3), where we anticipate that wind control measures will be required for these areas to be suitable for passive pedestrian activities.

In the areas immediately east of Tower 'A' and north of Tower 'B' (Location E_4 in Figure 1), lower wind speeds are expected due to wind protection provided by the proposed towers. If necessary, these wind speeds can be further reduced by localized landscaping, wind screens and/or trellises.

Wind tunnel testing can assist in quantifying the wind conditions on the podium can also assist with wind control measures.

5. SUMMARY

Overall, wind conditions are predicted to be suitable at the building entrances and sidewalks around the proposed development. Acceleration of wind flow is expected in localized areas of sidewalks around the southwest and northwest corners of the proposed development, as well as on the podium level, where uncomfortable wind conditions for amenity spaces are expected in localized areas. Potential wind control concepts that can enhance the wind environment on and around the proposed development have been discussed. It would be appropriate at a more advanced design stage to undertake wind tunnel tests to assess the potential need, if any, for wind control measures. The need for these tests would be of greater importance for the podium terrace and associated amenity spaces.



Reference Plan

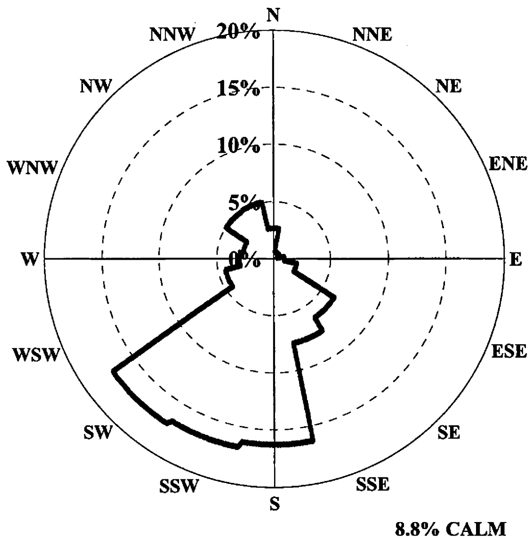
True North

Drawn by: CMH	Figure: 1
Approx. Scale:	1"=60'
Date Revised:	Feb. 4, 2005

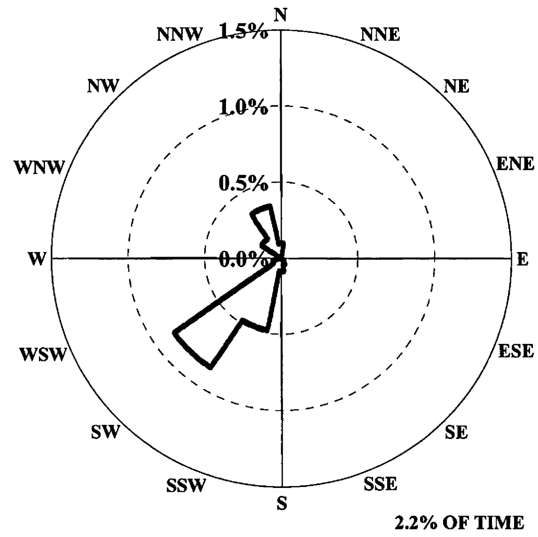
RWDI

Towers on Capitol Mall - Sacramento , California

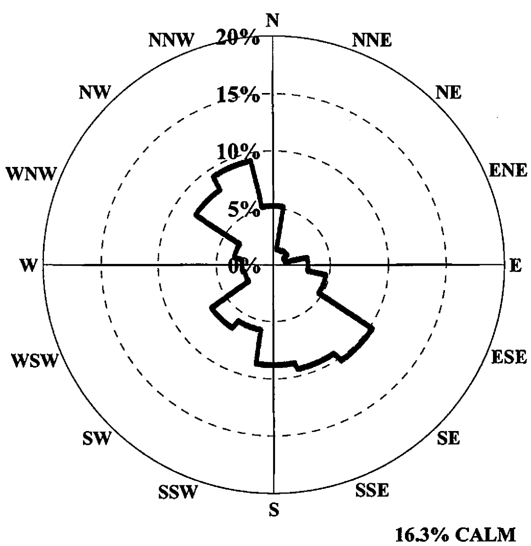
Project #05-1242



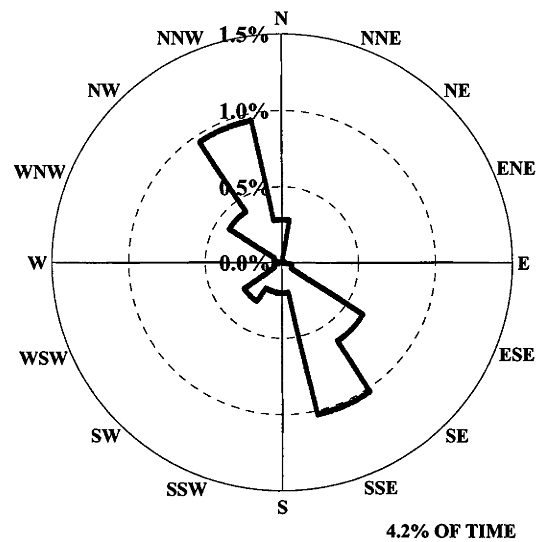
ALL SUMMER WINDS



SUMMER WINDS EXCEEDING 20 mph



ALL WINTER WINDS



WINTER WINDS EXCEEDING 20 mph

Directional Distribution (%) of Winds (Blowing From) **Station: Sacramento Executive Airport, CA (1947 - 1999)** Towers on Capitol Mall - Sacramento, California Project #: 05-1242	Figure No. **2** February 4, 2005	**RWDI**

Appendix D

CULTURAL RESOURCES STUDY

CULTURAL RESOURCE OVERVIEW

FOR THE CAPITAL TOWERS PROJECT,

CITY OF SACRAMENTO, CALIFORNIA

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April 2005
(Job #05-039)

INTRODUCTION

The project site is located in the City of Sacramento, and consists of the block bounded by Capitol Mall, Third, Fourth and L Streets. The project involves the development of two high-rise towers for commercial and residential purposes. The site is currently occupied by the Copley Press/*Sacramento Union* building, completed in 1968.

The goal of the study is to document the history of the development and use of the site, and to predict the potential for the presence of prehistoric and historic period archeological resources.

Melinda A. Peak, Senior Historian with Peak & Associates, Inc. served as principal investigator for the research, assisted by Kevin Morse.

RESEARCH METHODOLOGY

A record search was conducted through the North Central Information Center of the California Historical Resources Information System. No prehistoric resources have been recorded within or adjacent to the project site.

The Native American Heritage Commission was contacted for a check of the Sacred Lands files. Here are no listed properties in or near the project site. Letters were also sent to several Native American groups and individuals for further information on resources of concern to Native Americans including Rose Enos, Joe Marine, Nicholas Fonseca and Jeff Murray (Shingle Springs Rancheria), and Jessica Tavares (United Auburn Indian Community). No replies have been received to date.

To compile the historical context for the site, research has been conducted at the Sacramento Archives and Museums Collections Center and the California Room of the California State Library. Sources utilized include City tax assessment map books and rolls, City directories, federal census, photographic collection, Sanborn Fire Insurance maps, City maps, and newspapers.

HISTORIC CONTEXT

Native American Period

At the time of contact, the project site lay in the territory of the Valley Nisenan. The Nisenan, or Southern Maidu, occupied the upper drainages and the adjacent ridges of the Yuba, the north, middle, and south forks of the American, and at least the upper north side of the Cosumnes River. The eastern limit of their territory is conventionally believed to extend to the crest of the Sierra. The Nisenan in the valley proper also occupied some area west of the lower reaches of the Feather River (Wilson and Towne 1978).

The Nisenan linguistically are grouped with the Northern Maidu and Konkow within the Penutian family (Riddell 1978:387). Kroeber distinguished three dialects within the larger territory occupied by the Nisenan, but Riddell indicated more distinctions are possible. Wilson and Towne (1978) distinguished several "centers," presumably linguistic and social groupings.

The Nisenan were socially integrated at the village or community group level (Wilson and Towne 1978), with the group participating in the decision-making process. The villages would range in size from 15 to 25 people to, at least in the Valley Nisenan, villages of over 500 people (Kroeber 1925:821). A very large settlement consisted of a major village and associated smaller camps, whether general or specialized in nature. A headman, respected by all, residing in the major village had the authority to call upon the smaller associated groups in times of need, although the smaller groups did not have to always obey.

The villages for the Hill Nisenan were located on ridges and flats along the major streams and rivers within their territory. The satellite encampments and villages were probably located on the smaller watercourses surrounding or nearby the major village.

The Nisenan, as with other Sierran groups, moved into the higher elevations during the hot summer months. The main activity was the collecting of pine nuts and numerous other species of nuts, roots, and berries. This was done primarily by women and children. The foraging groups in a locale could range from small, extended family groups, composed of a woman, her immediate female kin, and their adolescent children to whole villages (Wilson and Towne 1978:389). The men spent most of their time hunting or fishing for a wide variety of fish and animals. Hunting was noted as often involving communal drives, with the best archers of the village posted to do the killing (Wilson and Towne 1978:389). Individual hunters made extensive use of decoys and imitative sounds.

Most Nisenan never left the territory used by their own village group. However, there were, in most large villages, at least some individuals who engaged in rather extensive trade with several valley and Sierra groups, such as the Washo.

Post-Contact History

The first recorded Spanish expedition into the project vicinity was led by Gabriel Moraga between 1806 and 1808, in order to scout new mission sites, return runaway Indians, and punish Indians hostile to Spanish rule. Beaver and other fur resources were exploited in the Sacramento Valley by the Hudson Bay Company. In 1827 and 1828, Jedediah Smith led a trapping foray into the project vicinity. These and other trappers set up temporary camps in Nisenan territory and relationships were friendly. In 1833, a great malaria epidemic swept through the Sacramento Valley, killing an estimated 75 percent of the Valley Nisenan population.

The first permanent European settler in the Sacramento Valley was Captain John Sutter, who set up operations in the present downtown area of Sacramento in 1839. Sutter initially employed the Nisenan to help him in his operations but later he imported large numbers of Plains Miwok from the Cosumnes River tribelets as laborers. Sutter's relations with these villages--both Miwok and Nisenan--were essentially feudal.

With the discovery of gold and the subsequent influx of a large Euro-American mining population after 1849, Nisenan numbers were further reduced by disease and genocide. Survivors who were not either sickened or murdered were ultimately forced to vacate their ancestral homes. By the 1920s, when University of California anthropologists sought Native American informants who could testify concerning aboriginal lifeways in the areas, only two elderly individuals could be located who retained any knowledge of Sacramento's native heritage.

Several village names have been reported for sites in the City of Sacramento, including Sacum, for the site at City Hall, the subject of recent excavations.

The City of Sacramento

In 1841, Sutter was granted 11 leagues of land by the Mexican government. His settlement of Rancho New Helvetia, located within present-day Sacramento and later known as Sutter's Fort, also served as a trading post and a place of refuge for immigrants. With the discovery of gold at his mill site in Coloma in 1848, Sutter's plans for New Helvetia as an independent state were ruined and gold seekers overran his ranching empire.

From a handful of residents at Sutter’s Fort, the population of Sacramento had grown to about 2,000 in October 1849, and to an estimated 3,500 two months later. Early settlement focused on the waterfront, with businesses extending along J Street (Severson 1973).

Sacramento became an off-loading point for those destined for the northern mines and it profited greatly from the mining trade. Sacramento was situated at a crucial transshipment point and soon came to dominate commercial activity in the interior of the state. The subsequent history is an example of urban growth based on its control over transportation. Sacramento became the state capitol in 1854 and continues as the State's political center to the present day.

Early development centered on the downtown central business district. The rapidity of Sacramento's growth provided the economic incentive to transform this tent community quickly to a city of wood-frame and brick structures. More permanent structures served to reduce the damage caused by a series of devastating fires.

Increasingly efficient flood control measures protected the town from inundation and subsequent sewage problems generated by periodic flooding of the Sacramento and American Rivers. Undertakings to prevent flooding included building and strengthening levees, re-channeling the American River, and raising streets in the main business district some 12 feet. In 1868, the "S" curve of the American River was bypassed by digging an entirely new channel, which joined the Sacramento River north of the rail yards, and reduced the frequency of flooding that once occurred within the present-day Richards Area. Major raising of the City streets occurred in the 1860s. Many building owners opted to raise their buildings to the new street grades; others converted their first floors into cellars.

Historic Project Site Use and Occupancy

Early Years

The project site was occupied by 1851. The 1852 fire destroyed all buildings in the northern half of the site. The block was quickly rebuilt, as was much of Sacramento. By December of 1852, there were 761 buildings in the City. By October 1854, about 500 brick and 2,000 frame buildings had been completed. There are buildings on each of the lots of the block (Neasham and Henley 1969; Figure 1). The 1857 lithograph of the City shows a fully developed block (Figure 2).

In 1860, at least one of the landowners is a prostitute, who may operate a business on the street. The block is close enough to the docks, plus just off the main business streets, J and K, apparently well serving the rather transient clientele of the block.

In 1866, Mark Twain reporting lodges at one of the boarding houses on the block during his time in Sacramento working for the *Sacramento Union* newspaper, reportedly only a few months. This building stood at 309 M Street until the early 1940s.

In 1870, there are more buildings on the lot, with many added on the east-west alley that divided the block (Figure 3). At this point, there were at least two “bawdy” houses on the block, one of which was owned by an African-American woman.

In the 1870s, the streets are raised about two feet along a portion of Fourth Street and L Street to help meet the established grades for the City(Lagomarsino 1969).

"Japantown"

Japanese began coming to the United States as contract laborers after 1884. By 1895, the block had apparently begun to attract Japanese individuals, with one of the boarding houses on the alley shown as “Jap. Lodgings” (Figure 4).

The block changed dramatically over the next fifteen years. In 1890, there were about 1,100 Japanese in California. By 1910, there were over 41,000 Japanese in the State. The block had a number of Japanese businesses, and the boardinghouses were operated catering to Japanese, as they were not welcome in white facilities.

The block becomes the heart of “Japantown”, the Japanese community in Sacramento. There are numerous businesses and boarding houses that cater to the Japanese community. By 1915, the block had 10 Japanese restaurants and 7 other restaurants, a “moving pictures” theater, two poolrooms, two Japanese laundries, a saloon, numerous tenements and boardinghouses, a soda works, and a bank (Figure 5). The alley on the block is indicated on maps and in telephone directories as “Jap Alley.”

The soda works produced “Sun Rise” soda. The history of this industry cannot be totally documented as the Japanese were excluded from City directories until 1918. The business is listed in the 1908 Sacramento telephone book, and appears to have remained in business until 1935. The proprietor was S. Tokunaga, and the business was located close to the alley. By 1928, the company also featured Rainier, Buffalo and Tacoma brands of beer, apparently acting as a distributor as well as producing the soda water and other beverages (Schulz et al.1980).

The Japanese were tenants for the most part, but slowly began to purchase the lots. By 1925, only two of the buildings on the block had Japanese surnamed owners. By 1940, 12 of the 37 lots on the block were owned by Japanese surnamed individuals or companies.

The Decline of Japantown

Decline of the block had begun in the 1930s. The population of Japanese in the area had declined, in part due to the Depression. Some of the Japanese did choose to return home to Japan.

In 1942, the internment of the Japanese began, with 3,500 citizens of Sacramento forced to leave their homes. Residents of the block were taken to the Walerga Center in northern Sacramento County, used as an assembly point, with the internees sent on to Tulelake.

One Sacramento resident, Eugene Hepting, provided an excellent record of the appearance of the block, and also seemed to understand the historical importance of the internment. His captioned photographs reflect the attitudes of the time (Figures 6 to 15). Hepting took hundreds of photographs of street scenes of the City of Sacramento, and it is fortunate his collection is preserved at the Sacramento Archives and Museums Collections Center.

One significant landowner was Henry Taketa, a prominent attorney who assisted the returning internees and helped to safeguard the legal rights of Japanese–Americans. Taketa was the uncle of the late Congressman Robert Matsui (*The Sacramento Bee*, October 22, 1991).

After the Japanese were removed from the block, other changes occurred. The boardinghouses were apparently rented to lower income individuals, including African-Americans, Chinese and Chinese-Americans, Hispanics and Phillipinos. The Nippon Theater, the movie theater on L Street, was renamed the Valley Theatre and later apparently, the Alameda.

Demolitions of buildings on the block began in the early 1940s. The boarding house that Mark Twain had stayed at was torn down in 1943 (Figure 6, Figure 16). Other businesses on Capital Mall and Third Street were also removed, with a filling station built at that corner.

Post-War Years

Although some of the Japanese returned to their homes and businesses after the end of World War II, many did not. The west end of Sacramento had declined, and families began to relocate to other parts of the City.

When redevelopment began in 1958, some of the Japanese moved to Tenth Street between W and T streets. Others moved further out, to Freeport and Fruitridge road areas, and some to Oak Park off Twelfth Avenue. In the later years, affluent Japanese moved to South Land Park and Greenhaven neighborhoods.

The project area became a predominantly Hispanic neighborhood by 1960, with a number of restaurants, some lodging and rooming houses, and several other businesses (Figure 17).

Redevelopment

Redevelopment brought a number of changes for the block. Demolitions of buildings on the block began in the early 1960s, and no businesses are listed for the block past 1964 (Figures 18 to 22).

Copley Press acquires the block as their main office site, and as a plant site for printing books and the *Sacramento Union* newspaper. The major portion of the center of the block is excavated to at least nine feet below street grade (Figure 23).

Capitol Mall is raised slightly for the construction of the over crossing of Interstate 5 through the City of Sacramento in the late 1960s. In 1994, the *Sacramento Union* halted publication after 143 years.

EFFECTS OF THE PROPOSED PROJECT

The grading plan for the Copley Press building was obtained from the City Building Inspection records. The plan shows that the major portion of the lot was excavated to a depth of nine feet for the building construction. The excavation may have eventually exceeded that depth as thick concrete pads were apparently installed on the lower level of the building to support the weight of the printing presses.

From the apparent amount of disturbance, it appears unlikely that the major portion of the block will contain archeological features and deposits that could be if excavated, could prove to be significant cultural resources through the address of important research questions. All knowledge about the history of the use and occupation of the block will be drawn from the archival record.

There are several strips of land that appear to be relatively undisturbed on the edges of the existing building. Two of these strips are parking lots along L Street and Capitol Mall, with one other undisturbed area along Third Street. Some of the area may have been disturbed for the installation of underground gas tanks for the filling station that stood on the site for thirty years. It is possible that these contain artifacts and features that would be able to address important research questions, although more commonly, the features are located along the back lot lines behind residences and other buildings.

IMPACTS

The construction of the proposed building complex has the potential to affect important cultural resources within a small portion of the project area.

PROPOSED MITIGATION MEASURES

A research design and field strategy for test and data recovery excavations should be developed for the remaining strips of land not excavated in the 1960s for the construction of the Copley Press building. If possible, records for the removal of tanks for the filling station may also need to be located to further identify areas of previous disturbance.

Excavation phasing must be coordinated with the proposed building demolition schedule. After the asphalt covering of the parking lot areas are removed, excavations should commence. Data recovery will occur, and all features will be excavated. Laboratory and analysis of the recovered materials will occur. If significant findings are made, it may be possible to incorporate historic materials and artifacts in an interpretive display in one of the buildings.

This block is the heart of Sacramento's "Japantown," the largest Japanese community in northern California for almost fifty years. It seems that it would be appropriate to in some way commemorate the previous use of the site by the Japanese-Americans, perhaps through an interpretive display in one of the buildings.

FIGURE LIST

such...May 16th, 1942. After the evacuation. North side of the alley." On file, Sacramento Archives and Museums Collections Center.

14. Eugene Hepting, photographer. Captioned: #74 Jap alley. On file, Sacramento Archives and Museums Collections Center.

15. Eugene Hepting, photographer. Captioned: Japanese already on the move, following the notice..May 9th, 1942. Picture taken on the east side of 4th Street. On file, Sacramento Archives and Museums Collections Center.

16. Sanborn Map Company, 1952.

17. West end L Street, between Third and Fourth Street, south side.

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18. Aerial photograph, looking north, 1961. *Sacramento Bee* morgue files. On file, Sacramento Archives and Museums Collections Center.

19. Aerial photograph, looking west, undated—early 1960s? *Sacramento Bee* morgue files. On file, Sacramento Archives and Museums Collections Center.

20. Aerial photograph, looking south, undated—early 1960s? *Sacramento Bee* morgue files. On file, Sacramento Archives and Museums Collections Center.

21. Aerial photograph, looking south, July 1963. Shows partial demolition of buildings for redevelopment. *Sacramento Bee* morgue files. On file, Sacramento Archives and Museums Collections Center.

22. Aerial photograph, looking east, July 1963. Shows partial demolition of buildings for redevelopment. *Sacramento Bee* morgue files. On file, Sacramento Archives and Museums Collections Center.

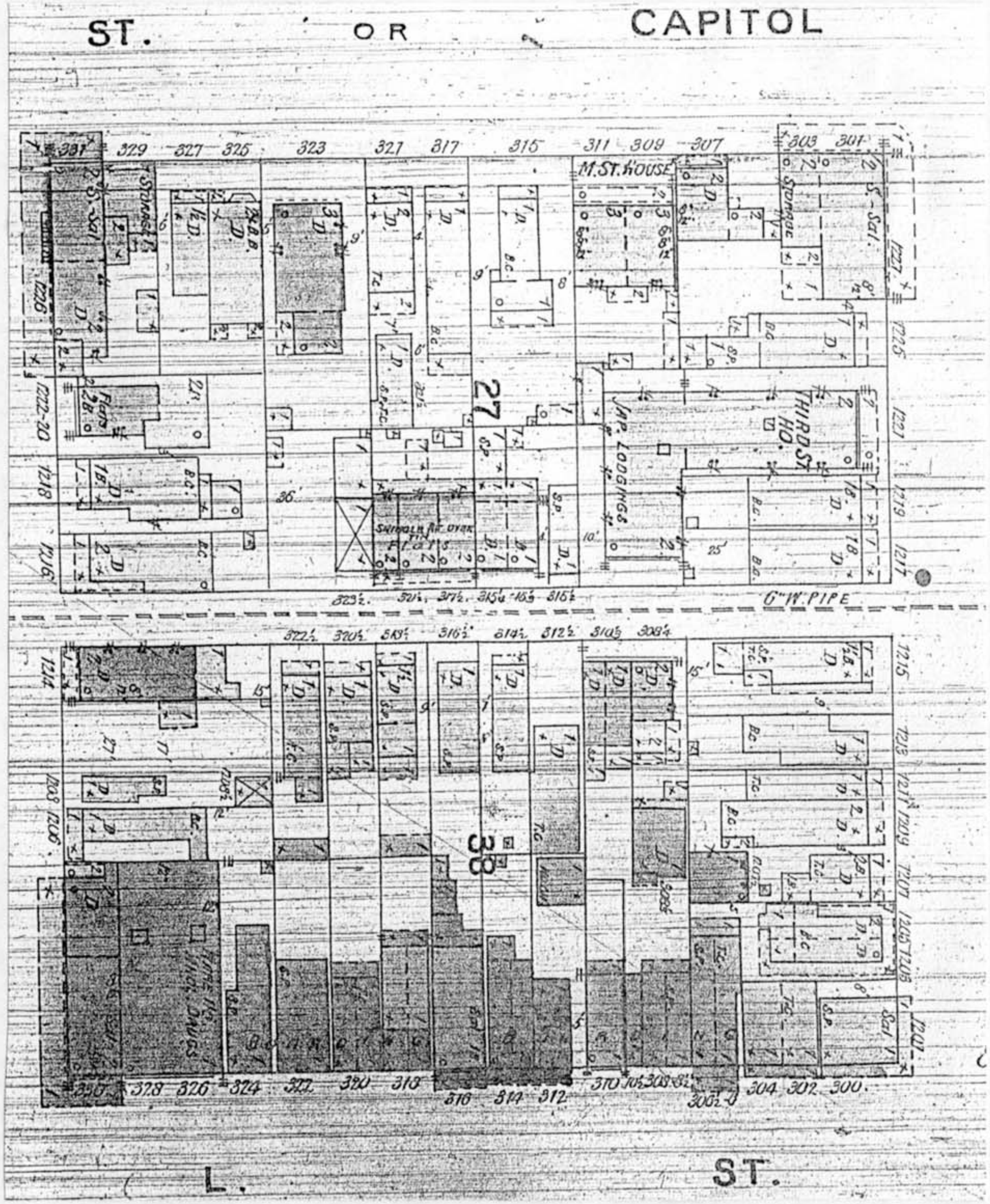
23. Aerial photograph, looking up Capitol Mall, undated—late 1960s? *Sacramento Bee* morgue files. On file, Sacramento Archives and Museums Collections Center.

Figure 1

Figure 2

82/04/452

Figure 3



ST. OR CAPITOL
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STORAGE
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Figure 4

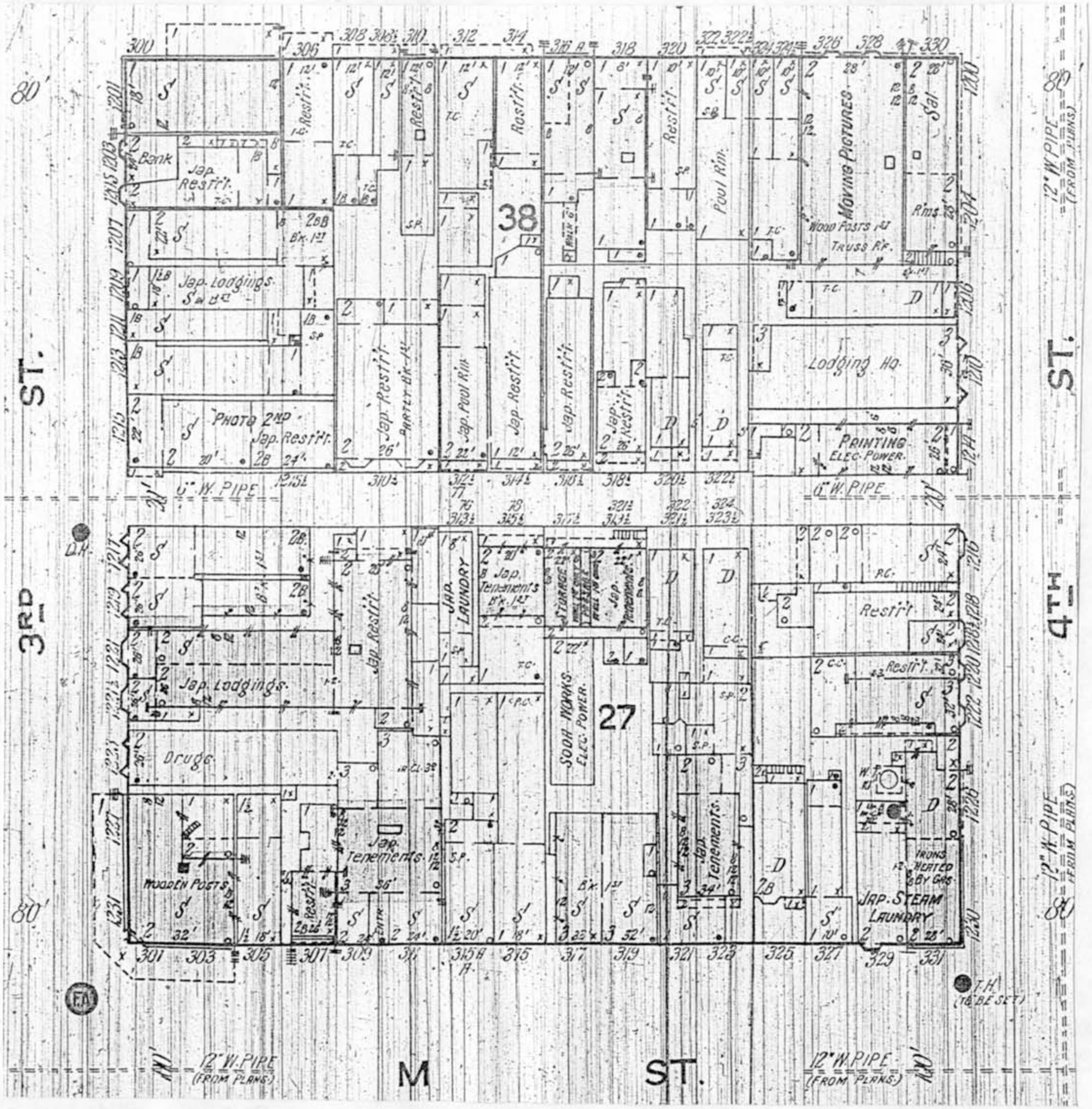
3RD ST.
4TH ST.
M ST.
38
27
Bank
Jap. Restr't.
Jap. Lodgings
Photo 2ND
Jap. Restr't.
Jap. Pool Rm.
Pool Rm.
Moving Pictures
Sal
Lodging Ho.
Printing
Elec. Power.
6" W. Pipe
Jap. Laundry
Jap. Tenements
Storage
Soda Works
Elec. Power.
Drugs
Wooden Posts
Jap. Tenements
Jap. Steam Laundry
Irons Heated By Gas
12" W. Pipe
(From Plans)

Figure 5

307 M STREET 3

Figure 6

Figure 7

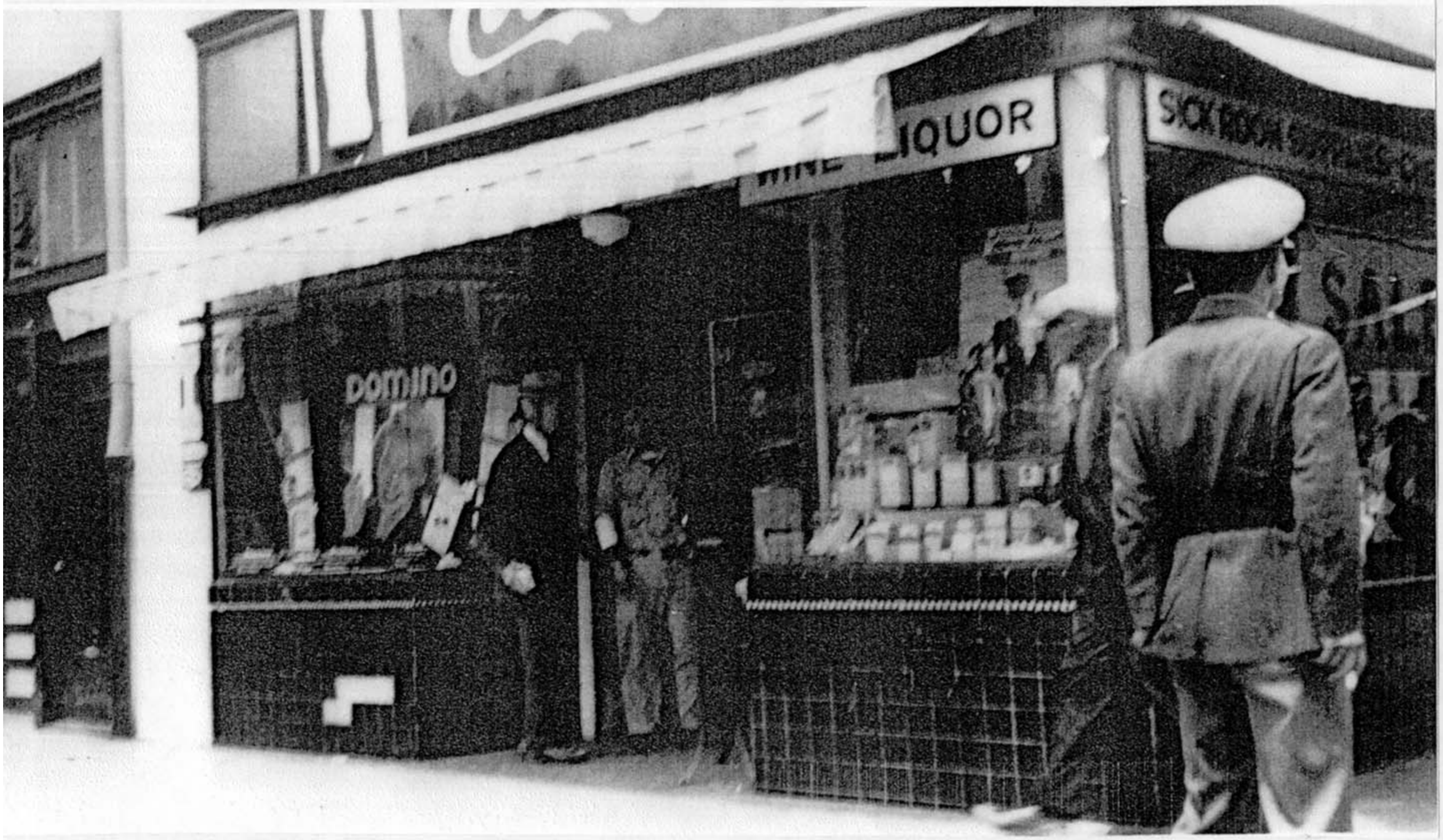

Figure 8

Figure 9

Figure 10

Figure 11

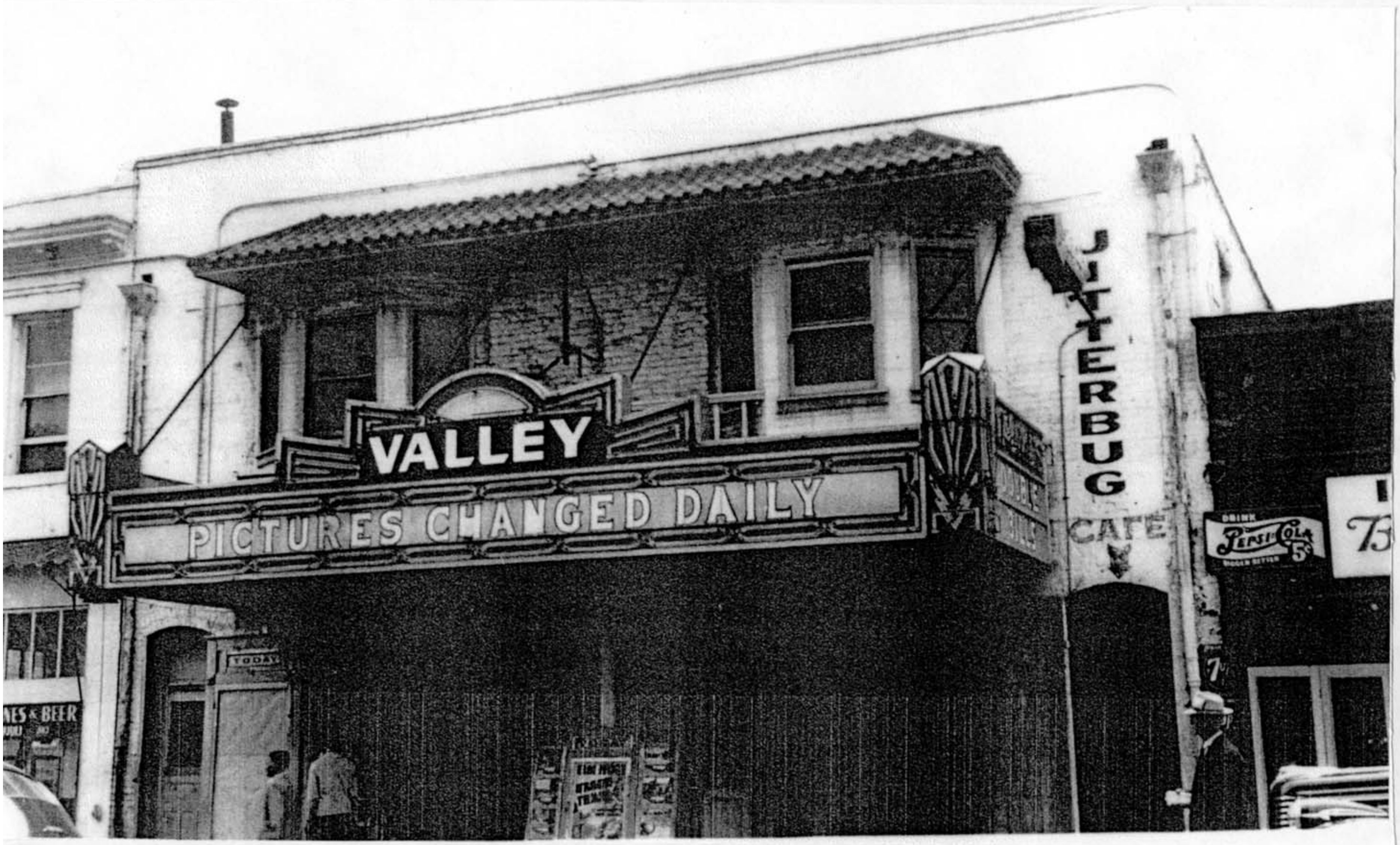
VALLEY
PICTURES CHANGED DAILY
JITTERBUG
CAFE
DRINK
Pepsi-Cola
5¢
TODAY

Figure 12

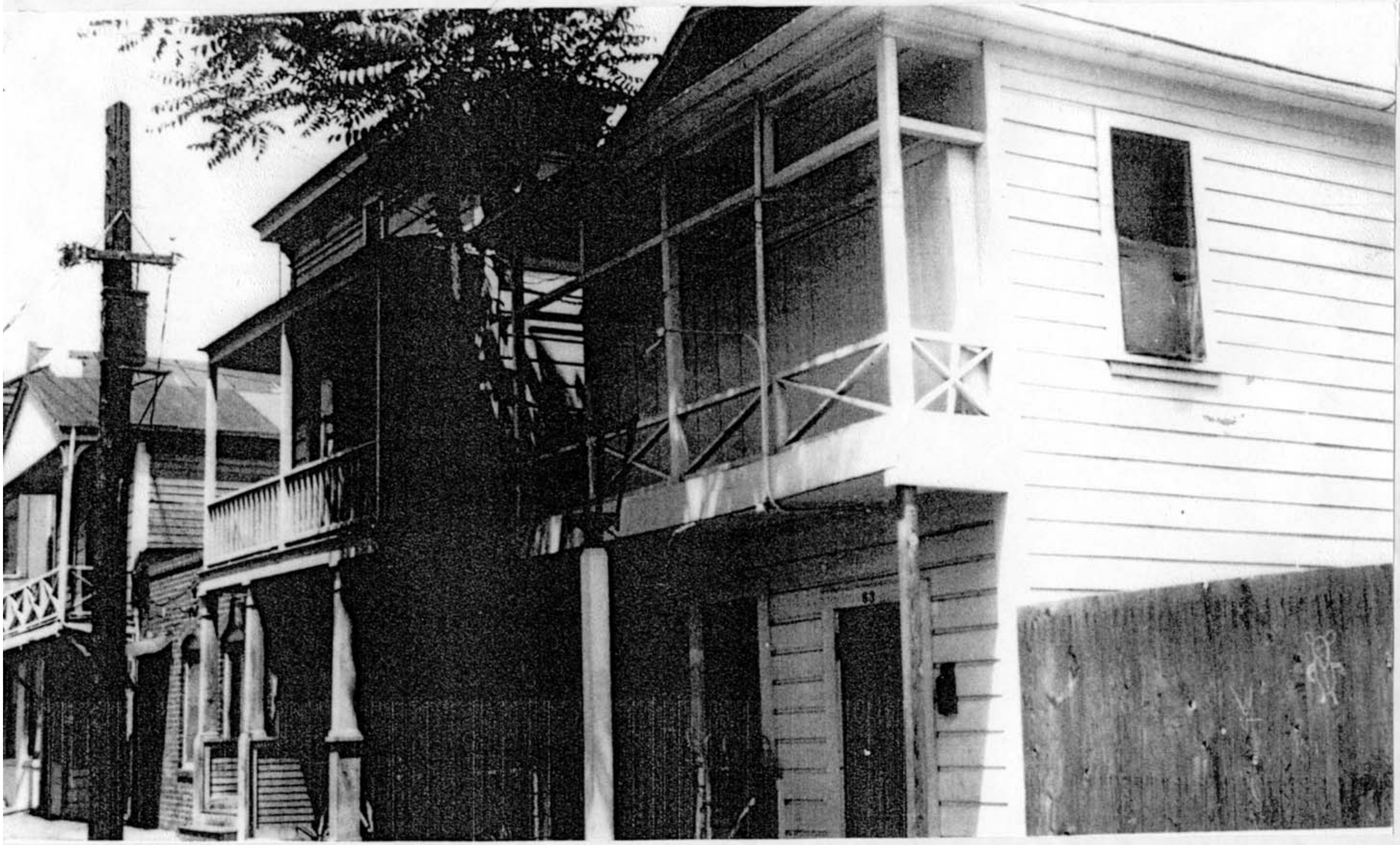

Figure 13

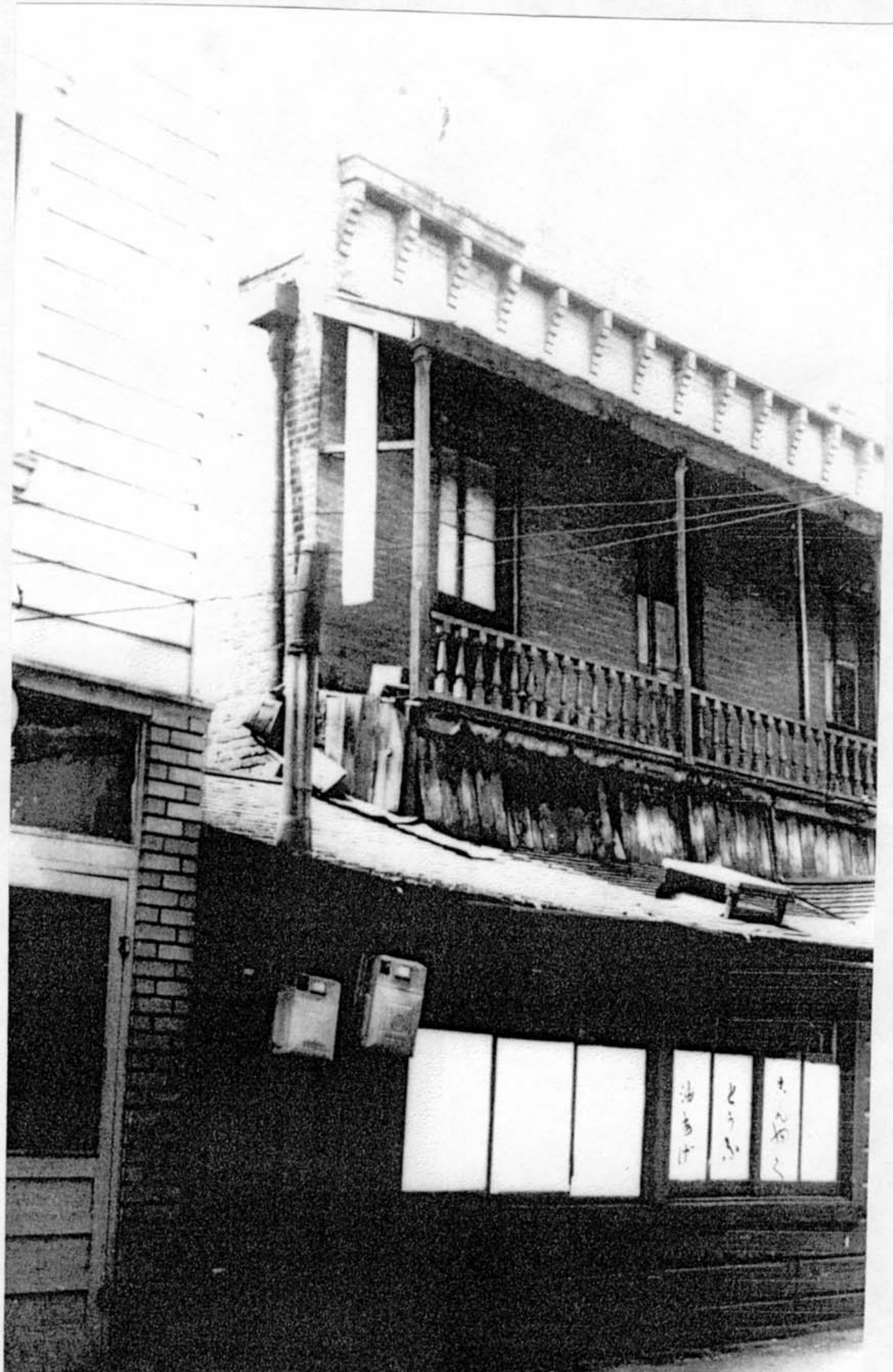

Figure 14

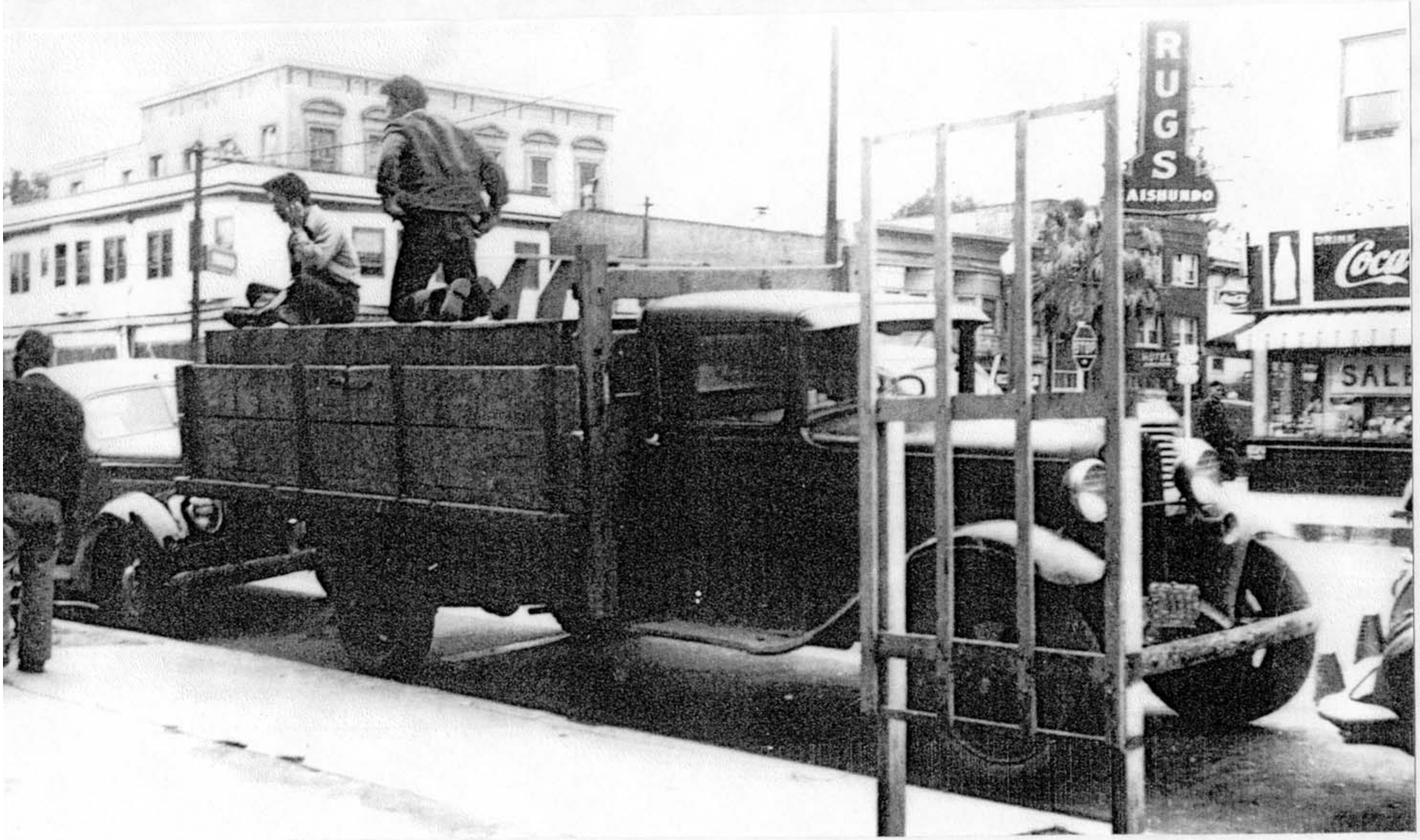

Figure 15

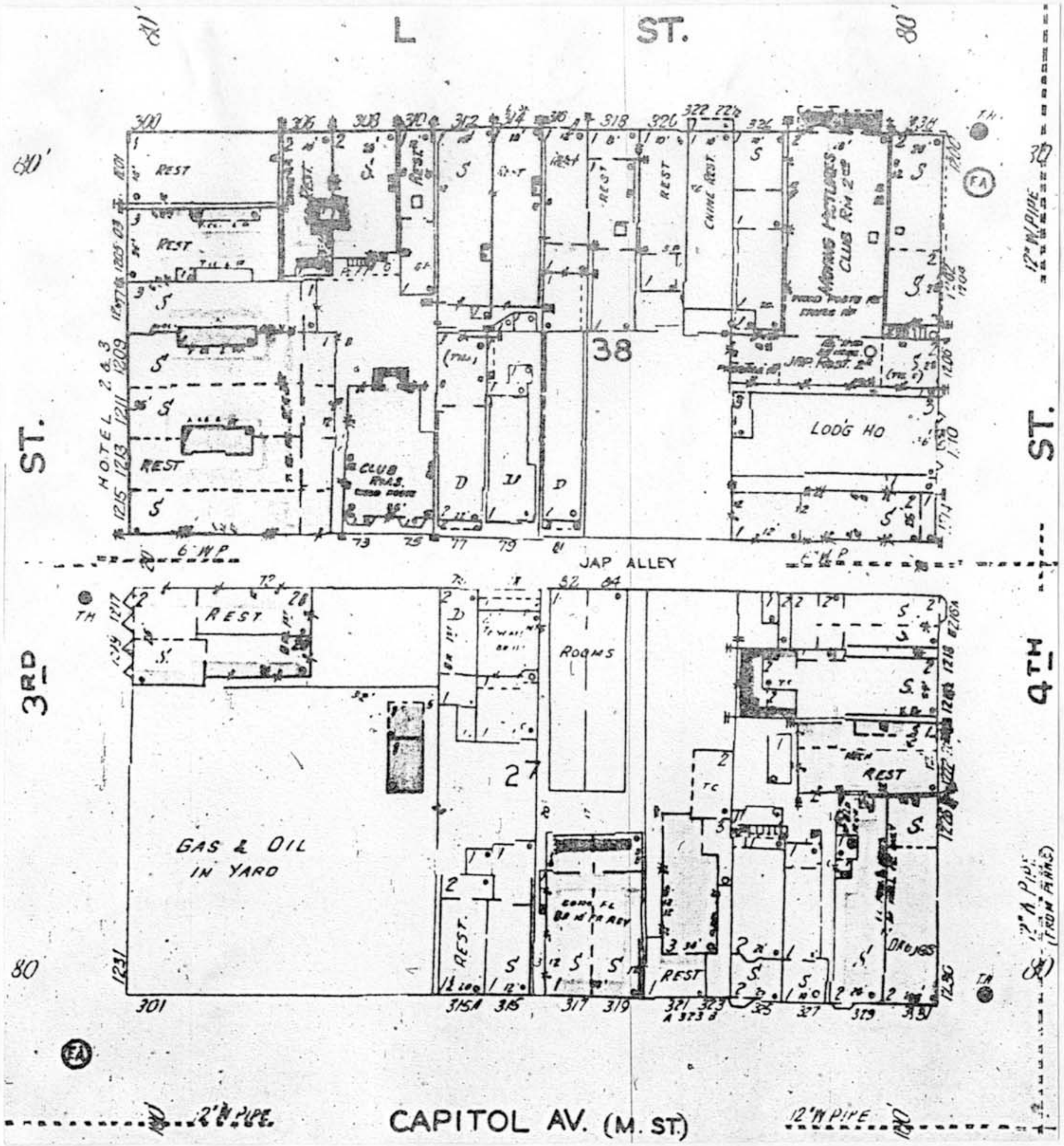
L ST.
3RD ST.
4TH ST.
CAPITOL AV. (M. ST.)
JAP ALLEY
38
27
HOTEL 2 & 3
REST
CHINE REST.
MOVING PICTURES
CLUB RM 2ND
JAP. REST. 2ND
LODG HO
CLUB RMS.
ROOMS
GAS & OIL
IN YARD
DRUGS
12"W PIPE
6"W.P.
2"W PIPE
12"A PIPE (FROM ARMS)

Figure 16

Figure 17

Figure 18

Figure 19

Figure 20

Figure 21

Figure 22

Figure 23

REFERENCES

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1939 *Sacramento Guide Book*. Sacramento: *The Sacramento Bee*.

Sacramento City Directories

v.d. Sacramento City Directories. [Titles and publishers vary with different years]. On file, Sacramento Archives and Museums Collections Center and California Room of the California State Library.

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Wilson, Norman L. and Arlean H. Towne
1978 Nisenan. In *California*, edited by Robert F Heizer, pp. 387-397. Handbook of North American Indians, vol. 8, William G. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Wooldridge, Major J. W., editor
1931 *History of the Sacramento Valley, California*. Chicago: Pioneer Publishing Co.

APPENDIX 1

Resume of Principal Investigator

PEAK & ASSOCIATES, INC.
RESUME

MELINDA A. PEAK **January 2005**
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site specific research. She is a registered professional historian and has completed a number of historical research projects. Ms. Peak has been a regular lecturer for courses in the Capital Campus Public History program (California State University, Sacramento), teaching cultural resource law and site specific research methods.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989
Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties*, *California*
B.A. - Anthropology - University of California, Berkeley, 1976

RECENT PROJECTS

In recent months, Ms. Peak has completed several determination of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places. She has also completed historical research projects on a wide variety of topics for a number of projects including the development of navigation and landings on the Napa River, a farmhouse dating to the 1860s, an early roadhouse, and a section of an electric railway line. She also completed an NRHP evaluation of

Folsom Dam for the Corps of Engineers.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Clover Valley Lakes project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project. She also served as principal investigator for the 1997 coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of the recently published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy*. She is currently preparing text for the second Sacramento County history volume, to be published by Heritage Media in 2005.

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY

April 14, 2005

RECEIVED
APR 26 2005
EIP Associates

D. Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Subject: Capital Towers Project, City of Sacramento

Dear Ms. Treadway:

We are completing cultural resource documentation for Section 106 compliance for a proposed project in the City of Sacramento. The project area is the block bounded by Third Street, L Street, Fourth Street, and Capitol Mall, and lies on unsectioned lands of the New Helvetia grant. The project area is mapped on the Sacramento West 7.5' USGS topographic quadrangle. A map delineating the project boundaries is enclosed.

Could you please check the Sacred Lands file for the project area, as well as provide a list of contacts for the area?

Thank you.

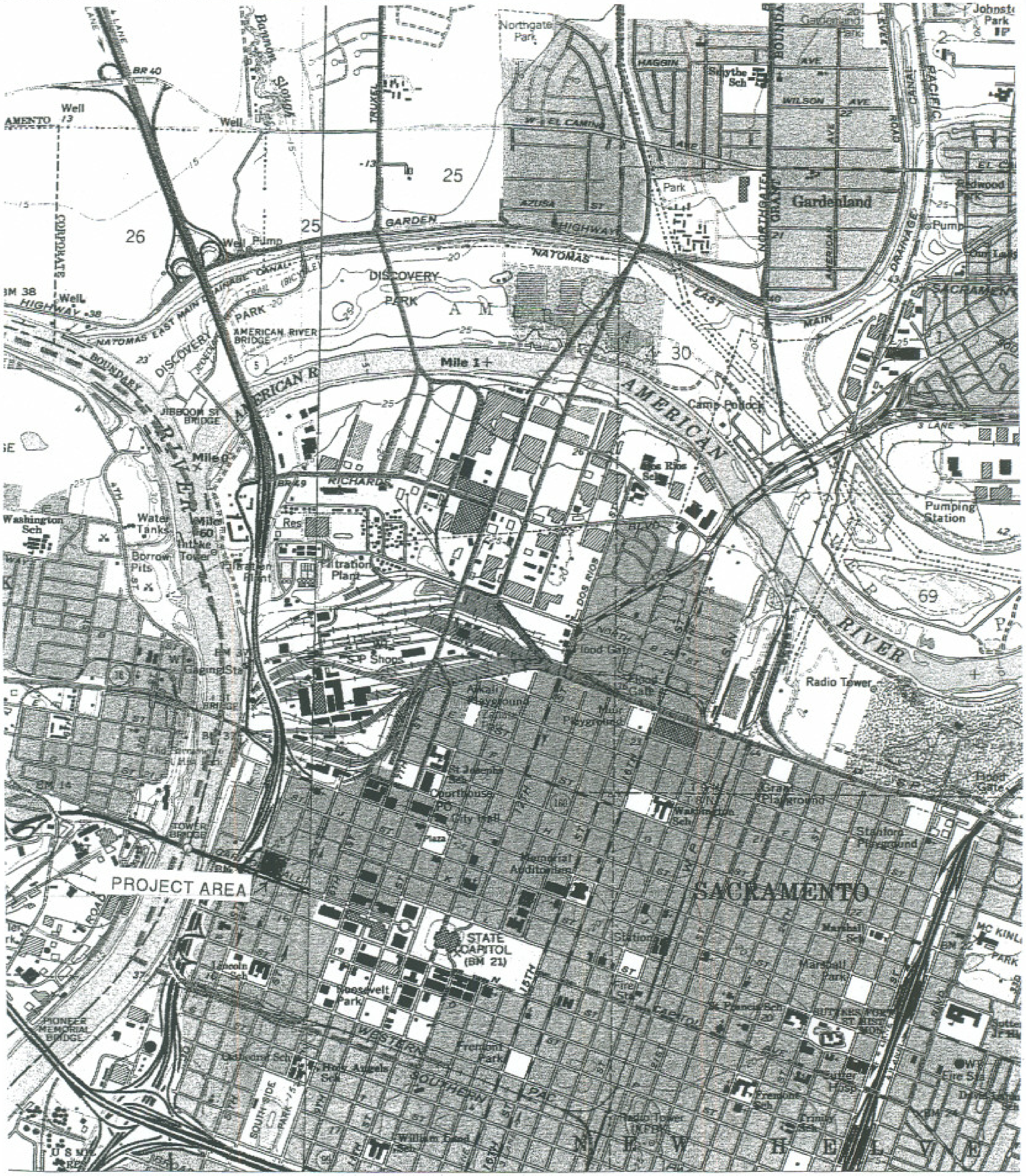
Sincerely,

Melinda A. Peak

Melinda A. Peak
President

enclosure

☒ 3941 Park Drive, Suite 20, #329, El Dorado Hills, CA 95762/Phone: (916)939-2405/Fax:(916)939-2406/email: peakinc@sbcglobal.net
☐ 3161 Godman Avenue, Suite A, Chico, CA 95973/Phone: (530)342-2800/Fax: (530)342-0273/email: peakinc@cmc.net



PROJECT AREA
SACRAMENTO
AMERICAN RIVER
DISCOVERY PARK
Gardenland
Northgate Park
Camp Pollock
Radio Tower
Pumping Station
STATE CAPITOL (BM 21)
Memorial Auditorium
Courthouse
City Hall
Roosevelt Park
Fremont Park
Lincoln Sch
Washington Sch
Water Tanks
Borrow Pits
Filtration Plant
SP Shops
Alkali Playground
Muir Playground
Grant Playground
Stanford Playground
Marshall Park
TOWER BRIDGE
JIBBOOM ST BRIDGE
AMERICAN RIVER BRIDGE
PIONEER MEMORIAL BRIDGE
Mile 1
Well
Well Pump
HIGHWAY
NATOMAS EAST MAIN DRAINAGE CANAL
GARDEN HIGHWAY
N E W H E L V E

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

April 19, 2005

Melinda Peak
Peak & Associates, Inc.
3941 Park Drive, Suite 20
El Dorado Hills, CA 95762

Sent by Fax: 916-939-2405
Number of Pages: 4

RE: Proposed Capitol Towers projects, Sacramento County; Schuman project, Butte County

Dear Ms. Peak:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
Sacramento County
April 19, 2005

Rose Enos 15310 Bancroft Road Auburn , CA 95603 (530) 878-2378	Maidu Washoe
Joe Marine 1025 35th Avenue, Apt 9 Sacramento , CA 95822 916 429-7307	Maidu
Shingle Springs Band of Miwok Indians Jeff Murray, Cultural Resources Manager P.O. Box 1340 Shingle , CA 95682 shingle_springs_rancheria@ho (530) 676-8010 (530) 676-8033 Fax	Miwok Maidu
Shingle Springs Band of Miwok Indians Nicholas Fonseca, Chairperson P.O. Box 1340 Shingle , CA 95682 shingle_springs_rancheria@ho (530) 676-8010 (530) 676-8033 Fax	Miwok Maidu
United Auburn Indian Community of the Auburn Jessica Tavares, Chairperson 575 Menlo Drive, Suite 2 Rocklin , CA 95765 916 663-3720 916 663-3727 - Fax	Maidu Miwok

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resource assessment for the proposed Capitol Towers projects, Sacramento County.

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY

April 20, 2005

Joe Marine
1025 35th Avenue
Sacramento, CA 95822

Subject: Capital Towers Project

Dear Mr. Marine:

We are involved in initial cultural resource studies for the block in the City of Sacramento bounded by Third, Fourth, and L streets and Capitol Mall on the south. The block is proposed for development for commercial and residential purposes, with two high-rise tower buildings. No prehistoric sites have been identified previously on or near the subject block.

The Native American Heritage Commission provided your name as a possible contact for information on the block. If you have any knowledge regarding prehistoric sites or areas of concern in or near the block, could you please contact me? Thank you.

Sincerely,

Melinda A. Peak

Melinda A. Peak
President

■ 3941 Park Drive, Suite 20, #329, El Dorado Hills, CA 95762/Phone: (916)939-2405/Fax:(916)939-2406/email: peakinc@sbcglobal.net
□ 3161 Godman Avenue, Suite A, Chico, CA 95973/Phone: (530)342-2800/Fax: (530)342-0273/email: peakinc@cmc.net

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY

April 20, 2005

Shingle Springs Band of Miwok Indians
Jeff Murray, Cultural Resources Manager
PO Box 1340
Shingle Springs, CA 95682

Subject: Capital Towers Project

Dear Mr. Murray:

We are involved in initial cultural resource studies for the block in the City of Sacramento bounded by Third, Fourth, and L streets and Capitol Mall on the south. The block is proposed for development for commercial and residential purposes, with two high-rise tower buildings. No prehistoric sites have been identified previously on or near the subject block.

The Native American Heritage Commission provided your name as a possible contact for information on the block. If you have any knowledge regarding prehistoric sites or areas of concern in or near the block, could you please contact me? Thank you.

Sincerely,

Melinda A. Peak

Melinda A. Peak
President

☒ 3941 Park Drive, Suite 20, #329, El Dorado Hills, CA 95762/Phone: (916)939-2405/Fax:(916)939-2406/email: peakinc@sbcglobal.net
☐ 3161 Godman Avenue, Suite A, Chico, CA 95973/Phone: (530)342-2800/Fax: (530)342-0273/email: peakinc@cmc.net

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY

April 20, 2005

Shingle Springs Band of Miwok Indians
Nicholas Fonseca, Chairperson
PO Box 1340
Shingle Springs, CA 95682

Subject: Capital Towers Project

Dear Mr. Fonseca:

We are involved in initial cultural resource studies for the block in the City of Sacramento bounded by Third, Fourth, and L streets and Capitol Mall on the south. The block is proposed for development for commercial and residential purposes, with two high-rise tower buildings. No prehistoric sites have been identified previously on or near the subject block.

The Native American Heritage Commission provided your name as a possible contact for information on the block. If you have any knowledge regarding prehistoric sites or areas of concern in or near the block, could you please contact me? Thank you.

Sincerely,

Melinda A. Peak

Melinda A. Peak
President

■ 3941 Park Drive, Suite 20, #329, El Dorado Hills, CA 95762/Phone: (916)939-2405/Fax:(916)939-2406/email: peakinc@sbcglobal.net
□ 3161 Godman Avenue, Suite A, Chico, CA 95973/Phone: (530)342-2800/Fax: (530)342-0273/email: peakinc@cmc.net

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY

April 20, 2005

United Auburn Indian Community
Jessica Tavares, Cahirperson
575 Menlo Drive, Suite 2
Rocklin, CA 95765

Subject: Capital Towers Project

Dear Ms. Tavares:

We are involved in initial cultural resource studies for the block in the City of Sacramento bounded by Third, Fourth, and L streets and Capitol Mall on the south. The block is proposed for development for commercial and residential purposes, with two high-rise tower buildings. No prehistoric sites have been identified previously on or near the subject block.

The Native American Heritage Commission provided your name as a possible contact for information on the block. If you have any knowledge regarding prehistoric sites or areas of concern in or near the block, could you please contact me? Thank you.

Sincerely,

Melinda A. Peak

Melinda A. Peak
President

☒ 3941 Park Drive, Suite 20, #329, El Dorado Hills, CA 95762/Phone: (916)939-2405/Fax:(916)939-2406/email: peakinc@sbcglobal.net
☐ 3161 Godman Avenue, Suite A, Chico, CA 95973/Phone: (530)342-2800/Fax: (530)342-0273/email: peakinc@cmc.net

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY

April 20, 2005

Rose Enos
15310 Bancroft Road
Auburn CA 95603

Subject: Capital Towers Project

Dear Ms. Enos:

We are involved in initial cultural resource studies for the block in the City of Sacramento bounded by Third, Fourth, and L streets and Capitol Mall on the south. The block is proposed for development for commercial and residential purposes, with two high-rise tower buildings. No prehistoric sites have been identified previously on or near the subject block.

The Native American Heritage Commission provided your name as a possible contact for information on the block. If you have any knowledge regarding prehistoric sites or areas of concern in or near the block, could you please contact me? Thank you.

Sincerely,

Melinda A. Peak

Melinda A. Peak
President

■ 3941 Park Drive, Suite 20, #329, El Dorado Hills, CA 95762/Phone: (916)939-2405/Fax:(916)939-2406/email: peakinc@sbcglobal.net
□ 3161 Godman Avenue, Suite A, Chico, CA 95973/Phone: (530)342-2800/Fax: (530)342-0273/email: peakinc@cmc.net

Appendix E

CNDDB REPORT

Accipiter cooperii

Cooper's hawk

Element Code: ABNKC12040

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: (NESTING) WOODLAND, CHIEFLY OF OPEN, INTERRUPTED OR MARGINAL TYPE.
Micro: NEST SITES MAINLY IN RIPARIAN GROWTHS OF DECIDUOUS TREES, AS IN CANYON BOTTOMS ON RIVER FLOOD-PLAINS; ALSO, LIVE OAKS.

Occurrence No. 61 **Map Index:** 33435 **EO Index:** 29285
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: WALKER, R. 1996 (OBS)

Dates Last Seen
Element: 1996-07-17
Site: 1996-07-17
Record Last Updated: 1996-09-04

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.60450° / -121.47256°
UTM: Zone-10 N4273995 E633000
Radius: 80 meters
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 05E
Section: 01 **Qtr:** NW
Meridian: M

Location: NATOMAS EAST MAIN DRAINAGE CANAL, SOUTH OF EAST LEVEE ROAD AND 0.2 MILE EAST OF NORTHGATE BLVD, SACRAMENTO.
Ecological: NEST TREE IS A VALLEY OAK; NEST IS 1/3 OF THE WAY DOWN FROM THE CANOPY TOP. HABITAT CONSISTS OF VALLEY OAK/COTTONWOOD RIPARIAN, INCLUDING AN UNDERSTORY OF GRAPES, WILLOWS, BUTTONWILLOW, AND BLACKBERRY; SURROUNDED BY URBAN DEVELOPMENT.
Threat: MAIN THREAT IS HUMAN DISTURBANCE FROM TRANSIENTS/HOMELESS PEOPLE THAT USE THE AREA.
General: 1 ADULT AND 3 YOUNG NEAR FLEDGING ("BRANCHERS") OBSERVED ON 17 JULY 1996.
Owner/Manager: SAC COUNTY-PARKS & REC

Agelaius tricolor

tricolored blackbird

Element Code: ABPBXB0020

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2G3
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: (NESTING COLONY) HIGHLY COLONIAL SPECIES, MOST NUMBEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.
Micro: REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

* SENSITIVE *

Occurrence No. 162 **Map Index:** 11126 **EO Index:** 24678
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: DE HAVEN, R. (OBS)

Dates Last Seen
Element: 197X-XX-XX
Site: 1992-06-25
Record Last Updated: 1992-07-02

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

* SENSITIVE *

Lat/Long:
UTM:
Radius:
Elevation:
Mapping Precision:
Symbol Type:
Township:
Range:
Section: **Qtr:**
Meridian:

Location: *SENSITIVE* Location information suppressed.
Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.
Ecological: NESTING IN MUSTARD AND THISTLE.
Owner/Manager:

Archoplites interruptus

Sacramento perch

Element Code: AFCQB07010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S1

Other Lists
CDFG Status: SC

Habitat Associations
General: HISTORICALLY FOUND IN THE SLOUGHS, SLOW-MOVING RIVERS, AND LAKES OF THE CENTRAL VALLEY.
Micro: PREFER WARM WATER. AQUATIC VEGETATION IS ESSENTAL FOR YOUNG. TOLERATE WIDE RANGE OF PHYSICO-CHEMICAL WATER CONDITIONS.

Occurrence No. 4 Map Index: 42795 EO Index: 42795
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ACEITUNO & NICOLA 1976 (LIT)

Dates Last Seen
Element: 1973-XX-XX
Site: 1973-XX-XX
Record Last Updated: 2000-04-19

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.50841° / -121.53532°
UTM: Zone-10 N4263243 E627705
Area: 53.0 ac
Elevation: 10 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 04E
Section: 99 Qtr: XX
Meridian: X

Location: LAKE GREENHAVEN (AKA BRICKYARD POND), W OF HAVENSIDE DR & N OF GLORIA DR, BETWEEN I-5 & SACRAMENTO RIVER, SACRAMENTO.
Location Detail: PRESENT IN LAKE AS OF 1973, INFORMATION REPORTED AS BEING TAKEN FROM FISH & GAME FILES.
Ecological: PAST FLOODPLAIN LAKE, IN THE GARCIA BEND AREA OF THE SACRAMENTO RIVER.
Threat: INTRODUCED PREDATORS AND COMPETITORS, POOR WATER QUALITY
General: UNKNOWN POPULATION SIZE REPORTED AS STILL EXTANT IN 1973.
Owner/Manager: UNKNOWN

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status — Federal: None; State: None

NDDB Element Ranks — Global: G4; State: S2

Other Lists — CDFG Status: SC

Habitat Associations

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.

Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 59 **Map Index:** 11348 **EO Index:** 25458

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: VINCENTY, J. 1974 (PERS)

Dates Last Seen — Element: 1974-02-XX; Site: 1974-02-XX
Record Last Updated: 1989-08-10

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.57712° / -121.46245°
UTM: Zone-10 N4270972 E633931
Radius: 1/5 mile
Elevation: 25 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** XX **Qtr:** XX **Meridian:** M

Location: VICINITY OF MCKINLEY PARK, SW OF CALIFORNIA STATE EXPOSITION, SACRAMENTO.

General: SEVERAL COLONIES OBSERVED IN GROUND BURROWS IN 1974; NESTING WAS SUCCESSFUL.

Owner/Manager: UNKNOWN

Occurrence No. 60 **Map Index:** 11437 **EO Index:** 25460

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Decreasing
Main Source: VINCENTY, J. 1974 (LIT)

Dates Last Seen — Element: 1974-02-XX; Site: 2000-10-19
Record Last Updated: 2003-05-07

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.57270° / -121.41573°
UTM: Zone-10 N4270550 E638009
Radius: 1/10 mile
Elevation: 25 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** 03 **Qtr:** XX **Meridian:** M

Location: IMMEDIATELY SW OF THE JUNCTION OF HOWE AVE AND FAIR OAKS BLVD, SACRAMENTO.

Ecological: THE SITE IS NOW COMPLETELY DEVELOPED WITH OFFICE BUILDINGS, LANDSCAPING AND MANICURED LAWNS. THERE IS NO REMAINING HABITAT FOR BURROWING OWLS.

General: SEVERAL COLONIES OBSERVED IN GROUND BURROWS DURING 1974; NESTING WAS SUCCESSFUL.

Owner/Manager: UNKNOWN

Occurrence No. 61 **Map Index:** 11424 **EO Index:** 25459

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: VINCENTY, J. 1974 (LIT)

Dates Last Seen — Element: 1974-02-XX; Site: 1974-02-XX
Record Last Updated: 2003-05-07

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.55960° / -121.42387°
UTM: Zone-10 N4269084 E637326
Area: 343.4 ac
Elevation: 20 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 08N **Range:** 05E **Section:** 10 **Qtr:** XX **Meridian:** M

Location: SACRAMENTO STATE COLLEGE AND ADJACENT LEVEE AREAS ALONG THE AMERICAN RIVER, SACRAMENTO.

Location Detail: LEVEE BURROWS WERE ON THE WEST SIDE OF THE LEVEE ON THE WEST BANK OF THE AMERICAN RIVER.

General: "LARGE NUMBERS" OBSERVED ALONG THE LEVEE IN LATE 1960'S & EARLY 1970'S. 14 NESTING COLONIES OBSERVED IN GROUND BURROWS ON THE UNIVERSITY IN 1974; MOST NESTING WAS UNSUCCESSFUL.

Owner/Manager: CSU-SACRAMENTO (PART)

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 127 **Map Index:** 20688 **EO Index:** 9327
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: KOFORD, E. 1990 (OBS)

Dates Last Seen
Element: 2003-XX-XX
Site: 2003-XX-XX
Record Last Updated: 2003-12-03

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51679° / -121.40308°
UTM: Zone-10 N4264365 E639219
Area: 163.9 ac
Elevation: 40 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 26 **Qtr:** XX
Meridian: M

Location: VICINITY OF THE B. T. COLLINS USAR CENTER, JUST SE OF THE JUNCTION OF FRUITRIDGE ROAD AND POWER INN ROAD, SACRAMENTO
Location Detail: MOST BURROWS ARE LOCATED ALONG BERMS EDGING THE PERIPHERY OF THE ARMY DEPOT.
Ecological: HABITAT CONSISTS OF ARTIFICIAL BERMS AND LEVEES PLANTED IN INTRODUCED GRASSLAND.
Threat: THREATENED BY POTENTIAL CLOSURE OF ARMY DEPOT AND CONVERSION TO DEVELOPMENT.
General: 1990: AT LEAST 6 NESTING BURROWS SCATTERED OVER THIS SITE, WITH AT LEAST 14 INDIVIDUAL BIRDS PRESENT. 4 ADULTS OBSERVED AT A BURROW SITE ON 7 MAR 2003. 11 ACTIVE BURROWS OBSERVED DURING A 2003 STUDY. BOTH ADULTS AND JUVENILES OBSERVED.
Owner/Manager: PVT, DOD-SACRAMENTO ARMY DEPOT

Occurrence No. 467 **Map Index:** 48312 **EO Index:** 48312
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STACKHOUSE, E. 2002 (OBS)

Dates Last Seen
Element: 2002-06-28
Site: 2002-06-28
Record Last Updated: 2002-07-18

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51921° / -121.49841°
UTM: Zone-10 N4264493 E630903
Radius: 80 meters
Elevation: 15 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 04E
Section: 25 **Qtr:** NW
Meridian: M

Location: SACRAMENTO; NORTHWEST CORNER OF SACRAMENTO EXECUTIVE AIRPORT.
Location Detail: 60 FT NORTH OF CDF&G HANGER.
Ecological: HABITAT CONSISTS OF FIELD WITH AVENA FATUA, LOLIUM MULTIFLORUM AND YELLOW STAR THISTLE. SUBSTRATE: SAN JOAQUIN SILT LOAM. 0% SLOPE. SURROUNDING LAND CONSISTS OF AN AIRPORT.
Threat: FREQUENTLY MOWED FIELD. PROPOSED FOR DEVELOPMENT IN 2002.
General: 5 ADULTS OBSERVED USING AREA FOR BREEDING ON 28 JUN 2002.
Owner/Manager: SAC COUNTY, CITY OF SACRAMENTO

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status — **Federal:** None; **State:** None

NDDB Element Ranks — **Global:** G4; **State:** S2

Other Lists — **CDFG Status:** SC

Habitat Associations

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.

Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 488 **Map Index:** 48664 **EO Index:** 48664

Dates Last Seen — **Element:** 1974-02-XX; **Site:** 1974-02-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: VICENTY, J. 1974 (LIT)

Record Last Updated: 2003-05-07

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.57733° / -121.43523°
UTM: Zone-10 N4271035 E636302
Area: 25.6 ac
Elevation: 25 ft

Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON

Township: 08N **Range:** 05E **Section:** 04 **Qtr:** XX **Meridian:** M

Location: VICINITY OF ELVAS AND 51ST STREET, SACRAMENTO.

General: 2 BURROWS OBSERVED IN AREA DURING 1974 NEST SURVEY.

Owner/Manager: UNKNOWN

Occurrence No. 525 **Map Index:** 49112 **EO Index:** 49112

Dates Last Seen — **Element:** 1997-03-06; **Site:** 1997-03-06

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: BAXTER, R. 1997 (PERS COM)

Record Last Updated: 2002-10-23

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.55183° / -121.58357°
UTM: Zone-10 N4267995 E623423
Radius: 1/10 mile
Elevation: 10 ft

Mapping Precision: NON-SPECIFIC
Symbol Type: POINT

Township: 08N **Range:** 04E **Section:** 07 **Qtr:** SW **Meridian:** M

Location: ADJACENT TO THE DEEP WATER SHIP CHANNEL, 0.9 MILE SE OF GREENS LAKE, EAST SIDE OF YOLO BYPASS

Location Detail: BURROW WAS LOCATED 170' FEET SOUTH OF A LONE POWER POLE CONTAINING A "POSTED NO TRESPASSING" SIGN.

Ecological: HABITAT CONSISTS OF A SMALL BENCH ON THE LAND (EAST) SIDE OF SLOPE OF THE LEVEE; LEVEE SLOPE WAS VEGETATED BY ANNUAL GRASSES AND WEEDS AND ALSO SUPPORTED GROUND SQUIRRELS.

Threat: THREATENED BY ROAD/LEVEE MAINTENANCE ACTIVITIES.

General: BURROWING OWL OBSERVED AT ITS BURROW ON 4 AND 6 MAR 1997; OWL WAS NOT OBSERVED ON A 12 MAR 1997 REVISIT, AND GRADING ACTIVITIES MAY HAVE CAUSED ABANDONMENT.

Owner/Manager: RECLAMATION DISTRICT 900

Occurrence No. 569 **Map Index:** 51256 **EO Index:** 51256

Dates Last Seen — **Element:** 1901-05-08; **Site:** 1901-05-08

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MVZ 2003 (MUS)

Record Last Updated: 2004-02-17

Quad Summary: SACRAMENTO EAST (3812154/512C), RIO LINDA (3812164/512B)
County Summary: SACRAMENTO

Lat/Long: 38.62254° / -121.42968°
UTM: Zone-10 N4276060 E636699
Radius: 1 mile
Elevation: 45 ft

Mapping Precision: NON-SPECIFIC
Symbol Type: POINT

Township: 09N **Range:** 05E **Section:** 21 **Qtr:** XX **Meridian:** M

Location: HAGGINWOOD. VICINITY OF ARCADE CREEK, BUSINESS I-80 AND HAGGIN OAKS GOLF COURSE.

Location Detail: COLLECTION FROM "HAGGIN'S RANCH, 5 MILES NORTH OF SACRAMENTO". THIS IS NOW THE HAGGINWOOD NEIGHBORHOOD OF SACRAMENTO.

General: MVZ EGG SET #893 COLLECTED 8 MAY 1901 BY R. H. ELLIOTT

Owner/Manager: UNKNOWN

Branchinecta lynchi

vernal pool fairy shrimp

Element Code: ICBRA03030

Status
Federal: Threatened
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status:

Habitat Associations
General: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.
Micro: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Occurrence No. 32 **Map Index:** 31558 **EO Index:** 6893
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: FOSTER WHEELER ENVIRON. CORP. 1995 (LIT)

Dates Last Seen
Element: 1995-02-08
Site: 1995-04-21
Record Last Updated: 1995-08-25

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51137° / -121.39697°
UTM: Zone-10 N4263773 E639762
Area: 5.3 ac
Elevation: 40 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 26 **Qtr:** SE
Meridian: M

Location: FORMER SACRAMENTO ARMY DEPOT. B.T. COLLINS ARMY RESERVE TRAINING CENTER.
Location Detail: FOUND ONLY IN SEASONAL WETLAND IN THE IMMEDIATE VICINITY OF THE RUNNING TRACK.
Ecological: 53 PONDED WATER AREAS SAMPLED EVERY 2 WEEKS BETWEEN 12/19/95 & 4/21/95. AREAS SURVEYED INCLUDED SEASONAL WETLANDS, SHALLOW SWALES, TIRE TRACKS, PONDED AREAS IN RUNNING TRACK & BASEBALL DIAMOND, FIELD & ROADSIDE DRAINAGE DITCHES.
General: BRACHINECTA LYNCHI FOUND IN ONLY 3 OF 53 SITES. FOUND ONLY BETWEEN 1/31/95 & 2/8/95. 2 POOLS HAD POP. EST. <50, 1 POOL >50. ALSO FOUND LINDERIELLA OCCIDENTALIS; 11 ADULTS COLLECTED AND DEPOSITED IN CAS; MORE POOL INFO IN REPORT.
Owner/Manager: DOD-BT COLLINS RESERVE TR CNTR

Occurrence No. 35 **Map Index:** 32443 **EO Index:** 637
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SUGNET & ASSOC. 1995 (LIT)

Dates Last Seen
Element: 1995-01-05
Site: 1995-01-05
Record Last Updated: 1996-03-11

Quad Summary: CARMICHAEL (3812153/512D), SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.50564° / -121.37821°
UTM: Zone-10 N4263165 E641409
Area: 15.7 ac
Elevation: 40 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 36 **Qtr:** NE
Meridian: M

Location: 1.2 KM ESE OF ELDER CREEK ROAD X FLORIN PERKINS ROAD; SE OF THE FORMER SACRAMENTO ARMY DEPOT.
Location Detail: ELDER CREEK PROPERTY. BRANCHINECTA LYNCHI WERE FOUND IN TWO OF 90 SAMPLED WETLANDS.
Ecological: HARDPAN VERNAL POOL IN ANNUAL GRASSLAND.
Threat: RURAL AGRICULTURE; URBAN DEVELOPMENT OCCURING IN VICINITY.
General: POOL #46: 12/21/1994: >50 ADULTS OBSERVED, 1/5/1995: <50 ADULTS OBSERVED, 3 SPECIMENS COLLECTED AND DEPOSITED IN CAS; POOL #51: 12/21/94: >50 ADULTS OBSERVED, 1/5/95: >50 ADULTS OBSERVED.
Owner/Manager: PVT-PIPE TRADES TRUST FUND

Branchinecta lynchi

vernal pool fairy shrimp — Element Code: ICBRA03030

Status — Federal: Threatened; State: None

NDDB Element Ranks — Global: G3; State: S2S3

Other Lists — CDFG Status:

Habitat Associations

General: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Occurrence No. 122 **Map Index:** 33380 **EO Index:** 28755

Dates Last Seen — Element: 1996-03-10; Site: 1996-03-10

Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MARTIN, D. 1996 (OBS)
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.53209° / -121.39920°
UTM: Zone-10 N4266068 E639528
Area: 6.3 ac
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 23 **Qtr:** XX
Meridian: M

Location: ALONG THE CENTRAL CALIFORNIA TRACTION COMPANY (RAILROAD) RIGHT-OF-WAY, AT THE NORTH END OF 83RD STREET, SACRAMENTO.

Location Detail: LOCATED IN A SERIES OF PONDED DEPRESSIONS ALONG THE RAILROAD RIGHT-OF-WAY. B. LYNCHI FOUND IN 5 OF 27 SAMPLED DEPRESSIONS.

Ecological: HABITAT CONSISTS OF PONDED DEPRESSIONS; OTHER RARE SPECIES FOUND INCLUDE BRANCHINECTA MESOVALLENSIS (UNDESCRIBED) AND LINDERIELLA OCCIDENTALIS.

Threat: CONSTANT DISTURBANCE BY RAILROAD TRUCKS & OTHERS DRIVING THROUGH POOLED AREAS. ALSO TIRES & DEBRIS IN POOLED AREAS.

General: >50 INDIVIDUALS OBSERVED IN FIVE OF THE DEPRESSIONS DURING SURVEYS CONDUCTED FROM 6 FEBRUARY TO 10 MARCH 1996.

Owner/Manager: PVT

Occurrence No. 131 **Map Index:** 34791 **EO Index:** 12989

Dates Last Seen — Element: 1992-04-03; Site: 1992-04-03

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: KOFORD, E. 1992 (PERS)
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51058° / -121.40219°
UTM: Zone-10 N4263677 E639309
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: 26 **Qtr:** SW
Meridian: M

Location: RAILROAD DITCH AT 47TH AVENUE (ELDER CREEK RD) AND SPTRR, NEAR POWER INN ROAD; NEAR SW CORNER OF SACRAMENTO ARMY DEPOT.

Location Detail: SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM CORNER OF 65TH ST & HWY 50.

Ecological: RAILROAD DITCH.

General: KOFORD OBSERVED B. LYNCHI IN DITCH DURING SURVEY IN SPRING OF 1992; LINDERIELLA OCCIDENTALIS AND LEPIDURUS PACKARDI ALSO OBSERVED.

Owner/Manager: PVT-SOUTHERN PACIFIC RR

Branchinecta lynchi

vernal pool fairy shrimp

Element Code: ICBRA03030

Status
Federal: Threatened
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status:

Habitat Associations
General: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.
Micro: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Occurrence No. 166 **Map Index:** 33692 **EO Index:** 30609
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SUGNET & ASSOC. 1993 (PERS)

Dates Last Seen
Element: 1992-04-03
Site: 1992-04-03
Record Last Updated: 1998-08-10

Quad Summary: FLORIN (3812144/496B), SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51048° / -121.39984°
UTM: Zone-10 N4263669 E639514
Area: 1,513.2 ac
Elevation: 35 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 35 **Qtr:** XX
Meridian: M

Location: SOUTH OF FRUITRIDGE RD, NORTH OF FLORIN RD, EAST OF POWER INN RD, & WEST OF FLORIN PERKINS RD.
Location Detail: ROADSIDE DITCHES LOCATED SOMEWHERE IN SECTIONS 26 AND 35.
Ecological: MOST OF SECTION 26 IS URBANIZED.
General: A MANMADE ROADSIDE DITCH IN SECTION 35 CONTAINED B. LYNCHI AND LEPIDURUS PACKARDI.
Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk — Element Code: ABNKC19070

Status — Federal: None; State: Threatened

NDDB Element Ranks — Global: G5; State: S2

Other Lists — CDFG Status:

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 12 **Map Index:** 11220 **EO Index:** 7542

Dates Last Seen — Element: 1993-07-15; Site: 1993-07-15

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Stable
Record Last Updated: 1993-09-08
Main Source: DEPT OF FISH & GAME 1984 (PERS)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.52605° / -121.52746° **Township:** 08N
UTM: Zone-10 N4265211 E628359 **Range:** 04E
Radius: 80 meters **Mapping Precision:** SPECIFIC **Section:** 22 **Qtr:** SE
Elevation: 10 ft **Symbol Type:** POINT **Meridian:** M

Location: SACRAMENTO RIVER, RM-54.20(L), ON THE SOUTH EDGE OF CHICORY BEND, WEST OF SACRAMENTO.

Ecological: NEST TREE IS A MEDIUM-SIZED COTTONWOOD, LOCATED ABOUT 60 FEET FROM THE RIVER; SURROUNDING FORAGE CONSISTS OF WHEAT FIELDS AND FALLOW FIELDS.

General: DFG SWHA #SA009. ACTIVE NEST SITE, 1979-91 (EXCEPT POSSIBLY IN 1980); 2 YOUNG FLEDGED IN 1979, 2 YOUNG FLEDGED IN 1981, 1 YOUNG FLEDGED IN 1984, AND 1 YOUNG FLEDGED IN 1988, 2 YOUNG PRODUCED IN 1993.

Owner/Manager: UNKNOWN

Occurrence No. 136 **Map Index:** 11217 **EO Index:** 27162

Dates Last Seen — Element: 1993-07-15; Site: 1993-07-15

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 1998-11-10
Main Source: DEPT OF FISH & GAME 1984 (PERS)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.60358° / -121.53071° **Township:** 99X
UTM: Zone-10 N4273810 E627938 **Range:** 99X
Radius: 80 meters **Mapping Precision:** SPECIFIC **Section:** XX **Qtr:** SW
Elevation: 25 ft **Symbol Type:** POINT **Meridian:** X

Location: SACRAMENTO RIVER, RM-61.5(R), WEST OF DISCOVERY PARK, SACRAMENTO

Ecological: NEST TREE IS A MEDIUM-SIZED COTTONWOOD, LOCATED 30 FEET FROM THE RIVER; SURROUNDING FORAGING HABITAT CONSISTS OF GRASSY/WEEDY FIELDS.

General: DFG SWHA #YO043. ONE HAWK OBSERVED SOARING IN 1983. NEST SITE DISCOVERED IN 1984, AND HAS BEEN ACTIVE EVERY YEAR (EXCEPT 1988) SINCE, SUCCESSFULLY FLEDGING 1-2 YOUNG EVERY YEAR EXCEPT 1991. 1992 ACTIVITY UNKNOWN; 1993, 1+ YOUNG PRODUCED.

Owner/Manager: PVT

Occurrence No. 196 **Map Index:** 11150 **EO Index:** 27102

Dates Last Seen — Element: 1991-XX-XX; Site: 1991-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 1993-04-13
Main Source: DEPT OF FISH & GAME 1984 (PERS)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.61295° / -121.55718° **Township:** 09N
UTM: Zone-10 N4274813 E625616 **Range:** 04E
Radius: 1/5 mile **Mapping Precision:** NON-SPECIFIC **Section:** 20 **Qtr:** SW
Elevation: 20 ft **Symbol Type:** POINT **Meridian:** M

Location: SACRAMENTO RIVER, RM-63.6(R), 1 MILE NW OF I-80, SACRAMENTO.

Ecological: NEST TREE IS A COTTONWOOD, LOCATED WITHIN GOOD RIPARIAN VEGETATION; SURROUNDING FORAGING HABITAT CONSISTS OF AGRICULTURAL FIELDS, PLANTED MAINLY IN TOMATOES.

General: DFG SWHA #SA032. 2 ADULTS AND NEST FOUND IN 1983. NO HAWKS OBSERVED IN 1984 OR 1986; 2 OBSERVED SOARING IN 1985. IN 1987 AND 1991, TWO HAWKS WERE OBSERVED NESTING; NESTING SUCCESS UNKNOWN.

Owner/Manager: PVT

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status
Federal: None
State: Threatened

NDDB Element Ranks
Global: G5
State: S2

Other Lists
CDFG Status:

Habitat Associations
General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.
Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 287 **Map Index:** 11256 **EO Index:** 27027

Dates Last Seen
Element: 1991-XX-XX
Site: 1991-XX-XX
Record Last Updated: 1998-11-10

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: DEPT. OF FISH & GAME 1986 (LIT)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.60226° / -121.51233°
UTM: Zone-10 N4273690 E629541
Radius: 80 meters
Elevation: 20 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 99X
Range: 99X
Section: XX Qtr: SE
Meridian: X

Location: SACRAMENTO RIVER, RM-60.5(L), JUST UPSTREAM FROM DISCOVERY PARK, SACRAMENTO.
Ecological: NEST TREE IS A MEDIUM-SIZED COTTONWOOD, 40 FEET FROM THE RIVER; SURROUNDING FORAGING HABITAT CONSISTS OF GRASSY, WEEDY FIELDS.
Threat: POSSIBLE THREAT FROM DISTURBANCE ACROSS THE RIVER FROM MAJOR LAND DEVELOPMENT/CONSTRUCTION.
General: DFG SWHA #SA016. NEST WITH TWO YOUNG FOUND ON 19 JUNE 1981. BIRDS WERE OBSERVED SOARING 1983-85. IN 1986, ONE YOUNG WAS FLEDGED. IN 1990, TWO ADULTS NESTED, FLEDGING TWO YOUNG. IN 1991, ONE YOUNG WAS FLEDGED
Owner/Manager: CITY OF SACRAMENTO

Occurrence No. 326 **Map Index:** 21079 **EO Index:** 9026

Dates Last Seen
Element: 1991-XX-XX
Site: 1993-XX-XX
Record Last Updated: 1999-10-25

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: WILKINSON, C. 1990 (OBS)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.62265° / -121.56098°
UTM: Zone-10 N4275885 E625269
Radius: 80 meters
Elevation: 30 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: 20 Qtr: NE
Meridian: M

Location: SACRAMENTO RIVER, RM-64.5(L), 2.5 MILES WEST OF THE I-5/I-80 JUNCTION, SACRAMENTO.
Ecological: NEST TREE IS A TALL COTTONWOOD, LOCATED 20 FEET FROM THE RIVER IN RIPARIAN; SURROUNDING FORAGING HABITAT CONSISTS OF AGRICULTURAL FIELDS.
Threat: POTENTIAL THREAT FROM THE SACRAMENTO URBAN LEVEE RECONSTRUCTION PROJECT.
General: DFG SWHA #SA066. 2 ADULTS OBSERVED NESTING IN 1990; NO YOUNG FLEDGED. IN 1991, 2 ADULTS NESTED, FLEDGING 2 YOUNG. NO BIRDS OBSERVED IN 1993.
Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status
Federal: None
State: Threatened

NDDB Element Ranks
Global: G5
State: S2

Other Lists
CDFG Status:

Habitat Associations
General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.
Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 498 **Map Index:** 23024 **EO Index:** 27192

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 2001 (OBS)

Dates Last Seen
Element: 2001-06-22
Site: 2001-06-22
Record Last Updated: 2003-04-10

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.58066° / -121.57082°
UTM: Zone-10 N4271212 E624484
Radius: 80 meters
Elevation: 10 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: 32 **Qtr:** XX
Meridian: M

Location: 0.4 MILE NORTH OF I-80, 0.5 MILE NW OF THE I-80/HIGHWAY 50 JUNCTION, WEST SACRAMENTO
Location Detail: NEST TREE IS LOCATED ALONG THE SOUTH SIDE OF THE UNION PACIFIC RR TRACKS.
Ecological: NEST TREE IS AN 85' COTTONWOOD, SURROUNDED BY WELL-DEVELOPED RIPARIAN HABITAT AROUND THE RAILROAD TRACKS. MANY LARGE, POTENTIAL NEST TREES ARE FOUND IN THE VICINITY.
General: DFG SWHA #YO160. ONE ADULT OBSERVED SOARING NEAR NEST SITE ON 7 APR 1988. 2 ADULTS AND 3 JUVENILES (YOUNG BANDED) OBSERVED AT THE NEST SITE ON 22 JUN 2001.
Owner/Manager: PVT-UNION PACIFIC RR

Occurrence No. 499 **Map Index:** 23018 **EO Index:** 13259

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MAIER, L. 1990 (OBS)

Dates Last Seen
Element: 1991-XX-XX
Site: 1993-XX-XX
Record Last Updated: 1999-10-19

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.51541° / -121.54157°
UTM: Zone-10 N4264011 E627147
Radius: 1/5 mile
Elevation: 10 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 04E
Section: 28 **Qtr:** SW
Meridian: M

Location: SACRAMENTO RIVER, RM-52.7(L), BETWEEN CLAY BANK BEND AND OAK HALL BEND, SACRAMENTO
Ecological: NEST TREE IS A SMALL COTTONWOOD, 25 FEET FROM THE RIVER; SURROUNDING FORAGING HABITAT CONSISTS OF AGRICULTURAL FIELDS (ALFALFA AND WHEAT).
Threat: THREATENED BY DEVELOPMENT OF FORAGING HABITAT AND HIGH DISTURBANCE (PEDESTRIAN/BIKE TRAFFIC) IN VICINITY OF NEST SITE.
General: DFG SWHA #SA054. ONE BIRD OBSERVED SOARING AT THIS SITE IN 1986; NO NEST FOUND. TWO ADULTS OBSERVED NESTING IN 1990 AND 1991; NO YOUNG PRODUCED. NEST INACTIVE IN 1993.
Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status — Federal: None; State: Threatened

NDDB Element Ranks — Global: G5; State: S2

Other Lists — CDFG Status:

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 500 **Map Index:** 23019 **EO Index:** 20415

Dates Last Seen — Element: 1991-XX-XX; Site: 1991-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 1993-04-28
Main Source: LEVY, C. ET AL 1990 (OBS)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.53454° / -121.52451° **Township:** 08N
UTM: Zone-10 N4266157 E628601 **Range:** 04E
Radius: 1/5 mile **Mapping Precision:** NON-SPECIFIC **Section:** XX **Qtr:** XX
Elevation: 20 ft **Symbol Type:** POINT **Meridian:** M

Location: SACRAMENTO RIVER, RM-55.05(R), JUST UPSTREAM FROM CHICORY BEND, SACRAMENTO.

Ecological: NEST TREE IS A TALL COTTONWOOD; SURROUNDING FORAGING HABITAT CONSISTS OF ROW CROPS.

Threat: THREATENED BY VARIOUS DISTURBANCES (TREE CLEARING ACTIVITIES, MARINA OPERATIONS)

General: DFG SWHA #YO202. TWO ADULTS FLEDGED TWO YOUNG IN 1990. TWO ADULTS OBSERVED NESTING IN 1991; NESTING SUCCESS UNKNOWN.

Owner/Manager: UNKNOWN

Occurrence No. 501 **Map Index:** 23020 **EO Index:** 20410

Dates Last Seen — Element: 1990-08-08; Site: 1990-08-08

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 1993-04-28
Main Source: LEVY, C. ET AL 1990 (OBS)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.54155° / -121.51335° **Township:** 08N
UTM: Zone-10 N4266951 E629561 **Range:** 04E
Radius: 1/5 mile **Mapping Precision:** NON-SPECIFIC **Section:** XX **Qtr:** XX
Elevation: 20 ft **Symbol Type:** POINT **Meridian:** M

Location: SACRAMENTO RIVER, RM-55.9(R), NEAR RIVER ROAD AND SOUTH RIVER ROAD INTERSECTION, SACRAMENTO.

Ecological: NEST TREE IS A MEDIUM-SIZED WALNUT TREE; SURROUNDING FORAGING HABITAT CONSISTS OF FALLOW FIELDS, ROW CROPS, AND WHEAT FIELDS.

Threat: THREATENED BY AGRICULTURAL PRACTICES - WHEAT FIELD WAS SPRAYED AND HARVESTED DURING THE HAWK'S REPRODUCTIVE PERIOD.

General: DFG SWHA #YO203. TWO ADULTS FLEDGED ONE JUVENILE DURING 1990.

Owner/Manager: UNKNOWN

Occurrence No. 502 **Map Index:** 23021 **EO Index:** 7541

Dates Last Seen — Element: 1993-07-15; Site: 1993-07-15

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 1993-08-02
Main Source: LEVY, C. & C. WILKINSON 1991 (OBS)

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.54759° / -121.51076° **Township:** 08N
UTM: Zone-10 N4267625 E629776 **Range:** 04E
Radius: 80 meters **Mapping Precision:** SPECIFIC **Section:** XX **Qtr:** XX
Elevation: 20 ft **Symbol Type:** POINT **Meridian:** M

Location: SACRAMENTO RIVER, RM-56.30(R), 0.5 MILE NORTH OF LINDEN ROAD/SOUTH RIVER ROAD JUNCTION, SACRAMENTO.

Ecological: NEST TREE IS A LONE OAK, 1200 FEET FROM THE RIVER; SURROUNDING FORAGING HABITAT CONSISTS OF FALLOW AGRICULTURAL FIELDS.

General: DFG SWHA #YO204. TWO ADULTS OBSERVED NESTING IN 1991; NESTING SUCCESS UNKNOWN. 2 ADULTS OBSERVED NESTING IN 1993; NESTING SUCCESS UNKNOWN.

Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status — **Federal:** None; **State:** Threatened

NDDB Element Ranks — **Global:** G5; **State:** S2

Other Lists — **CDFG Status:**

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 503 **Map Index:** 23022 **EO Index:** 15855

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MAIER, L. 1990 (OBS)

Dates Last Seen — **Element:** 1991-XX-XX; **Site:** 1991-XX-XX
Record Last Updated: 1993-04-28

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.55347° / -121.51514°
UTM: Zone-10 N4268271 E629384
Radius: 1/5 mile
Elevation: 25 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 04E **Section:** XX **Qtr:** XX **Meridian:** M

Location: SACRAMENTO RIVER, RM-56.6(R), 0.5 MILE SOUTH OF MILLER PARK.

Ecological: NEST TREE IS A SMALL OAK, LOCATED 1200 FEET FROM THE RIVER; SURROUNDING FORAGING HABITAT INCLUDES FALLOW AGRICULTURAL FIELDS.

General: DFG SWHA #YO205. TWO ADULTS FLEDGED ONE YOUNG IN 1990. TWO ADULTS FLEDGED ONE YOUNG IN 1991.

Owner/Manager: UNKNOWN

Occurrence No. 504 **Map Index:** 23023 **EO Index:** 14240

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MAIER, L. 1990 (OBS)

Dates Last Seen — **Element:** 1990-08-XX; **Site:** 1990-08-XX
Record Last Updated: 1993-04-28

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.56391° / -121.52208°
UTM: Zone-10 N4269420 E628760
Radius: 1/5 mile
Elevation: 35 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 99X **Range:** 99X **Section:** 99 **Qtr:** XX **Meridian:** X

Location: SACRAMENTO RIVER, RM-57.6(R), ACROSS FROM MILLER PARK, SACRAMENTO.

Ecological: NEST TREE IS A MEDIUM-SIZED COTTONWOOD; SURROUNDING FORAGING HABITAT CONSISTS OF FALLOW FIELDS AND ROW CROPS.

Threat: THREATENED BY THE HIGH DEGREE OF DISTURBANCE AT THIS SITE.

General: DFG SWHA #YO206. TWO ADULTS FLEDGED ONE YOUNG IN 1990.

Owner/Manager: UNKNOWN

Occurrence No. 595 **Map Index:** 23629 **EO Index:** 20518

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ENGLAND, S. 1992 (PERS)

Dates Last Seen — **Element:** 1992-XX-XX; **Site:** 1992-XX-XX
Record Last Updated: 1996-01-03

Quad Summary: SACRAMENTO WEST (3812155/513D), TAYLOR MONUMENT (3812165/513A)
County Summary: SACRAMENTO

Lat/Long: 38.62357° / -121.54405°
UTM: Zone-10 N4276010 E626741
Radius: 1/5 mile
Elevation: 10 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** 21 **Qtr:** NE **Meridian:** M

Location: 0.25 MILE WEST OF EL CENTRO ROAD AND 0.25 MILE SOUTH OF SAN JUAN ROAD, 2 MILES NORTH OF BRYTE.

Location Detail: NEST TREE IS LOCATED ALONG A SMALL DRAINAGE CANAL.

Ecological: NEST TREE IS A COTTONWOOD.

General: DFG SWHA #SA. 1 YOUNG FLEDGED IN 1992.

Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status — **Federal:** None; **State:** Threatened
NDDB Element Ranks — **Global:** G5; **State:** S2
Other Lists — **CDFG Status:**

Habitat Associations
General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.
Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 634 **Map Index:** 23875 **EO Index:** 7539
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MORENO, L. A. 1993 (OBS)

Dates Last Seen — **Element:** 1993-07-15; **Site:** 1993-07-15
Record Last Updated: 1993-08-02

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.51501° / -121.55084°
UTM: Zone-10 N4263954 E626340
Radius: 80 meters
Elevation: 20 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 04E **Section:** XX **Qtr:** XX **Meridian:** M

Location: SACRAMENTO RIVER, RM-52.20(R), AT CLAY BANK BEND, WEST OF SACRAMENTO.
General: DFG SWHA #YO. 2 ADULTS AND AT LEAST 1 JUVENILE PRESENT AT THE NEST SITE.
Owner/Manager: UNKNOWN

Occurrence No. 635 **Map Index:** 23874 **EO Index:** 7540
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MORENO, L. A. 1993 (OBS)

Dates Last Seen — **Element:** 1993-07-15; **Site:** 1993-07-15
Record Last Updated: 1993-08-02

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.60285° / -121.51936°
UTM: Zone-10 N4273745 E628927
Radius: 80 meters
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** 26 **Qtr:** SW **Meridian:** M

Location: SACRAMENTO RIVER, RM-60.90(R), JUST UPSTREAM FROM DISCOVERY PARK, SACRAMENTO.
General: DFG SWHA #YO. 2 ADULTS AND 2 JUVENILES OBSERVED AT NEST SITE.
Owner/Manager: UNKNOWN

Occurrence No. 636 **Map Index:** 23873 **EO Index:** 7537
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MORENO, L. A. 1993 (OBS)

Dates Last Seen — **Element:** 1993-07-15; **Site:** 1993-07-15
Record Last Updated: 1999-10-25

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.60202° / -121.54078°
UTM: Zone-10 N4273623 E627064
Radius: 80 meters
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 99X **Range:** 99X **Section:** 99 **Qtr:** SE **Meridian:** X

Location: SACRAMENTO RIVER, RM-62.10(L), JUST DOWNSTREAM FROM THE PIONEER BRIDGE (I-80) OVER THE SACRAMENTO RIVER, SACRAMENTO.
General: DFG SWHA #SA???. 2 ADULTS AND 1 JUVENILE OBSERVED AT THE NEST SITE IN 1993.
Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status — **Federal:** None; **State:** Threatened

NDDB Element Ranks — **Global:** G5; **State:** S2

Other Lists — **CDFG Status:**

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 758 **Map Index:** 41771 **EO Index:** 41771

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: DEPT. OF FISH & GAME 1994 (PERS)

Dates Last Seen — **Element:** 2000-05-25; **Site:** 2000-05-25
Record Last Updated: 2000-06-22

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.61927° / -121.52435°
UTM: Zone-10 N4275560 E628464
Radius: 80 meters
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: 22 **Qtr:** SE
Meridian: M

Location: WEST EDGE OF NATOMAS MAIN DRAIN, BETWEEN ORCHARD LANE AND I-5, NW OF SACRAMENTO

Location Detail: SITE IS LOCATED WEST OF THE BIKE TRAIL, ~70 METERS SW OF THE END OF GATEWAY OAKS BLVD. 1994 NEST TREE WAS A WILLOW GROWING ON THE EAST EDGE OF THE MAIN DRAIN.

Ecological: NEST TREE IS A BLACK WALNUT; NEST IS OVERGROWN BY GRAPEVINES AND IS BARELY VISIBLE.

General: ACTIVE NEST, WITH 2 JUVENILES AND 2 ADULTS ATTENDING, OBSERVED ON 3 JUN 1994. NEST IN A NEW NEST TREE WITH AN INCUBATING ADULT AND AN ATTENDING ADULT OBSERVED, 25 MAY 2000.

Owner/Manager: UNKNOWN

Occurrence No. 769 **Map Index:** 41792 **EO Index:** 41792

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: DEPT. OF FISH & GAME 1994 (PERS)

Dates Last Seen — **Element:** 1993-XX-XX; **Site:** 1993-XX-XX
Record Last Updated: 1999-10-26

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.53086° / -121.52857°
UTM: Zone-10 N4265744 E628253
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 04E
Section: 22 **Qtr:** XX
Meridian: M

Location: SACRAMENTO RIVER, RM-54.72(L), AT CHICORY BEND, SOUTH SACRAMENTO

Location Detail: LOCATION HAS VARIED, BETWEEN RM-54.72(L) AND RM-55.10(R).

Ecological: NEST TREE WAS A COTTONWOOD IN 1990.

General: DFG SWHA #SA087. 2 ADULTS/1 JUVENILE AND NEST OBSERVED IN 1990. 3 ADULTS AND NEST OBSERVED IN 1991. 2 ADULTS NESTING IN 1992. 2 ADULTS/2 JUVENILES AND NEST OBSERVED IN 1993.

Owner/Manager: UNKNOWN

Occurrence No. 770 **Map Index:** 41793 **EO Index:** 41793

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: DEPT. OF FISH & GAME 1994 (PERS)

Dates Last Seen — **Element:** 1993-XX-XX; **Site:** 1993-XX-XX
Record Last Updated: 1999-10-26

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.55020° / -121.51153°
UTM: Zone-10 N4267914 E629704
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 04E
Section: XX **Qtr:** XX
Meridian: M

Location: SACRAMENTO RIVER, RM-56.60(L), ABOUT 1 MILE SOUTH OF MILLER PARK, SOUTH SACRAMENTO

General: DFG SWHA #SA088. 2 ADULTS PRODUCED 1 YOUNG IN 1992. 2 ADULTS NESTED, BUT THE NESTING ATTEMPT FAILED, IN 1993.

Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status — Federal: None; State: Threatened

NDDB Element Ranks — Global: G5; State: S2

Other Lists — CDFG Status:

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 931 **Map Index:** 45347 **EO Index:** 45347

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ZETTLE, B. 2001 (OBS)

Dates Last Seen — Element: 2001-04-20; Site: 2001-04-20
Record Last Updated: 2001-05-15

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.61009° / -121.49006°
UTM: Zone-10 N4274590 E631466
Radius: 80 meters
Elevation: 20 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: 25 **Qtr:** XX
Meridian: M

Location: ALONG NATOMAS EAST MAIN DRAIN, JUST NORTH OF THE GARDEN HIGHWAY, 0.5 MILE EAST OF TRUXEL, SACRAMENTO

Ecological: NEST TREE IS A COTTONWOOD, LOCATED WITHIN RIPARIAN ALONG THE NATOMAS EAST MAIN DRAIN; SURROUNDED BY AN URBAN AREA ADJACENT TO THE GARDEN HIGHWAY TO THE NORTH AND A RECREATIONAL AREA ALONG THE JEDIDIAH SMITH BIKE TRAIL TO THE SOUTH.

Threat: POSSIBLE THREAT FROM HUMAN USE OF THE NEARBY RECREATIONAL AREA.

General: ON 20 APR 2001, THE MALE WAS OBSERVED PERCHED IN A COTTONWOOD, 100 FEET EAST OF THE NEST TREE; FEMALE WAS OBSERVED SITTING ON THE NEST.

Owner/Manager: UNKNOWN

Occurrence No. 939 **Map Index:** 45688 **EO Index:** 45688

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)

Dates Last Seen — Element: 1999-06-04; Site: 1999-06-04
Record Last Updated: 2001-10-09

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.57959° / -121.57485°
UTM: Zone-10 N4271088 E624135
Radius: 1/10 mile
Elevation: 10 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: 32 **Qtr:** XX
Meridian: M

Location: SOUTH SIDE OF RAILROAD TRACKS, NORTH OF I-80, 0.8 MILE WNW OF I-80/HIGHWAY 50 INTERSECTION, WEST SACRAMENTO

Ecological: HABITAT CONSISTS OF A WELL-DEVELOPED RIPARIAN CORRIDOR ALONG THE RAILROAD TRACKS, WITH THE YOLO BYPASS FLOOD-CONTROL FACILITY AND URBAN DEVELOPMENT SOUTH OF THE SITE.

Threat: THREATENED BY DISTURBANCE DUE TO PROXIMITY TO THE RAILROAD TRACKS AND I-80.

General: 2 ADULTS OBSERVED WITH 3 JUVENILES ON 4 JUN 1999.

Owner/Manager: UNKNOWN

Occurrence No. 940 **Map Index:** 45692 **EO Index:** 45692

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)

Dates Last Seen — Element: 2001-06-22; Site: 2001-06-22
Record Last Updated: 2003-04-10

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.60024° / -121.56529°
UTM: Zone-10 N4273392 E624932
Radius: 80 meters
Elevation: 35 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: 29 **Qtr:** XX
Meridian: M

Location: ALONG THE SOUTH SIDE OF THE SACRAMENTO BYPASS, JUST NORTH OF THE CHP ACADEMY, NORTH OF I-80, WEST OF SACRAMENTO

Ecological: NEST TREE IS A LARGE COTTONWOOD ON THE INSIDE LEVEE SLOPE OF THE SACRAMENTO BYPASS; SURROUNDED BY UNDISTURBED GRASSLAND IN THE BYPASS. CHP FACILITY TO THE SOUTH AND AGRICULTURE TO THE NORTH.

Threat: THREATENED BY HUMAN DISTURBANCES.

General: 2 ADULTS OBSERVED NESTING ON 4 JUN 1999; NEST FAILED. 2 ADULTS AND 3 JUVENILES (YOUNG BANDED) OBSERVED AT THE NEST SITE ON 22 JUN 2001.

Buteo swainsoni

Swainson's hawk — **Element Code:** ABNKC19070

Status		NDDB Element Ranks		Other Lists	
Federal:	None	**Global:**	G5	**CDFG Status:**	
State:	Threatened	**State:**	S2		

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Owner/Manager: UNKNOWN

Occurrence No. 941 **Map Index:** 45700 **EO Index:** 45700

Dates Last Seen — **Element:** 1999-06-04 **Site:** 1999-06-04

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)
Record Last Updated: 2003-04-09

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.59972° / -121.58631° **Township:** 09N
UTM: Zone-10 N4273306 E623103 **Range:** 04E
Radius: 80 meters **Mapping Precision:** SPECIFIC **Section:** 30 **Qtr:** XX
Elevation: 10 ft **Symbol Type:** POINT **Meridian:** M

Location: ALONG THE NORTH LEVEE OF SACRAMENTO BYPASS, NORTH OF I-80 AND JUST EAST OF YOLO BYPASS, WEST OF SACRAMENTO

Ecological: HABITAT CONSISTS OF A WELL-DEVELOPED RIPARIAN CORRIDOR, WITH OAKS, COTTONWOODS, AND WILLOWS; FAIRLY DENSE IN PLACES.

General: 2 ADULTS AND 1 JUVENILE OBSERVED AT THE NEST ON 4 JUN 1999.

Owner/Manager: UNKNOWN

Occurrence No. 942 **Map Index:** 45707 **EO Index:** 45707

Dates Last Seen — **Element:** 2000-06-20 **Site:** 2000-06-20

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)
Record Last Updated: 2003-04-10

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.59642° / -121.57868° **Township:** 09N
UTM: Zone-10 N4272950 E623773 **Range:** 04E
Radius: 80 meters **Mapping Precision:** SPECIFIC **Section:** 30 **Qtr:** XX
Elevation: 10 ft **Symbol Type:** POINT **Meridian:** M

Location: SOUTH OF THE SACRAMENTO BYPASS AND WEST OF THE CHP ACADEMY, WEST OF SACRAMENTO

Ecological: NEST TREE IS A LARGE COTTONWOOD; SURROUNDING HABITAT CONSISTS OF A WELL-DEVELOPED WETLAND CORRIDOR, ADJACENT TO A FLOOD CONTROL FACILITY, AND FURTHER SURROUNDED BY AGRICULTURE.

General: 2 ADULTS OBSERVED NESTING ON 4 JUN 1999; NEST FAILED. 2 ADULTS AND 2 JUVENILES OBSERVED AT THE NEST SITE ON 20 JUN 2000.

Owner/Manager: UNKNOWN

Occurrence No. 943 **Map Index:** 45712 **EO Index:** 45712

Dates Last Seen — **Element:** 2001-06-22 **Site:** 2001-06-22

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)
Record Last Updated: 2003-04-10

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.60142° / -121.57917° **Township:** 09N
UTM: Zone-10 N4273504 E623722 **Range:** 04E
Radius: 80 meters **Mapping Precision:** SPECIFIC **Section:** 30 **Qtr:** XX
Elevation: 30 ft **Symbol Type:** POINT **Meridian:** M

Location: ALONG THE NORTH LEVEE OF THE SACRAMENTO BYPASS, 1.25 MILES WEST OF THE SACRAMENTO RIVER, WEST OF SACRAMENTO

Ecological: NEST TREE IS AN EXTREMELY LARGE COTTONWOOD ALONG THE EDGE OF A FLOOD-CONTROL FACILITY; SURROUNDING HABITAT CONSISTS OF A WELL-DEVELOPED RIPARIAN AREA, AGRICULTURE, AND NON-NATIVE GRASSLAND.

Threat: POSSIBLE THREAT FROM HUMAN USE OF SITE FOR FISHING.

General: 2 ADULTS AND 2 JUVENILES OBSERVED AT THE NEST ON 4 JUN 1999. 2 ADULTS AND 3 JUVENILES (YOUNG BANDED) OBSERVED ON 22 JUN 2001.

Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk — Element Code: ABNKC19070

Status — Federal: None; State: Threatened

NDDB Element Ranks — Global: G5; State: S2

Other Lists — CDFG Status:

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 1080 **Map Index:** 50910 **EO Index:** 50910

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)

Dates Last Seen — Element: 1999-04-26; Site: 1999-04-26
Record Last Updated: 2003-04-09

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.60359° / -121.55246°
UTM: Zone-10 N4273781 E626044
Radius: 80 meters
Elevation: 35 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** 28 **Qtr:** SW **Meridian:** M

Location: 0.4 MILE UPSTREAM FROM THE I-80 BRIDGE OVER THE SACRAMENTO RIVER, SACRAMENTO

Ecological: HABITAT CONSISTS OF A RIPARIAN CORRIDOR ALONG THE SACRAMENTO RIVER.

Threat: THREATENED BY URBAN DEVELOPMENT.

General: 2 ADULTS OBSERVED NESTING ON 26 APR 1999.

Owner/Manager: UNKNOWN

Occurrence No. 1081 **Map Index:** 50911 **EO Index:** 50911

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)

Dates Last Seen — Element: 1999-06-28; Site: 1999-06-28
Record Last Updated: 2003-04-10

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.57113° / -121.56139°
UTM: Zone-10 N4270167 E625322
Radius: 80 meters
Elevation: 10 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 04E **Section:** 05 **Qtr:** XX **Meridian:** M

Location: 0.2 MILE SOUTH OF INDUSTRIAL BOULEVARD, ON THE WEST BANK OF THE DEEP WATER CHANNEL TURNING BASIN, WEST SACRAMENTO

Ecological: NEST TREE UNKNOWN; SURROUNDING FORAGING HABITAT CONSISTS OF A SMALL PLOT OF NON-NATIVE GRASSLAND ADJACENT TO INDUSTRIAL CENTERS.

Threat: THREATENED BY COMMERCIAL AND RESIDENTIAL DEVELOPMENT.

General: 2 ADULTS AND 1 JUVENILE OBSERVED AT THE NEST SITE ON 28 JUN 1999.

Owner/Manager: UNKNOWN

Occurrence No. 1082 **Map Index:** 50912 **EO Index:** 50912

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 1999 (OBS)

Dates Last Seen — Element: 1999-06-28; Site: 1999-06-28
Record Last Updated: 2003-04-10

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.55503° / -121.54061°
UTM: Zone-10 N4268409 E627161
Radius: 80 meters
Elevation: 10 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 04E **Section:** 09 **Qtr:** XX **Meridian:** M

Location: JUST NW OF THE INTERSECTION OF LAKE WASHINGTON WITH JEFFERSON BOULEVARD, WEST SACRAMENTO

Ecological: NEST TREE IS A LARGE OAK; SURROUNDING FORAGING HABITAT CONSISTS OF NON-NATIVE GRASSLAND.

Threat: THREATENED BY COMMERCIAL AND RESIDENTIAL DEVELOPMENT.

General: 2 ADULTS AND 2 JUVENILES OBSERVED AT THE NEST SITE ON 28 JUN 1999.

Owner/Manager: UNKNOWN

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status — **Federal:** None; **State:** Threatened

NDDB Element Ranks — **Global:** G5; **State:** S2

Other Lists — **CDFG Status:**

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 1083 **Map Index:** 50913 **EO Index:** 50913

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRADBURY, M. 2001 (OBS)

Dates Last Seen — **Element:** 2001-06-23; **Site:** 2001-06-23
Record Last Updated: 2003-04-10

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.61289° / -121.53423°
UTM: Zone-10 N4274838 E627615
Radius: 80 meters
Elevation: 15 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** 22 **Qtr:** NW **Meridian:** M

Location: SE OF THE I-80/WEST EL CAMINO CLOVERLEAF, SACRAMENTO

Ecological: NEST TREE IS A LARGE COTTONWOOD NEAR THE REMAINS OF AN OLD HOMESTEAD; SURROUNDING FORAGING HABITAT CONSISTS OF AGRICULTURAL LAND BORDERED BY URBAN DEVELOPMENT AND A MAJOR FREEWAY.

Threat: THREATENED BY URBAN DEVELOPMENT; SITE WILL LIKELY BE LOST TO DEVELOPMENT IN 2-5 YEARS.

General: 2 ADULTS AND 1 JUVENILE (YOUNG BANDED) OBSERVED AT THE NEST SITE ON 23 JUN 2001.

Owner/Manager: UNKNOWN

Occurrence No. 1232 **Map Index:** 51852 **EO Index:** 51852

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: GERSON, R. 2003 (OBS)

Dates Last Seen — **Element:** 2003-07-16; **Site:** 2003-07-16
Record Last Updated: 2003-07-28

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.60709° / -121.52481°
UTM: Zone-10 N4274209 E628445
Radius: 80 meters
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** 27 **Qtr:** NE **Meridian:** M

Location: WEST SIDE OF NATOMAS EAST MAIN DRAINAGE CANAL, 0.1 MILE NORTH OF THE GARDEN HIGHWAY, SACRAMENTO

Location Detail: NEST TREE IS LOCATED ~500' NORTH OF PUMP STATION 1B AT THE GARDEN HIGHWAY/NATOMAS MAIN DRAINAGE CANAL JUNCTION.

Ecological: NEST TREE IS A LARGE SYCAMORE, ADJACENT TO A TREE CLUMP; SURROUNDED BY RIPARIAN SYCAMORE AND OAKS.

General: NEST WITH 1 JUVENILE OBSERVED ON 16 JUL 2003.

Owner/Manager: RECLAMATION DIST 1000

Occurrence No. 1343 **Map Index:** 56590 **EO Index:** 56606

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: RESSEGUIE, L. J. 2004 (OBS)

Dates Last Seen — **Element:** 2004-08-03; **Site:** 2004-08-03
Record Last Updated: 2004-09-01

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.52506° / -121.56269°
UTM: Zone-10 N4265053 E625289
Radius: 80 meters
Elevation: 10 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 04E **Section:** 20 **Qtr:** XX **Meridian:** M

Location: EAST SIDE OF JEFFERSON BOULEVARD, 0.1 MILE NORTH OF BEVAN ROAD, 2.5 MILES SOUTH OF THE PORT OF SACRAMENTO

Location Detail: 2004 NEST WAS AT THE 85% HEIGHT, ON THE NORTH SIDE OF A BLACK WALNUT IN THE MIDDLE OF THE SOUTH EDGE OF THE FORMER FARMSTEAD AT 3975 JEFFERSON BOULEVARD.

Ecological: NEST TREE IS A BLACK WALNUT; SURROUNDED BY RUDERAL AND ABANDONED ALFALFA.

Threat: THREATENED BY IMMINENT DEVELOPMENT.

General: NEST SITE MONITORED 6 JUN-3 AUG 2004; NO YOUNG FLEDGED.

Owner/Manager: PVT

Desmocerus californicus dimorphus

valley elderberry longhorn beetle — **Element Code:** IICOL48011

Status — **Federal:** Threatened; **State:** None

NDDB Element Ranks — **Global:** G3T2; **State:** S2

Other Lists — **CDFG Status:**

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 6 **Map Index:** 11337 **EO Index:** 22744

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing
Main Source: EYA, B. 1976 (LIT)

Dates Last Seen — **Element:** 1984-06-XX; **Site:** 1984-06-XX
Record Last Updated: 1998-09-08

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.59819° / -121.46807°
UTM: Zone-10 N4273301 E633403
Area: 27.2 ac
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 09N **Range:** 05E **Section:** 30 **Qtr:** SE **Meridian:** M

Location: JUST SOUTH OF HIGHWAY 160 AT DEL PASO BLVD, JOHNSON INDUSTRIAL PARK.

Location Detail: SACRAMENTO ZONE - JOHNSON INDUSTRIAL PARK CRITICAL HABITAT.

Ecological: LARVAE ARE BORERS; ADULTS FEED ON FOLIAGE.

General: ADULTS OBSERVED BY ARNOLD IN 1984.

Owner/Manager: PVT

Occurrence No. 7 **Map Index:** 11410 **EO Index:** 22742

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ENG, L. 1983 (PERS)

Dates Last Seen — **Element:** 1984-06-XX; **Site:** 1984-06-XX
Record Last Updated: 1998-07-15

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.58184° / -121.42968°
UTM: Zone-10 N4271543 E636777
Radius: 1/5 mile
Elevation: 25 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** XX **Qtr:** XX **Meridian:** M

Location: SOUTH BANK AMERICAN RIVER WEST OF GLEN HALL PARK (ACROSS FROM CAL EXPO), RIVER MILE 5.

Ecological: HABITAT IS A NARROW RIPARIAN BAND.

General: OBSERVED ON A STEM OF A LARGE (1.0-1.5 CM DIAMETER) ELDERBERRY SHRUB. FEMALE SPECIMEN HELD FOR TWO DAYS; IT ATE ELDERBERRY LEAVES, LAID 10 EGGS, THEN WAS RELEASED AT CAPTURE SITE. ADULTS WERE ALSO OBSERVED BY ARNOLD IN 1984.

Owner/Manager: UNKNOWN

Occurrence No. 8 **Map Index:** 11398 **EO Index:** 22739

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: U.S. FISH & WILDLIFE SERVICE 1984 (LIT)

Dates Last Seen — **Element:** XXXX-XX-XX; **Site:** 1984-06-XX
Record Last Updated: 1998-07-15

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.58768° / -121.43495°
UTM: Zone-10 N4272184 E636307
Radius: 1/5 mile
Elevation: 20 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 05E **Section:** XX **Qtr:** XX **Meridian:** M

Location: BUSHY LAKE, NEAR CAL EXPO.

Ecological: LARVAE ARE ELDERBERRY STEM BORERS AND ADULTS FEED ON ELDERBERRY FOLIAGE.

General: COLLECTIONS KNOWN FROM THIS AREA. NO ADULTS OR FRESH EXIT HOLES OBSERVED IN 1984.

Owner/Manager: PVT

Desmocerus californicus dimorphus

valley elderberry longhorn beetle

Element Code: IICOL48011

Status
Federal: Threatened
State: None

NDDB Element Ranks
Global: G3T2
State: S2

Other Lists
CDFG Status:

Habitat Associations
General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).
Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 9 **Map Index:** 11343 **EO Index:** 22740
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ARNOLD, R. 1984 (LIT)

Dates Last Seen
Element: 1984-06-00
Site: 1984-06-00
Record Last Updated: 1998-07-14

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.58961° / -121.46495°
UTM: Zone-10 N4272354 E633690
Radius: 1/5 mile
Elevation: 10 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 05E
Section: XX **Qtr:** XX
Meridian: M

Location: AMERICAN RIVER FLOODPLAIN 22 ACRE PARCEL BETWEEN RAILROAD TRACK OVERPASSES (BTWN I-80 & HWY 160).
Location Detail: ADULTS OBSERVED ON "STRESSED" ELDERBERRIES IN RIPARIAN VEGETATION ALONG THE AMERICAN RIVER.
General: NORTH SACRAMENTO LAND COMPANY PROPERTY.
Owner/Manager: PVT

Occurrence No. 10 **Map Index:** 11431 **EO Index:** 22741
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ARNOLD, R. 1984 (LIT)

Dates Last Seen
Element: 1984-06-00
Site: 1984-06-00
Record Last Updated: 1998-07-14

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.58101° / -121.41885°
UTM: Zone-10 N4271467 E637721
Radius: 1/5 mile
Elevation: 10 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 05E
Section: XX **Qtr:** XX
Meridian: M

Location: BETWEEN MILEAGE MARKERS 6 & 7 ON AMERICAN RIVER PARKWAY BIKE TRAIL.
Location Detail: ADULTS OBSERVED BY ARNOLD ON "STRESSED" ELDERBERRIES IN RIPARIAN VEGETATION ALONG THE AMERICAN RIVER.
Owner/Manager: UNKNOWN

Occurrence No. 11 **Map Index:** 11316 **EO Index:** 12887
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ARNOLD, R. 1984 (LIT)

Dates Last Seen
Element: 1984-06-00
Site: 1984-06-00
Record Last Updated: 1998-07-14

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.60461° / -121.47634°
UTM: Zone-10 N4274002 E632670
Radius: 1/5 mile
Elevation: 10 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 05E
Section: XX **Qtr:** XX
Meridian: M

Location: JUNCTION OF GARDEN HIGHWAY AND NORTHGATE BLVD.
Location Detail: 10 ACRE PARCEL, REFERRED TO AS THE NORTHGATE TRIANGLE.
Ecological: MOST BEETLES FOUND ON "STRESSED" ELDERBERRIES.
General: ADULTS OBSERVED BY ARNOLD.
Owner/Manager: UNKNOWN

Desmocerus californicus dimorphus

valley elderberry longhorn beetle — **Element Code:** IICOL48011

Status — Federal: Threatened; State: None
NDDB Element Ranks — Global: G3T2; State: S2
Other Lists — CDFG Status:

Habitat Associations
General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).
Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 18 **Map Index:** 11171 **EO Index:** 22733
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: JONES & STOKES ASSOC. 1985 (LIT)

Dates Last Seen — Element: XXXX-XX-XX; Site: 1985-04-24
Record Last Updated: 1989-08-11

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.59601° / -121.54801°
UTM: Zone-10 N4272946 E626445
Radius: 1/5 mile
Elevation: 20 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** XX **Qtr:** XX **Meridian:** M

Location: SACRAMENTO RIV MI 62.5 W AT I-80.
Ecological: HABITAT IS A NEARLY-PURE ELDERBERRY STAND LOCATED ALONG THE RAILROAD TRACKS, WITH A HIGH DENSITY (50%) OF EXIT HOLES.
General: NO BEETLES OBSERVED; SITE VISITED TOO LATE IN THE DAY.
Owner/Manager: UNKNOWN

Occurrence No. 28 **Map Index:** 11252 **EO Index:** 22723
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHONHOLTZ, R. 1986 (OBS)

Dates Last Seen — Element: 1985-09-04; Site: 1985-09-04
Record Last Updated: 1989-08-11

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.59740° / -121.51079°
UTM: Zone-10 N4273153 E629684
Radius: 1/5 mile
Elevation: 30 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** XX **Qtr:** XX **Meridian:** M

Location: SACRAMENTO RIVER, OPPOSITE MOUTH OF AMERICAN RIVER, AT RIVER MI 60.3, W BANK.
Ecological: HABITAT CONSISTS OF ELDERBERRY SAVANNAH AND ELDERBERRY TREES IN A COTTONWOOD RIPARIAN WOODLAND.
Threat: THREAT OF DEVELOPMENT INTO LIGHTHOUSE MARINA PROJECT.
General: EXIT HOLES FOUND.
Owner/Manager: PVT

Occurrence No. 29 **Map Index:** 11259 **EO Index:** 22724
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHONHOLTZ, R. 1986 (OBS)

Dates Last Seen — Element: 1985-09-04; Site: 1985-09-04
Record Last Updated: 1989-08-11

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.59156° / -121.50913°
UTM: Zone-10 N4272507 E629839
Radius: 1/5 mile
Elevation:
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N **Range:** 04E **Section:** XX **Qtr:** XX **Meridian:** M

Location: SACRAMENTO RIVER, OPPOSITE MOUTH OF AMERICAN RIVER, RIVER MI 59.8, W BANK.
Ecological: HABITAT CONSISTS OF ELDERBERRY SAVANNAH AND ELDERBERRY TREES IN A COTTONWOOD RIPARIAN WOODLAND.
Threat: THREAT OF DEVELOPMENT INTO THE LIGHTHOUSE MARINA PROJECT.
General: EXIT HOLES FOUND.
Owner/Manager: PVT

Desmocerus californicus dimorphus

valley elderberry longhorn beetle

Element Code: IICOL48011

Status
Federal: Threatened
State: None

NDDB Element Ranks
Global: G3T2
State: S2

Other Lists
CDFG Status:

Habitat Associations
General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).
Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 56 **Map Index:** 11236 **EO Index:** 22712
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHONHOLTZ, R. 1985 (OBS)

Dates Last Seen
Element: 1985-09-04
Site: 1985-09-04
Record Last Updated: 1989-08-11

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO, YOLO

Lat/Long: 38.60295° / -121.52189°
UTM: Zone-10 N4273753 E628707
Radius: 1/5 mile
Elevation: 25 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: XX **Qtr:** XX
Meridian: M

Location: SACRAMENTO RIVER, OPPOSITE JCT WITH NATOMAS, MAIN DRAINAGE CANAL, RIVER MILE 61.
Ecological: HABITAT CONSISTS OF ELDERBERRY AND SAVANNAH/ELDERBERRY TREES IN A COTTONWOOD RIPARIAN WOODLAND.
Threat: THREAT OF DEVELOPMENT.
General: YELLOW WARBLER AND SWAINSON'S HAWK ALSO OBSERVED AT THE SITE.
Owner/Manager: PVT

Elderberry Savanna

Element Code: CTT63440CA

Status — Federal: None; State: None

NDDB Element Ranks — Global: G2; State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 2 Map Index: 11371 EO Index: 15253
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SAC. CO. PARKS & REC. DEPT. 1987 (LIT)

Dates Last Seen — Element: 1987-XX-XX; Site: 1987-XX-XX
Record Last Updated: 1998-07-23

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.59206° / -121.44612°
UTM: Zone-10 N4272653 E635326
Area: 51.3 ac
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 05E
Section: 32 Qtr: XX
Meridian: M

Location: CAL EXPO, ON AMERICAN RIVER FLOODPLAIN FROM S.P. RR TRACKS EAST TO JUST BEYOND HWY 80.
Location Detail: BOUNDARY GENERALIZED FROM MANAGEMENT PLAN TO INCLUDE MOST ELDERBERRY BUSHES IN THIS PORTION OF CAL EXPO.
Ecological: SAMBUCUS MEXICANA, CENTAUREA SOLSTITIALIS, ELYMUS TRITICHOIDES, BROMUS DIANDRUS, FOENICULUM VULGARE.
General: LEASED BY SACRAMENTO COUNTY PARKS & RECREATION DEPT MANAGEMENT PLAN EMPHASIZES PRESERVATION & RESTORATION. THIS WAS OCC #002 OF CTT63440CCA.
Owner/Manager: STATE (SAC COUNTY LEASE)

Occurrence No. 3 Map Index: 11402 EO Index: 15252
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SAC. CO. PARKS & REC. DEPT. 1987 (LIT)

Dates Last Seen — Element: 1987-XX-XX; Site: 1987-XX-XX
Record Last Updated: 1998-07-23

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.58433° / -121.43294°
UTM: Zone-10 N4271815 E636488
Area: 79.9 ac
Elevation: 35 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 05E
Section: 33 Qtr: S
Meridian: M

Location: CAL EXPO, ON AMERICAN RIVER FLOODPLAIN, SOUTH & SOUTHEAST OF BUSHY LAKE.
Location Detail: BOUNDARY GENERALIZED FROM MANAGEMENT PLAN TO INCL MOST ELDERBERRY BUSHES IN THIS PORTION OF CAL EXPO.
Ecological: SAMBUCUS MEXICANA, CENTAUREA SOLSTITIALIS, ELYMUS TRITICOIDES, BROMUS DIANDRUS, FOENICULUM VULGARE.
General: LEASED FROM STATE BY SAC COUNTY PARKS & REC DEPT. MGMT PLAN EMPHASIZES PRESERVATION & RESTORATION. THIS WAS OCC #003 OF CTT63440CA.
Owner/Manager: STATE (SAC COUNTY LEASE)

Occurrence No. 4 Map Index: 21067 EO Index: 9156
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHONHOLTZ, R. 1985 (OBS)

Dates Last Seen — Element: 1985-09-04; Site: 1985-09-04
Record Last Updated: 1998-07-23

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.59758° / -121.51081°
UTM: Zone-10 N4273172 E629682
Radius: 80 meters
Elevation: 30 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 99X
Range: 99X
Section: XX Qtr: XX
Meridian: M

Location: WEST BANK OF SACRAMENTO RIVER, OPPOSITE MOUTH OF AMERICAN RIVER. NEXT TO MARINAS, BOATYARDS, LEVEE RD, RIPARIAN FOREST.
Location Detail: SCATTERED ELDERBERRY AND VALLEY OAKS WITHIN THE FLOODPLAIN.
Ecological: DOMINANTS ARE SAMBUCUS SP., AND QUERCUS LOBATA. NEIGHBORING COMMUNITIES ARE GREAT VALLEY COTTONWOOD RIPARIAN FOREST, ANNUAL GRASSLAND/RUDERAL FORBS.

Elderberry Savanna

Element Code: CTT63440CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Threat: UNKNOWN.
General: VALLEY ELDERBERRY LONGHORN BEETLE FOUND HERE. THIS WAS OCC #004 OF CTT63440CA.
Owner/Manager: PVT

Great Valley Cottonwood Riparian Forest

Element Code: CTT61410CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 37 **Map Index:** 11231 **EO Index:** 15664
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHONHOLTZ, R. 1985 (OBS)

Dates Last Seen
Element: 1985-09-29
Site: 1985-09-29
Record Last Updated: 1998-09-02

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: YOLO

Lat/Long: 38.59715° / -121.51001°
UTM: Zone-10 N4273126 E629752
Area: 64.7 ac
Elevation: 15 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 04E
Section: XX **Qtr:** XX
Meridian: M

Location: YOLO SIDE OF SACRAMENTO RIVER AT BRODERICK FROM RM 59.8 TO RM 62.

Ecological: MOSTLY MATURE FOREST OF POPULUS FREMONTII, FRAXINUS LATIFOLIA, SALIX SPP & QUERCUS LOBATA IN STRIP RANGING FROM <100 FT TO >200 FT WIDE. PARTS HIGHLY DISTURBED, OTHERS FAIRLY INTACT.

Threat: THREATENED BY MARINA/DEVEL.

General: RARE VALLEY ELDERBERRY LONGHORN BEETLE & SWAINSONS HAWK PRESENT. THIS WAS OCC #037 OF CTT61410CA.

Owner/Manager: UNKNOWN, PVT

Hibiscus lasiocarpus

rose-mallow

Element Code: PDMAL0H0Q0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S2.2

Other Lists
CNPS List: 2
R-E-D Code: 2-2-1

Habitat Associations
General: MARSHES AND SWAMPS (FRESHWATER).
Micro: MOIST, FRESHWATER-SOAKED RIVER BANKS & LOW PEAT ISLANDS IN SLOUGHS; IN CALIF., KNOWN FROM THE DELTA WATERSHED. 0-150M.

Occurrence No. 110 **Map Index:** 24959 **EO Index:** 6338
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MARTZ, C. 1988 (OBS)

Dates Last Seen
Element: 1988-08-04
Site: 1988-08-04
Record Last Updated: 1994-01-13

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.61547° / -121.53364°
UTM: Zone-10 N4275126 E627662
Radius: 80 meters
Elevation: 10 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 04E
Section: 22 **Qtr:** SW
Meridian: M

Location: ON-RAMP TO EASTBOUND I-80 FROM WEST EL CAMINO AVE., NORTH OF SACRAMENTO.
Location Detail: 1/2 MILE NORTH OF SWALLOWS NEST GOLF COURSE IN DRAINAGE DITCH NEXT TO THE ON-RAMP.
Ecological: DRY DRAINAGE DITCH WITH MANY WEEDY TAXA. ECHINOCHLOA CRUSGALLII, SORGHUM HALAPENSE, PICRIS ECHIOIDES, CONVOLVULUS ARVENSIS, AND RUMEX CRISPUS. HELIOTROPUM CURASSAVICUM AND SILYBUM MARIANUM NEARBY.
Threat: DITCH MAINTENANCE AND ROW MOWING ARE THREATS. CALTRANS MAINTENANCE UNITS ADVISED OF THIS SITE.
General: 2 PLANTS OBSERVED BY MARTZ IN 1988. VERY DISTURBED SITE LACKING FRESHWATER SLOUGH/MARSH HABITAT AND ASSOCIATED SPECIES. INTACT SLOUGH HABITAT ON NORTH SIDE OF I-80 IN THIS AREA SHOULD BE SURVEYED.
Owner/Manager: CALTRANS

Lepidurus packardi

vernal pool tadpole shrimp — Element Code: ICBRA10010

Status — Federal: Endangered; State: None

NDDB Element Ranks — Global: G3; State: S2S3

Other Lists — CDFG Status:

Habitat Associations

General: INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro: POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Occurrence No. 14 **Map Index:** 32443 **EO Index:** 638

Dates Last Seen — **Element:** 1995-03-31 **Site:** 1995-03-31

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SUGNET & ASSOC. 1995 (LIT)
Record Last Updated: 1996-03-06

Quad Summary: CARMICHAEL (3812153/512D), SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.50564° / -121.37821°
UTM: Zone-10 N4263165 E641409
Area: 15.7 ac
Elevation: 40 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 08N **Range:** 05E **Section:** 36 **Qtr:** NE **Meridian:** M

Location: 1.2 KM ESE OF ELDER CREEK ROAD X FLORIN PERKINS ROAD; SE OF THE FORMER SACRAMENTO ARMY DEPOT.

Location Detail: ELDER CREEK PROPERTY. LEPIDURUS PACKARDI WERE FOUND IN 10 OF 90 SAMPLED WETLANDS.

Ecological: HARDPAN VERNAL POOLS IN ANNUAL GRASSLAND.

Threat: RURAL AGRICULTURE; URBAN DEVELOPMENT OCCURING IN VICINITY.

General: POOL #86: 2/21/1995: <50 ADULTS OBSERVED, 3/31/1995: <50 ADULTS OBSERVED; POOLS #21,43,46: <50 ADULTS OBSERVED; POOLS #38,41,44,45,50,53: >50 ADULTS OBSERVED; 4 ADULTS DEPOSITED IN CAS.

Owner/Manager: PVT-PIPE TRADES TRUST FUND

Occurrence No. 66 **Map Index:** 34791 **EO Index:** 13036

Dates Last Seen — **Element:** 1992-04-03 **Site:** 1992-04-03

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: KOFORD, E. 1992 (PERS)
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51058° / -121.40219°
UTM: Zone-10 N4263677 E639309
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** 26 **Qtr:** SW **Meridian:** M

Location: RAILROAD DITCH AT 47TH AVENUE (ELDER CREEK RD) & SPTRR, NEAR POWER INN ROAD; NEAR SW CORNER OF SACRAMENTO ARMY DEPOT.

Location Detail: SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM CORNER OF 65TH ST AND HWY 50.

Ecological: RAILROAD DITCH.

General: KOFORD OBSERVED TADPOLE SHRIMP DURING SURVEY IN SPRING OF 1992; BRANCHINECTA LYNCHI AND LINDERIELLA OCCIDENTALIS ALSO OBSERVED.

Owner/Manager: PVT-SOUTHERN PACIFIC RR

Lepidurus packardi

vernal pool tadpole shrimp

Element Code: ICBRA10010

Status — **Federal:** Endangered; **State:** None

NDDB Element Ranks — **Global:** G3; **State:** S2S3

Other Lists — **CDFG Status:**

Habitat Associations

General: INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro: POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Occurrence No. 67 **Map Index:** 34792 **EO Index:** 13094

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: KOFORD, E. 1992 (PERS)

Dates Last Seen — **Element:** 1992-04-02 **Site:** 1992-04-02
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.52498° / -121.40725°
UTM: Zone-10 N4265267 E638840
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** 26 **Qtr:** NW **Meridian:** M

Location: FRUITRIDGE ROAD X SPTRR, NEAR POWER INN ROAD; NEAR NORTHWEST CORNER OF SACRAMENTO ARMY DEPOT.

Location Detail: SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM CORNER OF 65TH ST & HWY 50.

Ecological: TURBID POOL.

General: TADPOLE SHRIMP OBSERVED BY E.J. KOFORD DURING SURVEY IN SPRING OF 1992; LINDERIELLA OCCIDENTALIS ALSO PRESENT.

Owner/Manager: PVT-SOUTHERN PACIFIC RR

Occurrence No. 92 **Map Index:** 33691 **EO Index:** 30608

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SUGNET & ASSOC. 1993 (PERS)

Dates Last Seen — **Element:** 1992-04-02 **Site:** 1992-04-02
Record Last Updated: 1997-03-07

Quad Summary: FLORIN (3812144/496B), SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.50290° / -121.47384°
UTM: Zone-10 N4262718 E633076
Radius: 3/5 mile
Elevation: 15 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** 31 **Qtr:** XX **Meridian:** M

Location: SOUTH OF 47TH AVE, NORTH OF FLORIN RD, EAST OF WOODBINE AVE. ON SOUTHERN END OF SACRAMENTO.

Location Detail: ROADSIDE DITCHES SOMEWHERE IN SECTION 31.

Ecological: MOST OF THIS SECTION IS URBANIZED.

General: LEPIDURUS PACKARDI WAS OBSERVED IN A ROADSIDE DITCH ON 4/2/92. SUGNET RECORD #144.

Owner/Manager: UNKNOWN

Occurrence No. 93 **Map Index:** 33692 **EO Index:** 30610

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SUGNET & ASSOC. 1993 (PERS)

Dates Last Seen — **Element:** 1992-04-03 **Site:** 1992-04-03
Record Last Updated: 1998-08-10

Quad Summary: FLORIN (3812144/496B), SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51048° / -121.39984°
UTM: Zone-10 N4263669 E639514
Area: 1,513.2 ac
Elevation: 35 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N **Range:** 05E **Section:** 35 **Qtr:** XX **Meridian:** M

Location: SOUTH OF FRUITRIDGE RD, NORTH OF FLORIN RD, EAST OF POWER INN RD, AND WEST OF FLORIN PERKINS RD.

Location Detail: MANMADE ROADSIDE DITCHES LOCATED SOMEWHERE IN SECTIONS 26 AND 35.

Ecological: MOST OF SECTION 26 IS URBANIZED.

General: LEPIDURUS PACKARDI OBSERVED IN A ROADSIDE DITCH IN SECTION 26 AND A ROADSIDE DITCH IN SECTION 35. SUGNET RECORD #S 143 & 145.

Owner/Manager: UNKNOWN

Linderiella occidentalis

California linderiella

Element Code: ICBRA06010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status:

Habitat Associations
General: SEASONAL POOLS IN UNPLOWED GRASSLANDS WITH OLD ALLUVIAL SOILS UNDERLAIN BY HARDPAN OR IN SANDSTONE DEPRESSIONS.
Micro: WATER IN THE POOLS HAS VERY LOW ALKALINITY, CONDUCTIVITY, AND TDS.

Occurrence No. 49 **Map Index:** 31558 **EO Index:** 22317

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: FOSTER WHEELER ENVIRON. CORP. 1995 (LIT)

Dates Last Seen
Element: 1995-02-14
Site: 1995-04-21
Record Last Updated: 1995-10-02

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51137° / -121.39697°
UTM: Zone-10 N4263773 E639762
Area: 5.3 ac
Elevation: 40 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 26 **Qtr:** SE
Meridian: M

Location: FORMER SACRAMENTO ARMY DEPOT. B.T. COLLINS ARMY RESERVE TRAINING CENTER
Location Detail: FOUND ONLY IN SEASONAL WETLAND INSIDE THE OVAL OF AND ADJACENT TO THE RUNNING TRACK
Ecological: 53 PONDED WATER AREAS SAMPLED EVERY 2 WEEKS BETWEEN 12/19/94 & 4/21/95. ARES SURVEYED INCLUDED SEASONAL WETLANDS, SHALLOW SWALES, TIRE TRACKS, PONDED AREAS IN RUNNING TRACK & BASEBALL DIAMOND, AND FIELD & ROADSIDE DRAINAGE DITCHES.
General: LINDERIELLA OCCIDENTALIS WAS FOUND IN 6 OF THE 53 SITES FROM 1/31/95 TO 2/14/95; 31 ADULTS COLLECTED AND DEPOSITED IN CAS;. 3 OF THE 6 POOLS ALSO HAD BRACHINECTA LYNCHI; MORE POOL INFO IN REPORT.
Owner/Manager: DOD-BT COLLINS RESERVE TR CNTR

Occurrence No. 118 **Map Index:** 32443 **EO Index:** 636

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SUGNET & ASSOC. 1995 (LIT)

Dates Last Seen
Element: 1995-03-31
Site: 1995-03-31
Record Last Updated: 1996-03-06

Quad Summary: CARMICHAEL (3812153/512D), SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.50564° / -121.37821°
UTM: Zone-10 N4263165 E641409
Area: 15.7 ac
Elevation: 40 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 36 **Qtr:** NE
Meridian: M

Location: 1.2 KM ESE OF ELDER CREEK ROAD X FLORIN PERKINS ROAD; SE OF THE FORMER SACRAMENTO ARMY DEPOT.
Location Detail: ELDER CREEK PROPERTY. LINDERIELLA OCCIDENTALIS WERE FOUND IN 2 OF 90 SAMPLED WETLANDS.
Ecological: HARDPAN VERNAL POOLS IN ANNUAL GRASSLAND.
Threat: RURAL AGRICULTURE; URBAN DEVELOPMENT OCCURING IN VICINITY.
General: POOLS #46 & 50: 2/21/95: >50 ADULTS OBSERVED. POOL #50: 3/31/95: <50 ADULTS OBSERVED.
Owner/Manager: PVT-PIPE TRADES TRUST FUND

Linderiella occidentalis

California linderiella — **Element Code:** ICBRA06010

Status — **Federal:** None; **State:** None
NDDB Element Ranks — **Global:** G3; **State:** S2S3
Other Lists — **CDFG Status:**

Habitat Associations
General: SEASONAL POOLS IN UNPLOWED GRASSLANDS WITH OLD ALLUVIAL SOILS UNDERLAIN BY HARDPAN OR IN SANDSTONE DEPRESSIONS.
Micro: WATER IN THE POOLS HAS VERY LOW ALKALINITY, CONDUCTIVITY, AND TDS.

Occurrence No. 124 **Map Index:** 34791 **EO Index:** 12939
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: KOFORD, E. 1992 (PERS)

Dates Last Seen — **Element:** 1992-04-03; **Site:** 1992-04-03
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.51058° / -121.40219°
UTM: Zone-10 N4263677 E639309
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: 26 **Qtr:** SW
Meridian: M

Location: RAILROAD DITCH AT 47TH AVENUE (ELDER CREEK RD) & SPTRR, NEAR POWER INN ROAD; NEAR SW CORNER OF SACRAMENTO ARMY DEPOT
Location Detail: SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM THE CORNER OF 65TH ST & HWY 50.
Ecological: RAILROAD DITCH.
General: KOFORD OBSERVED LINDERIELLA DURING SURVEY IN SPRING OF 1992; BRANCHINECTA LYNCHI AND LEPIDURUS PACKARDI ALSO OBSERVED
Owner/Manager: PVT-SOUTHERN PACIFIC RR

Occurrence No. 125 **Map Index:** 34792 **EO Index:** 13153
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: KOFORD, E. 1992 (PERS)

Dates Last Seen — **Element:** 1992-04-02; **Site:** 1992-04-02
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.52498° / -121.40725°
UTM: Zone-10 N4265267 E638840
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: 26 **Qtr:** NW
Meridian: M

Location: FRUITRIDGE ROAD X SPTRR, NEAR POWER INN ROAD; NEAR NORTHWEST CORNER OF SACRAMENTO ARMY DEPOT.
Location Detail: SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM CORNER OF 65TH STREET AND HWY 50.
Ecological: TURBID POOL.
General: LINDERIELLA OBSERVED BY E.J. KOFORD DURING SURVEY IN SPRING OF 1992; LEPIDURUS PACKARDI ALSO PRESENT.
Owner/Manager: PVT-SOUTHERN PACIFIC RR

Occurrence No. 126 **Map Index:** 34793 **EO Index:** 12914
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: KOFORD, E. 1992 (PERS)

Dates Last Seen — **Element:** 1992-04-02; **Site:** 1992-04-02
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.52515° / -121.38497°
UTM: Zone-10 N4265320 E640782
Radius: 80 meters
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: 25 **Qtr:** NW
Meridian: M

Location: FRUITRIDGE ROAD X CENTRAL CALIFORNIA TRACTION (RR), NEAR FLORIN-PERKINS ROAD; NEAR NE CORNER OF SACRAMENTO ARMY DEPOT.
Ecological: CLEAR POOL WITH DETRITUS.
General: LINDERIELLA OBSERVED BY KOFORD DURING SURVEY IN SPRING OF 1992.
Owner/Manager: PVT-CENTRAL CALIFORNIA TRR

Linderiella occidentalis

California linderiella

Element Code: ICBRA06010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status:

Habitat Associations
General: SEASONAL POOLS IN UNPLOWED GRASSLANDS WITH OLD ALLUVIAL SOILS UNDERLAIN BY HARDPAN OR IN SANDSTONE DEPRESSIONS.
Micro: WATER IN THE POOLS HAS VERY LOW ALKALINITY, CONDUCTIVITY, AND TDS.

Occurrence No. 149 **Map Index:** 28182 **EO Index:** 29286
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MARTIN, D. 1996 (OBS)

Dates Last Seen
Element: 1996-03-10
Site: 1996-03-10
Record Last Updated: 1996-08-05

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.53154° / -121.39537°
UTM: Zone-10 N4266013 E639863
Area: 38.7 ac
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 23 **Qtr:** XX
Meridian: M

Location: ALONG THE CENTRAL CALIFORNIA TRACTION COMPANY (RR) RIGHT-OF-WAY, FROM THE NORTH END OF 83RD ST TO FLORIN PERKINS RD.
Location Detail: LOCATED IN A SERIES OF PONDED DEPRESSIONS ALONG THE RAILROAD RIGHT-OF-WAY. LINDERIELLA FOUND IN 12 OF 27 SAMPLED DEPRESSIONS.
Ecological: HABITAT CONSISTS OF PONDED DEPRESSIONS. BRANCHINECTA MESOVALLENSIS (UNDESCRIBED) AND B. LYNCHI ALSO FOUND IN THIS AREA.
Threat: CONSTANT DISTURBANCE FROM RAILROAD TRUCKS AND OTHERS DRIVING THROUGH POOLED AREAS. ALSO TIRES & DEBRIS IN POOLED AREAS.
General: SURVEYS CONDUCTED FROM 6 FEBRUARY TO 10 MARCH 1996.
Owner/Manager: PVT

Pogonichthys macrolepidotus

Sacramento splittail

Element Code: AFCJB34020

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: ENDEMIC TO THE LAKES AND RIVERS OF THE CENTRAL VALLEY, BUT NOW CONFINED TO THE DELTA, SUISUN BAY & ASSOCIATED MARSHES.
Micro: SLOW MOVING RIVER SECTIONS, DEAD END SLOUGHS. REQUIRE FLOODED VEGETATION FOR SPAWNING & FORAGING FOR YOUNG.

Occurrence No. 1 **Map Index:** 24986 **EO Index:** 881

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: WIXOM, L. ET AL 1995 (LIT)

Dates Last Seen
Element: 1995-02-26
Site: 1995-02-26

Record Last Updated: 1996-01-02

Quad Summary: COURTLAND (3812135/497D), FLORIN (3812144/496B), CLARKSBURG (3812145/497A), SACRAMENTO WEST (3812155/513D), TAYLOR MONUMENT (3812165/513A), GRAYS BEND (3812166/513B), VERONA (3812175/529D), KNIGHTS LANDING (3812176/529C), ELDORADO BEND (3812177/530D), NICOLAUS (3812185/529A)
County Summary: SACRAMENTO, SUTTER, YOLO

Lat/Long: 38.61362° / -121.56075°
UTM: Zone-10 N4274883 E625304
Area: 5,037.5 ac
Elevation: 20 ft

Mapping Precision: SPECIFIC
Symbol Type: POLYGON

Township: 10N
Range: 03E
Section: XX **Qtr:** XX
Meridian: M

Location: SACRAMENTO RIVER FROM MISSOURI BEND N OF KNIGHTS LANDING TO S OF COURTLAND. ALSO, LOWER 10 MILES OF THE FEATHER RIVER.
Location Detail: IN THE SACRAMENTO RIVER FROM RIVER MILE 33 SOUTH OF COURTLAND TO RIVER MILE 97 NORTH OF KNIGHTS LANDING, AND THE LOWER 10 MILES OF THE FEATHER RIVER.
Ecological: MODERATE CURRENT & SANDY BOTTOM. RIVERBANKS VARIABLE, WATER TEMP AVERAGES LOW 60'S F. MOST FISH TAKEN FROM THE END OF DECEMBER TO THE END OF MAY.
General: INFORMATION TAKEN FROM A SACRAMENTO RIVER ANGLER SURVEY CONDUCTED BETWEEN 1991 & 1995. FISH WERE TAKEN BY HOOK & LINE MOSTLY FROM SHORE. MOST OF THE SPLITTAIL CAUGHT WERE TAKEN INCIDENTALLY & WERE NOT THE SPECIES TARGETED BY THE ANGLER.
Owner/Manager: PVT, STATE

Progne subis

purple martin

Element Code: ABPAU01010

Status — **Federal:** None; **State:** None

NDDB Element Ranks — **Global:** G5; **State:** S3

Other Lists — **CDFG Status:** SC

Habitat Associations

General: (NESTING) INHABITS WOODLANDS, LOW ELEVATION CONIFEROUS FOREST OF DOUGLAS FIR, PONDEROSA PINE, & MONTEREY PINE.

Micro: NESTS IN OLD WOODPECKER CAVITIES MOSTLY, ALSO IN HUMAN-MADE STRUCTURES. NEST OFTEN LOCATED IN TALL, ISOLATED TREE/SNAG.

Occurrence No. 17 **Map Index:** 54694 **EO Index:** 54694

Dates Last Seen — **Element:** 2003-XX-XX; **Site:** 2003-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 2004-03-12
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.62273° / -121.42273°
UTM: Zone-10 N4276092 E637304
Radius: 80 meters
Elevation: 50 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 05E
Section: 22 **Qtr:** NW
Meridian: M

Location: MARCONI AVENUE OVERPASS OF AUBURN ROAD AND UNION PACIFIC & LIGHT RAIL TRACKS, SACRAMENTO

Location Detail: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.

General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 1 PAIR OBSERVED NESTING. NEW BREEDING LOCATION IN 2003. HIGH NUMBER OF SECOND YEAR MALES OBSERVED, WHICH IS CONSISTENT WITH TYPICAL PIONEERING BEHAVIOR OF SECOND YEAR BIRDS.

Owner/Manager: UNKNOWN

Occurrence No. 18 **Map Index:** 54696 **EO Index:** 54696

Dates Last Seen — **Element:** 2003-XX-XX; **Site:** 2003-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 2004-03-12
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.61095° / -121.43559°
UTM: Zone-10 N4274765 E636207
Radius: 80 meters
Elevation: 45 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 05E
Section: 28 **Qtr:** NE
Meridian: M

Location: EL CAMINO OVERPASS OF UNION PACIFIC AND LIGHT RAIL TRACKS, SACRAMENTO

Location Detail: SITE FIRST DOCUMENTED IN 2003 BUT ASSUMED TO HAVE BEEN OCCUPIED IN PRIOR YEARS BASED ON THE PRESENCE OF OVER 90% OF PAIRS WITH ASY MALES.

Ecological: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.

General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 15 PAIRS OBSERVED NESTING.

Owner/Manager: UNKNOWN

Progne subis

purple martin

Element Code: ABPAU01010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: (NESTING) INHABITS WOODLANDS, LOW ELEVATION CONIFEROUS FOREST OF DOUGLAS FIR, PONDEROSA PINE, & MONTEREY PINE.
Micro: NESTS IN OLD WOODPECKER CAVITIES MOSTLY, ALSO IN HUMAN-MADE STRUCTURES. NEST OFTEN LOCATED IN TALL, ISOLATED TREE/SNAG.

Occurrence No. 19 **Map Index:** 54697 **EO Index:** 54697
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Dates Last Seen
Element: 2003-XX-XX
Site: 2003-XX-XX
Record Last Updated: 2004-03-12

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.55083° / -121.42235°
UTM: Zone-10 N4268114 E637474
Area: 10.5 ac
Elevation: 40 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 15 **Qtr:** NW
Meridian: M

Location: HWY 50 AT REDDING ROAD AND UNION PACIFIC AND LIGHT RAIL TRACKS. BETWEEN 65TH ST AND HOWE AVE
Location Detail: NEW SITE IN 2003.
Ecological: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.
General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 3 PAIRS OBSERVED NESTING. HIGH NUMBER OF SECOND YEAR MALES OBSERVED, WHICH IS CONSISTENT WITH TYPICAL PIONEERING BEHAVIOR OF SECOND YEAR BIRDS.
Owner/Manager: CALTRANS

Occurrence No. 20 **Map Index:** 54698 **EO Index:** 54698
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Dates Last Seen
Element: 2003-XX-XX
Site: 2003-XX-XX
Record Last Updated: 2004-03-12

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.56037° / -121.46510°
UTM: Zone-10 N4269109 E633731
Area: 17.1 ac
Elevation: 25 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 05E
Section: 07 **Qtr:** E
Meridian: M

Location: HWY 50 FROM 34TH STREET TO STOCKTON BLVD, SACRAMENTO
Ecological: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.
General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 19 PAIRS OBSERVED NESTING.
Owner/Manager: CALTRANS

Progne subis

purple martin

Element Code: ABPAU01010

Status — Federal: None; State: None

NDDB Element Ranks — Global: G5; State: S3

Other Lists — CDFG Status: SC

Habitat Associations

General: (NESTING) INHABITS WOODLANDS, LOW ELEVATION CONIFEROUS FOREST OF DOUGLAS FIR, PONDEROSA PINE, & MONTEREY PINE.

Micro: NESTS IN OLD WOODPECKER CAVITIES MOSTLY, ALSO IN HUMAN-MADE STRUCTURES. NEST OFTEN LOCATED IN TALL, ISOLATED TREE/SNAG.

Occurrence No. 21 **Map Index:** 54699 **EO Index:** 54699

Dates Last Seen — Element: 2003-XX-XX; Site: 2003-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 2004-03-12
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.56385° / -121.47122°
UTM: Zone-10 N4269487 E633191
Radius: 80 meters
Elevation: 26 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: 07 **Qtr:** N
Meridian: M

Location: CAPITAL CITY FWY (BUSINESS I-80) BETWEEN "R" AND "S" STREETS, SACRAMENTO

Ecological: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.

General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 14 PAIRS OBSERVED NESTING.

Owner/Manager: CALTRANS

Occurrence No. 22 **Map Index:** 54700 **EO Index:** 54700

Dates Last Seen — Element: 2003-XX-XX; Site: 2003-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 2004-03-12
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.55769° / -121.47405°
UTM: Zone-10 N4268799 E632956
Radius: 1/10 mile
Elevation: 27 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: 07 **Qtr:** S
Meridian: M

Location: EASTBOUND HWY 50 OFFRAMP TO SOUTHBOUND HWY 99 AND NORTHBOUND HWY 99 OFFRAMP TO EASTBOUND HWY 50, SACRAMENTO

Ecological: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.

General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 7 PAIRS OBSERVED NESTING.

Owner/Manager: CALTRANS

Occurrence No. 23 **Map Index:** 54701 **EO Index:** 54701

Dates Last Seen — Element: 2003-XX-XX; Site: 2003-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 2004-03-12
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.53948° / -121.48432°
UTM: Zone-10 N4266763 E632094
Radius: 80 meters
Elevation: 27 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 04E
Section: 13 **Qtr:** SE
Meridian: M

Location: SUTTERVILLE ROAD OVER THE UNION PACIFIC RAIL YARD, WEST OF HWY 99, SACRAMENTO

Ecological: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.

General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 6 PAIRS OBSERVED NESTING.

Owner/Manager: UNKNOWN

Progne subis

purple martin

Element Code: ABPAU01010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: (NESTING) INHABITS WOODLANDS, LOW ELEVATION CONIFEROUS FOREST OF DOUGLAS FIR, PONDEROSA PINE, & MONTEREY PINE.
Micro: NESTS IN OLD WOODPECKER CAVITIES MOSTLY, ALSO IN HUMAN-MADE STRUCTURES. NEST OFTEN LOCATED IN TALL, ISOLATED TREE/SNAG.

Occurrence No. 24 **Map Index:** 54702 **EO Index:** 54702
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Dates Last Seen
Element: 2003-XX-XX
Site: 2003-XX-XX
Record Last Updated: 2004-03-12

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.56215° / -121.48743°
UTM: Zone-10 N4269274 E631782
Area: 14.5 ac
Elevation: 23 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 04E
Section: 12 **Qtr:** NE
Meridian: M

Location: HWY 50 BETWEEN 18TH AND 20TH STREETS, SACRAMENTO
Ecological: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.
General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 21 PAIRS OBSERVED NESTING.
Owner/Manager: CALTRANS

Occurrence No. 25 **Map Index:** 54703 **EO Index:** 54703
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEEMAN, T, D. AIROLA, D. KOPP 2003 (LIT)

Dates Last Seen
Element: 2003-XX-XX
Site: 2003-XX-XX
Record Last Updated: 2004-03-12

Quad Summary: SACRAMENTO WEST (3812155/513D)
County Summary: SACRAMENTO

Lat/Long: 38.58491° / -121.50344°
UTM: Zone-10 N4271777 E630346
Area: 14.3 ac
Elevation: 24 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 04E
Section: 35 **Qtr:** SE
Meridian: M

Location: I-5 AT I STREET AND I STREET BRIDGE RAMP ABOVE THE CALIFORNIA STATE RAILROAD MUSEUM PARKING LOT, SACRAMENTO
Location Detail: BIRDS ARE NESTING IN WEEP HOLES IN FREEWAY AND STREET OVERPASSES. WEEP HOLES ARE VERTICAL HOLES CONSTRUCTED INTO THE UNDERSIDE OF SOME HOLLOW BOX GIRDER ELEVATED FREEWAYS, OVERPASSES & BRIDGES TO RELIEVE AIR PRESSURE & DRAIN CONDENSATION.
General: SITES MONITORED EVERY 4-8 DAYS FROM MID-MAY TO EARLY AUGUST 2003. 29 PAIRS OBSERVED NESTING.
Owner/Manager: CALTRANS

Riparia riparia

bank swallow

Element Code: ABPAU08010

Status
Federal: None
State: Threatened

NDDB Element Ranks
Global: G5
State: S2S3

Other Lists
CDFG Status:

Habitat Associations
General: (NESTING) COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT.
Micro: REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.

Occurrence No. 94 **Map Index:** 11372 **EO Index:** 12978
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HUMPHREY, J. 1986 (PERS)

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 1998-10-28

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.58441° / -121.44342°
UTM: Zone-10 N4271808 E635575
Area: 29.8 ac
Elevation: 30 ft
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 05E
Section: 33 **Qtr:** SE
Meridian: M

Location: SOUTH SIDE OF AMERICAN RIVER UPSTREAM FROM CAL EXPO, NEAR BUSINESS 80 BRIDGE.

General: 42 BURROWS WITH 30 BIRDS ESTIMATED BY RON SCHLORFF; VISIBLE FROM THE BUSINESS 80 BRIDGE.

Owner/Manager: SAC COUNTY

Sagittaria sanfordii

Sanford's arrowhead

Element Code: PMALI040Q0

Status		NDDB Element Ranks		Other Lists	
Federal:	None	**Global:**	G3	**CNPS List:**	1B
State:	None	**State:**	S3.2	**R-E-D Code:**	2-2-3

Habitat Associations

General: MARSHES AND SWAMPS.

Micro: IN STANDING OR SLOW-MOVING FRESHWATER PONDS, MARSHES, AND DITCHES. 0-610M.

Occurrence No. 26 **Map Index:** 24524 **EO Index:** 12899

Dates Last Seen — **Element:** 1993-07-22 **Site:** 1993-07-22

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 1995-11-14
Main Source: NOSAL, T. 1993 (OBS)

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.59505° / -121.45680°
UTM: Zone-10 N4272969 E634390
Area: 47.0 ac
Elevation: 20 ft
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 05E
Section: 68 **Qtr:** N
Meridian: M

Location: SLOUGH ALONG NORTH SIDE OF THE AMERICAN RIVER, BETWEEN SOUTHERN PACIFIC RR TRACKS AND THE PUMPING STATION, SACRAMENTO.

Location Detail: NEXT TO AMERICAN RIVER BIKE TRAIL, FROM SPRR TRACKS WEST APPROX. 1 KM (0.7 MI).

Ecological: SLOUGHS WITH MUDDY SHORES. ASSOCIATES INCLUDE PASPALUM, SETARIA, SALIX, AND TYPHA. MOSTLY GROWING OFFSHORE IN APPROX. 6" OF WATER WITH NO SURROUNDING VEGETATION.

General: 50+ COLONIES OBSERVED IN SEVERAL DISCONTINUOUS SLOUGHS. SITE IS WITHIN THE AMERICAN RIVER PARKWAY COUNTY PARK, COUNTY SHOULD BE MADE AWARE OF THE PLANTS PRESENCE.

Owner/Manager: SAC COUNTY-PARKS & REC

Occurrence No. 27 **Map Index:** 24521 **EO Index:** 12983

Dates Last Seen — **Element:** 1993-10-22 **Site:** 1993-10-22

Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Record Last Updated: 1995-11-14
Main Source: NOSAL, T. 1993 (OBS)

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.55401° / -121.42282°
UTM: Zone-10 N4268465 E637427
Radius: 80 meters
Elevation: 35 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: 15 **Qtr:** NW
Meridian: M

Location: SMALL CHANNEL JUST SOUTH OF CSU, SACRAMENTO FOOTBALL FIELD.

Location Detail: SOUTH OF STADIUM, BETWEEN ROAD AND PARKING LOT APPROX. 100' EAST OF CULVERT.

Ecological: GRASSY DRAINAGE CHANNEL DOMINATED BY ECHINOCHLOA CRUSGALI WITH CYPERUS AND POLYGONUM.

Threat: SITE IS SUBJECTED TO OCCASIONAL MOWING AND POSSIBLE HERBICIDE APPLICATION.

General: SMALL APPROX. 1 SQ FT COLONY. COMPETITION WITH GRASSES ETC. MAY BE IMPACTING POPULATION.

Owner/Manager: CSU-SACRAMENTO

Sagittaria sanfordii

Sanford's arrowhead

Element Code: PMALI040Q0

Status		NDDB Element Ranks		Other Lists	
Federal:	None	**Global:**	G3	**CNPS List:**	1B
State:	None	**State:**	S3.2	**R-E-D Code:**	2-2-3

Habitat Associations

General: MARSHES AND SWAMPS.

Micro: IN STANDING OR SLOW-MOVING FRESHWATER PONDS, MARSHES, AND DITCHES. 0-610M.

Occurrence No. 28 **Map Index:** 24522 **EO Index:** 12962

Dates Last Seen — **Element:** 1993-10-23 **Site:** 1993-10-23

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: NOSAL, T. 1992 (OBS)

Record Last Updated: 1995-11-14

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.55834° / -121.41403°
UTM: Zone-10 N4268959 E638185
Radius: 80 meters
Elevation: 20 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** XX **Qtr:** XX **Meridian:** M

Location: DEPRESSION ALONG THE SOUTH SIDE OF THE AMERICAN RIVER, APPROX. 400M WEST OF HOWE AVE, SACRAMENTO.

Location Detail: BETWEEN THE RIVER AND LEVEE, BEHIND AN APARTMENT COMPLEX AND NEAR THE WATER TREATMENT PLANT.

Ecological: GROWING IN A LOW, PERENNIAL WET, DEPRESSION. LUDWIGIA PEPLOIDES IS MAJOR ASSOCIATE.

Threat: SITE IS ADJACENT TO AMERICAN RIVER BIKE TRAIL AND MAY BE SUBJECT TO TRAMPLING.

General: 1 COLONY OBSERVED IN 1992. SITE IS WITHIN THE AMERICAN RIVER PARKWAY.

Owner/Manager: SAC COUNTY-PARKS & REC

Occurrence No. 29 **Map Index:** 24523 **EO Index:** 12937

Dates Last Seen — **Element:** 1992-10-23 **Site:** 1992-10-23

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: NOSAL, T. 1992 (OBS)

Record Last Updated: 1995-11-14

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.56284° / -121.39303°
UTM: Zone-10 N4269490 E640006
Radius: 80 meters
Elevation: 20 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 06E **Section:** 11 **Qtr:** E **Meridian:** M

Location: DRAINAGE INTO THE AMERICAN RIVER, BETWEEN LEVEE AND RIVER JUST WEST OF POWER LINES (WEST OF WATT), SACRAMENTO.

Ecological: ALONG SILTY-CLAYEY BANK OF PERENIALLY WET DRAINAGE CHANNEL. ASSOCIATES INCLUDE LUDWEGIA PEPLOIDES, POLYGONUM PERSICARIA, CYPERUS. SAGITTARIA APPEARS TO BE GROWING WITHOUT MUCH COMPETITION FROM IT'S ASSOCIATES.

Threat: PROXIMITY TO BIKE TRAIL MAY RESULT IN OCCASIONAL TRAMPLING.

General: 1 COLONY OBSERVED IN 1992. SITE IS WITHIN THE AMERICAN RIVER PARKWAY.

Owner/Manager: SAC COUNTY-PARKS & REC

Occurrence No. 44 **Map Index:** 30075 **EO Index:** 20718

Dates Last Seen — **Element:** 1993-XX-XX **Site:** 1993-XX-XX

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: NORTON, K. 1993 (MAP)

Record Last Updated: 1995-11-14

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.56188° / -121.42061°
UTM: Zone-10 N4269342 E637605
Radius: 80 meters
Elevation: 20 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N **Range:** 05E **Section:** XX **Qtr:** XX **Meridian:** M

Location: AMERICAN RIVER AT THE GUY WEST BRIDGE, CSUS SIDE OF THE RIVER, SACRAMENTO.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS MAP DETAIL; ECOLOGICAL AND THREAT INFO NEEDED. SITE IS WITHIN THE LOWER AMERICAN RIVER PARKWAY COUNTY PARK.

Owner/Manager: SAC COUNTY-PARKS & REC

Sagittaria sanfordii

Sanford's arrowhead

Element Code: PMALI040Q0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3.2

Other Lists
CNPS List: 1B
R-E-D Code: 2-2-3

Habitat Associations
General: MARSHES AND SWAMPS.
Micro: IN STANDING OR SLOW-MOVING FRESHWATER PONDS, MARSHES, AND DITCHES. 0-610M.

Occurrence No. 45 **Map Index:** 30076 **EO Index:** 14446
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: NOSAL, T. 1994 (OBS)

Dates Last Seen
Element: 1994-05-29
Site: 1994-05-29
Record Last Updated: 1995-11-14

Quad Summary: CARMICHAEL (3812153/512D), SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.56822° / -121.37668°
UTM: Zone-10 N4270112 E641420
Radius: 80 meters
Elevation: 15 ft
Mapping Precision: SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 05E
Section: XX **Qtr:** XX
Meridian: M

Location: AMERICAN RIVER UPSTREAM FROM WATT AVE, NORTH SIDE OF THE RIVER, SACRAMENTO.
Location Detail: LOCATED ABOUT 0.3 MILE EAST OF WATT AVE, AT RIVER MILE 9.7. SITE IS DOWNSTREAM FROM WHERE STORM BASIN DRAINS INTO RIVER (BASIN IS JUST EAST OF THE TEICHERT COMPLEX).
Ecological: BARE, SANDY SHORE OF RIVER IN LESS THAN 6" OF WATER. NO OTHER VEGETATION NEARBY. BANK VEGETATION CONSISTS OF SALIX, RUBUS, ET AL.
Threat: PLANTS APPEAR TO HAVE BEEN GRAZED/BROWSED (MUSKRAT/BEAVER/DEER/???), MAY BE TRAMPLED BY RECREATIONAL USERS.
General: 10 PLANTS OBSERVED IN 1994. SITE IS WITHIN THE LOWER AMERICAN RIVER PARKWAY COUNTY PARK.
Owner/Manager: SAC COUNTY-PARKS & REC

Taxidea taxus

American badger

Element Code: AMAJF04010

Status		NDDB Element Ranks		Other Lists	
Federal:	None	**Global:**	G5	**CDFG Status:**	SC
State:	None	**State:**	S4		

Habitat Associations

General: MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.

Micro: NEED SUFFICIENT FOOD, FRIABLE SOILS & OPEN, UNCULTIVATED GROUND. PREY ON BURROWING RODENTS. DIG BURROWS.

Occurrence No. 304 **Map Index:** 57545 **EO Index:** 57561

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: CDFG 1986 (LIT)

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX

Record Last Updated: 2004-10-21

Quad Summary: SACRAMENTO EAST (3812154/512C)
County Summary: SACRAMENTO

Lat/Long: 38.53222° / -121.40871°
UTM: Zone-10 N4266069 E638699
Radius: 1 mile
Elevation: 40 ft

Mapping Precision: NON-SPECIFIC
Symbol Type: POINT

Township: 08N
Range: 05E
Section: 23 **Qtr:** XX
Meridian: M

Location: POLK.

General: 1 COLLECTED, USNM.

Owner/Manager: UNKNOWN

Appendix F

TRANSPORTATION & CIRCULATION TECHNICAL APPENDIX

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.98									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		6198									4982	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		6198									4982	
Volume (vph)	0	1982	336	0	0	0	0	0	0	155	218	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1982	336	0	0	0	0	0	0	155	218	0
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	2288	0	0	0	0	0	0	0	0	353	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		71.5									21.5	
Effective Green, g (s)		71.0									21.0	
Actuated g/C Ratio		0.71									0.21	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		4401									1046	
v/s Ratio Prot		c0.37									c0.07	
v/s Ratio Perm												
v/c Ratio		0.52									0.34	
Uniform Delay, d1		6.7									33.6	
Progression Factor		1.00									0.87	
Incremental Delay, d2		0.4									0.9	
Delay (s)		7.1									30.1	
Level of Service		A									C	
Approach Delay (s)		7.1			0.0			0.0			30.1	
Approach LOS		A			A			A			C	

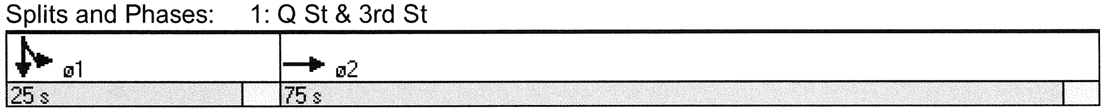
Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	75
Maximum Split (%)	25.0%	75.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	90.5	15.5
End Time (s)	15.5	90.5
Yield/Force Off (s)	12	87
Yield/Force Off 170(s)	4	79
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	92

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	50
Offset: 87 (87%), Referenced to phase 2:EBT, Start of Yellow	

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.99	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.98	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					4860						3108	1205
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					4860						3108	1205
Volume (vph)	0	0	0	132	446	0	0	0	0	0	241	176
Peak-hour factor, PHF	1.00	1.00	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	132	446	0	0	0	0	0	241	176
RTOR Reduction (vph)	0	0	0	0	61	0	0	0	0	0	29	91
Lane Group Flow (vph)	0	0	0	0	517	0	0	0	0	0	258	39
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2624						932	362
v/s Ratio Prot					c0.11						c0.08	
v/s Ratio Perm												0.03
v/c Ratio					0.20						0.28	0.11
Uniform Delay, d1					5.9						13.4	12.7
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.2						0.7	0.6
Delay (s)					6.1						14.1	13.3
Level of Service					A						B	B
Approach Delay (s)		0.0			6.1			0.0			13.8	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

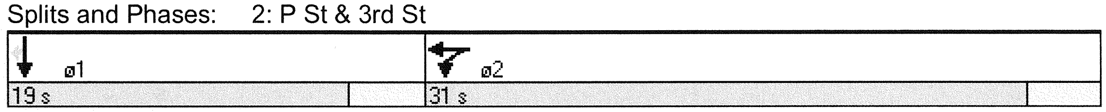
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.96	
Flt Protected	1.00			0.97	0.96	
Satd. Flow (prot)	1798			4949	3350	
Flt Permitted	1.00			0.97	0.96	
Satd. Flow (perm)	1798			4949	3350	
Volume (vph)	78	13	369	303	326	113
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	78	13	369	303	326	113
RTOR Reduction (vph)	8	0	0	213	0	0
Lane Group Flow (vph)	83	0	0	459	439	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			29.5	17.5	
Effective Green, g (s)	12.0			29.0	17.0	
Actuated g/C Ratio	0.17			0.41	0.24	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	308			2050	814	
v/s Ratio Prot	c0.05			c0.09	c0.13	
v/s Ratio Perm						
v/c Ratio	0.27			0.22	0.54	
Uniform Delay, d1	25.2			13.2	23.1	
Progression Factor	1.00			0.08	1.00	
Incremental Delay, d2	2.1			0.2	2.6	
Delay (s)	27.3			1.3	25.6	
Level of Service	C			A	C	
Approach Delay (s)	27.3			1.3	25.6	
Approach LOS	C			A	C	

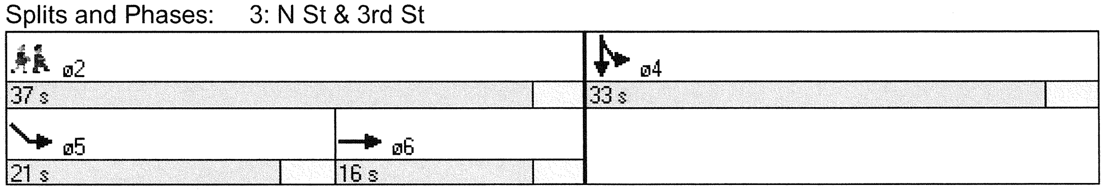
Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	37	33	21	16
Maximum Split (%)	52.9%	47.1%	30.0%	22.9%
Minimum Split (s)	37	33	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	22.5	20.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	57.5	20.5	41.5
End Time (s)	57.5	20.5	41.5	57.5
Yield/Force Off (s)	54	17	38	54
Yield/Force Off 170(s)	43	8	38	46
Local Start Time (s)	3.5	40.5	3.5	24.5
Local Yield (s)	37	0	21	37
Local Yield 170(s)	26	61	21	29

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70
Offset: 17 (24%), Referenced to phase 4:SBTL, Start of Yellow	

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #4: N St./4th St.

Signal=Stop/Rights=Include
Initial Vol: 0 39 42
Lanes: 0 0 0 1 0

Initial Vol:	Lanes:	Signal=Uncontrol Rights=Include			Signal=Uncontrol Rights=Include	Lanes:	Initial Vol:
11	0		Vol Cnt Date:	n/a			
			Cycle Time (sec):	100		0	0
	1		Loss Time (sec):	0		0	
500	1		Critical V/C:	0.000		0	0
	1		Avg Crit Del (sec/veh):	2.7		0	
62	0		Avg Delay (sec/veh):	2.7		0	0
			LOS:	B			

Lanes: 0 0 0 1 0
Initial Vol: 0 29 33
Signal=Stop/Rights=Include

Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	29	33	42	39	0	11	500	62	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	29	33	42	39	0	11	500	62	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	29	33	42	39	0	11	500	62	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	29	33	42	39	0	11	500	62	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	29	33	42	39	0	11	500	62	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	568	198	218	599	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	435	849	742	418	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	427	849	664	410	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.07	0.04	0.06	0.10	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	580	511	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.4	0.6	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	11.9	13.4	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	B	B	*	*	A	*	*	*	*	*
ApproachDel:		11.9			13.4			xxxxxx			xxxxxx	
ApproachLOS:		B			B			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.96				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5058						4844				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5058						4844				
Volume (vph)	63	523	0	0	0	0	0	619	193	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	523	0	0	0	0	0	619	193	0	0	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	81	0	0	0	0
Lane Group Flow (vph)	0	565	0	0	0	0	0	731	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2240						2145				
v/s Ratio Prot		c0.11						c0.15				
v/s Ratio Perm												
v/c Ratio		0.25						0.34				
Uniform Delay, d1		12.2						12.8				
Progression Factor		1.27						1.00				
Incremental Delay, d2		0.3						0.4				
Delay (s)		15.8						13.2				
Level of Service		B						B				
Approach Delay (s)		15.8			0.0			13.2			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70
Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow	

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		5034		1770	3539						6307	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		5034		1770	3539						6307	
Volume (vph)	0	745	35	63	147	0	0	0	0	219	548	10
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	745	35	63	147	0	0	0	0	219	548	10
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	773	0	63	147	0	0	0	0	0	775	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		20.0		12.5	36.0						25.5	
Effective Green, g (s)		19.5		12.0	35.5						26.5	
Actuated g/C Ratio		0.28		0.17	0.51						0.38	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		1402		303	1795						2388	
v/s Ratio Prot		c0.15		c0.04	0.04						c0.12	
v/s Ratio Perm												
v/c Ratio		0.55		0.21	0.08						0.32	
Uniform Delay, d1		21.5		24.9	8.9						15.4	
Progression Factor		1.00		0.75	1.59						0.71	
Incremental Delay, d2		1.6		1.6	0.1						0.3	
Delay (s)		23.1		20.4	14.2						11.3	
Level of Service		C		C	B						B	
Approach Delay (s)		23.1			16.0			0.0			11.3	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

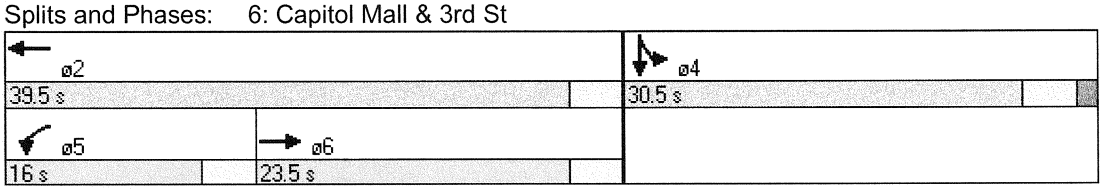
c Critical Lane Group

Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	39.5	30.5	16	23.5
Maximum Split (%)	56.4%	43.6%	22.9%	33.6%
Minimum Split (s)	39.5	30.5	7.5	23.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	26	20.5		10
Flash Dont Walk (s)	10	5		10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	22.5	62	22.5	38.5
End Time (s)	62	22.5	38.5	62
Yield/Force Off (s)	58.5	17.5	35	58.5
Yield/Force Off 170(s)	48.5	12.5	35	48.5
Local Start Time (s)	57.5	27	57.5	3.5
Local Yield (s)	23.5	52.5	0	23.5
Local Yield 170(s)	13.5	47.5	0	13.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 35 (50%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		0.91			1.00			1.00	
Frpb, ped/bikes		1.00	0.87		0.97			0.96			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			0.98			0.98	
Frt		1.00	0.85		0.97			0.95			1.00	
Flt Protected		1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)		3539	1380		4813			1489			1613	
Flt Permitted		1.00	1.00		1.00			0.93			0.94	
Satd. Flow (perm)		3539	1380		4813			1405			1532	
Volume (vph)	0	795	169	0	194	47	10	12	13	37	119	6
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	795	169	0	194	47	10	12	13	37	119	6
RTOR Reduction (vph)	0	0	78	0	22	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	795	91	0	219	0	0	27	0	0	160	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)		37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio		0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)		3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)		1896	739		2578			492			536	
v/s Ratio Prot		c0.22			0.05							
v/s Ratio Perm			0.07					0.02			c0.10	
v/c Ratio		0.42	0.12		0.09			0.05			0.30	
Uniform Delay, d1		9.7	8.1		7.9			15.1			16.5	
Progression Factor		0.92	3.10		0.47			0.85			0.57	
Incremental Delay, d2		0.6	0.3		0.1			0.2			1.4	
Delay (s)		9.5	25.3		3.8			13.0			10.9	
Level of Service		A	C		A			B			B	
Approach Delay (s)		12.3			3.8			13.0			10.9	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Timing Report, Sorted By Phase
7: Capitol Mall & 4th St

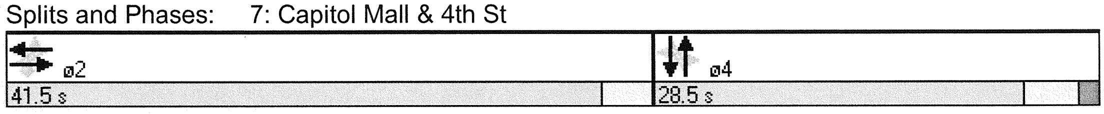
301 Capitol Mall
Existing Conditions - AM Peak

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.98		1.00	0.98				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.96		1.00	0.97				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4799		3433	4861				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4799		3433	4861				
Volume (vph)	491	354	0	0	115	37	126	297	60	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	491	354	0	0	115	37	126	297	60	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	38	0	0	0	0
Lane Group Flow (vph)	491	354	0	0	125	0	126	319	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1234		1275	1806				
v/s Ratio Prot	c0.14	c0.10			0.03		0.04	c0.07				
v/s Ratio Perm												
v/c Ratio	0.71	0.19			0.10		0.10	0.18				
Uniform Delay, d1	26.1	9.2			19.8		14.4	14.8				
Progression Factor	0.75	0.14			1.00		0.51	0.41				
Incremental Delay, d2	5.8	0.2			0.2		0.1	0.2				
Delay (s)	25.5	1.5			20.0		7.5	6.3				
Level of Service	C	A			B		A	A				
Approach Delay (s)		15.5			20.0			6.6			0.0	
Approach LOS		B			B			A			A	

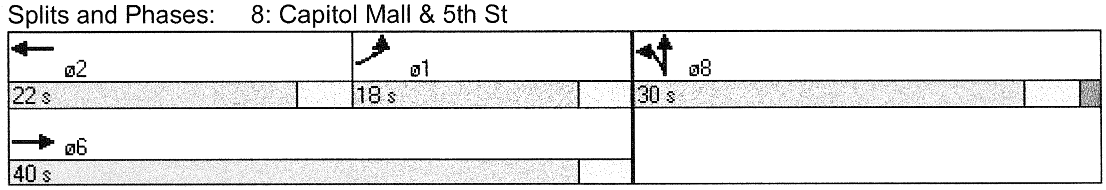
Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	55

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	WBL	WBT	WBR	WBR2	SBT	SBR	SBR2
Lane Configurations							
Ideal Flow (vphpl)	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	0.91	0.95	1.00	0.91		
Frt	1.00	0.97	0.85	0.85	0.98		
Flt Protected	0.95	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1681	1650	1504	1583	4964		
Flt Permitted	0.95	1.00	1.00	1.00	1.00		
Satd. Flow (perm)	1681	1650	1504	1583	4964		
Volume (vph)	119	156	202	67	657	117	7
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	156	202	67	657	117	7
RTOR Reduction (vph)	65	0	0	36	1	0	0
Lane Group Flow (vph)	54	190	168	31	780	0	0
Turn Type	custom	Prot		custom			
Protected Phases		2			4		
Permitted Phases	2		2	2			
Actuated Green, G (s)	32.5	32.5	32.5	32.5	30.5		
Effective Green, g (s)	32.0	32.0	32.0	32.0	30.0		
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.43		
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5		
Lane Grp Cap (vph)	768	754	688	724	2127		
v/s Ratio Prot		c0.12			c0.16		
v/s Ratio Perm	0.03		0.11	0.02			
v/c Ratio	0.07	0.25	0.24	0.04	0.37		
Uniform Delay, d1	10.7	11.7	11.6	10.5	13.6		
Progression Factor	0.51	0.78	0.78	0.58	1.00		
Incremental Delay, d2	0.2	0.8	0.8	0.1	0.5		
Delay (s)	5.6	9.9	9.9	6.2	14.0		
Level of Service	A	A	A	A	B		
Approach Delay (s)		8.5			14.0		
Approach LOS		A			B		

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	36	34
Maximum Split (%)	51.4%	48.6%
Minimum Split (s)	7.5	34
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		22.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	2.5	38.5
End Time (s)	38.5	2.5
Yield/Force Off (s)	35	69
Yield/Force Off 170(s)	35	61
Local Start Time (s)	3.5	39.5
Local Yield (s)	36	0
Local Yield 170(s)	36	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50
Offset: 69 (99%), Referenced to phase 4:SBT, Start of Yellow	

Splits and Phases: 9: L St & 3rd St

ø2	ø4
36 s	34 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					0.99		1.00	1.00				0.95
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.98		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6202		1770	5085				2656
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6202		1770	5085				2656
Volume (vph)	0	0	0	0	514	93	76	483	0	0	0	98
Peak-hour factor, PHF	1.00	1.00	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	514	93	76	483	0	0	0	98
RTOR Reduction (vph)	0	0	0	0	47	0	37	0	0	0	0	48
Lane Group Flow (vph)	0	0	0	0	560	0	39	483	0	0	0	50
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					25.0		35.5	35.5				35.5
Effective Green, g (s)					26.0		36.0	36.0				36.0
Actuated g/C Ratio					0.37		0.51	0.51				0.51
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					2304		910	2615				1366
v/s Ratio Prot					c0.09		0.02	c0.09				
v/s Ratio Perm												0.02
v/c Ratio					0.24		0.04	0.18				0.04
Uniform Delay, d1					15.2		8.4	9.1				8.4
Progression Factor					1.00		0.43	0.42				1.00
Incremental Delay, d2					0.3		0.1	0.1				0.1
Delay (s)					15.5		3.7	4.0				8.5
Level of Service					B		A	A				A
Approach Delay (s)		0.0			15.5			4.0			8.5	
Approach LOS		A			B			A			A	

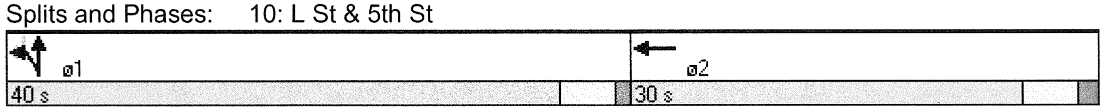
Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	40	30
Maximum Split (%)	57.1%	42.9%
Minimum Split (s)	40	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	26.5	16
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	7
End Time (s)	7	37
Yield/Force Off (s)	2.5	32
Yield/Force Off 170(s)	63.5	23
Local Start Time (s)	5	45
Local Yield (s)	40.5	0
Local Yield 170(s)	31.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



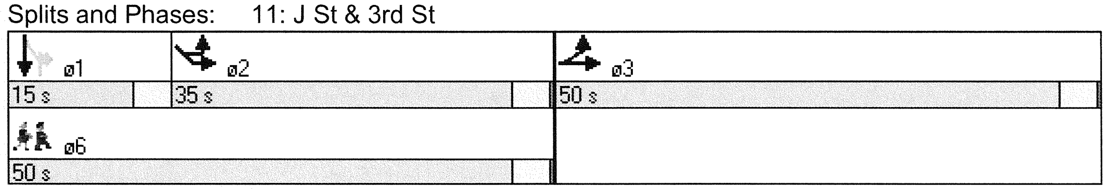
Movement	EBL	EBT	EBR	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.91		0.88	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		1.00	1.00	1.00		0.97	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	
Frt		0.98		0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4977		2787	1610	3351		6118	
Flt Permitted		1.00		1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4977		2787	1610	3351		6118	
Volume (vph)	23	1578	185	105	102	110	11	1511	491
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	23	1578	185	105	102	110	11	1511	491
RTOR Reduction (vph)	0	14	0	6	0	0	0	0	0
Lane Group Flow (vph)	0	1772	0	99	68	144	0	2013	0
Confl. Peds. (#/hr)			60						60
Turn Type	Split			custom	Perm		Split		
Protected Phases	3	3				1	2	2	
Permitted Phases				1	1				
Actuated Green, G (s)		46.0		11.5	11.5	11.5		31.0	
Effective Green, g (s)		46.0		11.0	11.0	11.0		31.0	
Actuated g/C Ratio		0.46		0.11	0.11	0.11		0.31	
Clearance Time (s)		4.0		3.5	3.5	3.5		4.0	
Lane Grp Cap (vph)		2289		307	177	369		1897	
v/s Ratio Prot		c0.36						c0.33	
v/s Ratio Perm				0.04	0.04	0.04			
v/c Ratio		0.77		0.32	0.38	0.39		1.06	
Uniform Delay, d1		22.6		41.1	41.4	41.4		34.5	
Progression Factor		1.00		1.00	1.19	1.19		1.00	
Incremental Delay, d2		2.6		2.8	6.2	3.1		39.1	
Delay (s)		25.3		43.8	55.3	52.2		73.6	
Level of Service		C		D	E	D		E	
Approach Delay (s)		25.3				53.2		73.6	
Approach LOS		C				D		E	

Intersection Summary			
HCM Average Control Delay	50.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	3	6
Movement	SBTL	SEL	EBTL	Ped
Lead/Lag	Lead	Lag		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	15	35	50	50
Maximum Split (%)	15.0%	35.0%	50.0%	50.0%
Minimum Split (s)	7.5	35	50	50
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		20	35	35
Flash Dont Walk (s)		11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	33	48	83	33
End Time (s)	48	83	33	83
Yield/Force Off (s)	44.5	79	29	79
Yield/Force Off 170(s)	44.5	68	18	68
Local Start Time (s)	54	69	4	54
Local Yield (s)	65.5	0	50	0
Local Yield 170(s)	65.5	89	39	89

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100
Offset: 79 (79%), Referenced to phase 2:SEL, Start of Yellow	

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.96					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.95	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6032	1514					3234	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6032	1514					3234	1441			
Volume (vph)	680	2425	98	0	0	0	0	280	296	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	680	2425	98	0	0	0	0	280	296	0	0	0
RTOR Reduction (vph)	176	1	43	0	0	0	0	1	1	0	0	0
Lane Group Flow (vph)	476	2452	55	0	0	0	0	403	171	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	56.0	56.0	56.0					36.0	36.0			
Effective Green, g (s)	56.0	56.0	56.0					36.0	36.0			
Actuated g/C Ratio	0.56	0.56	0.56					0.36	0.36			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	722	3378	848					1164	519			
v/s Ratio Prot	0.37	c0.41						c0.12				
v/s Ratio Perm			0.04						0.12			
v/c Ratio	0.66	0.73	0.06					0.35	0.33			
Uniform Delay, d1	15.3	16.3	10.0					23.4	23.2			
Progression Factor	1.15	0.96	1.48					1.00	1.00			
Incremental Delay, d2	2.1	0.6	0.1					0.8	1.7			
Delay (s)	19.8	16.3	15.0					24.2	24.9			
Level of Service	B	B	B					C	C			
Approach Delay (s)		17.0			0.0			24.4			0.0	
Approach LOS		B			A			C			A	

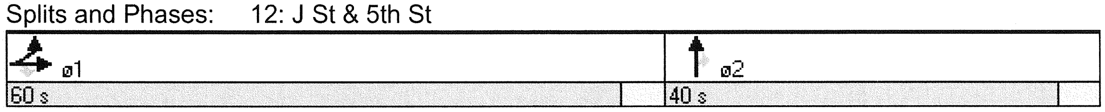
Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	60	40
Maximum Split (%)	60.0%	40.0%
Minimum Split (s)	60	40
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	44	20
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	43	3
End Time (s)	3	43
Yield/Force Off (s)	99	39
Yield/Force Off 170(s)	87	23
Local Start Time (s)	44	4
Local Yield (s)	0	40
Local Yield 170(s)	88	24

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100
Offset: 99 (99%), Referenced to phase 1:EBTL, Start of Yellow	

Splits and Phases: 12: J St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↱		↰↰	↑↑				
Ideal 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		0.97	0.95				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6117		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6117		3433	3362				
Volume (vph)	0	0	0	0	753	81	148	752	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	753	81	148	752	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	36	0	43	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	798	0	105	752	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					16.5		26.5	26.5				
Effective Green, g (s)					16.0		26.0	26.0				
Actuated g/C Ratio					0.32		0.52	0.52				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					1957		1785	1748				
v/s Ratio Prot					c0.13		0.03	c0.22				
v/s Ratio Perm												
v/c Ratio					0.41		0.06	0.43				
Uniform Delay, d1					13.3		5.9	7.4				
Progression Factor					1.00		1.82	1.33				
Incremental Delay, d2					0.6		0.0	0.6				
Delay (s)					13.9		10.9	10.5				
Level of Service					B		B	B				
Approach Delay (s)		0.0			13.9			10.5			0.0	
Approach LOS		A			B			B			A	

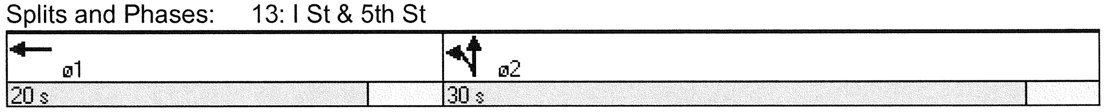
Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	20	30
Maximum Split (%)	40.0%	60.0%
Minimum Split (s)	20	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	5.5	14.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	15.5	35.5
End Time (s)	35.5	15.5
Yield/Force Off (s)	32	12
Yield/Force Off 170(s)	21	0
Local Start Time (s)	33.5	3.5
Local Yield (s)	0	30
Local Yield 170(s)	39	18

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50
Offset: 32 (64%), Referenced to phase 1:WBT, Start of Yellow	

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4905		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4905		1522	4806				
Volume (vph)	0	0	0	0	628	128	242	1214	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	628	128	242	1214	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	89	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	744	0	153	1214	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2060		639	2019				
v/s Ratio Prot					c0.15		0.10	c0.25				
v/s Ratio Perm												
v/c Ratio					0.36		0.24	0.60				
Uniform Delay, d1					9.9		9.4	11.3				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.5		0.9	1.3				
Delay (s)					10.4		10.2	12.6				
Level of Service					B		B	B				
Approach Delay (s)		0.0			10.4			12.2			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	11.6	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	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St

ø2	ø4
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.98									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		6237									5005	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		6237									5005	
Volume (vph)	0	495	79	0	0	0	0	0	0	206	436	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	495	79	0	0	0	0	0	0	206	436	0
RTOR Reduction (vph)	0	36	0	0	0	0	0	0	0	0	144	0
Lane Group Flow (vph)	0	538	0	0	0	0	0	0	0	0	498	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		27.5									15.5	
Effective Green, g (s)		27.0									15.0	
Actuated g/C Ratio		0.54									0.30	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3368									1502	
v/s Ratio Prot		c0.09									c0.10	
v/s Ratio Perm												
v/c Ratio		0.16									0.33	
Uniform Delay, d1		5.8									13.6	
Progression Factor		1.00									1.30	
Incremental Delay, d2		0.1									0.2	
Delay (s)		5.9									17.9	
Level of Service		A									B	
Approach Delay (s)		5.9			0.0			0.0			17.9	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

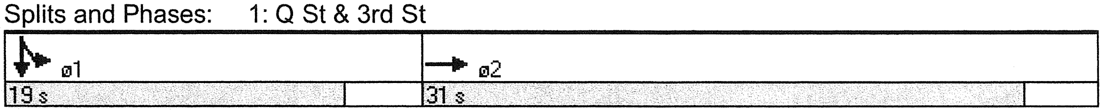
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	22.5	41.5
End Time (s)	41.5	22.5
Yield/Force Off (s)	38	19
Yield/Force Off 170(s)	30	11
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 19 (38%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.97	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.94	0.85
Flt Protected					1.00						1.00	1.00
Satd. Flow (prot)					4899						2942	1205
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					4899						2942	1205
Volume (vph)	0	0	0	137	1867	0	0	0	0	0	505	673
Peak-hour factor, PHF	1.00	1.00	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	137	1867	0	0	0	0	0	505	673
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	6	6
Lane Group Flow (vph)	0	0	0	0	1987	0	0	0	0	0	835	331
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2645						883	362
v/s Ratio Prot					c0.41						c0.28	
v/s Ratio Perm												0.27
v/c Ratio					0.75						0.95	0.91
Uniform Delay, d1					8.9						17.1	16.9
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					2.0						19.6	29.8
Delay (s)					10.9						36.7	46.6
Level of Service					B						D	D
Approach Delay (s)		0.0			10.9			0.0			39.5	
Approach LOS		A			B			A			D	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

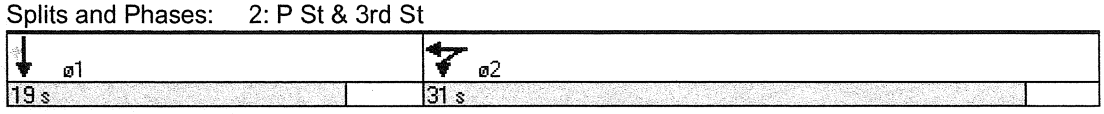
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	55

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.97			1.00	0.91	
Flt Protected	1.00			0.99	0.98	
Satd. Flow (prot)	1777			5051	3235	
Flt Permitted	1.00			0.99	0.98	
Satd. Flow (perm)	1777			5051	3235	
Volume (vph)	81	19	148	939	154	204
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	19	148	939	154	204
RTOR Reduction (vph)	12	0	0	30	0	0
Lane Group Flow (vph)	88	0	0	1057	358	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			32.5	14.5	
Effective Green, g (s)	12.0			32.0	14.0	
Actuated g/C Ratio	0.17			0.46	0.20	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2309	647	
v/s Ratio Prot	c0.05			c0.21	c0.11	
v/s Ratio Perm						
v/c Ratio	0.29			0.46	0.55	
Uniform Delay, d1	25.3			13.0	25.2	
Progression Factor	1.00			0.65	1.00	
Incremental Delay, d2	2.4			0.6	3.4	
Delay (s)	27.6			9.0	28.6	
Level of Service	C			A	C	
Approach Delay (s)	27.6			9.0	28.6	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

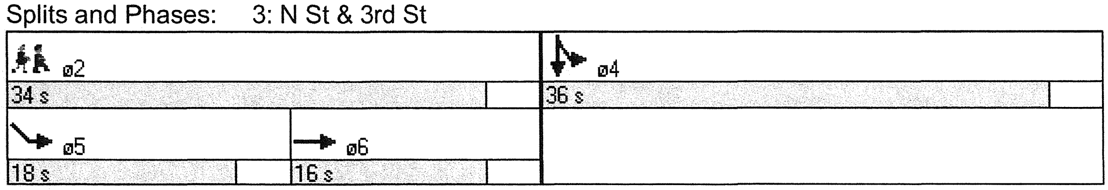
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	36	18	16
Maximum Split (%)	48.6%	51.4%	25.7%	22.9%
Minimum Split (s)	34	36	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	19.5	23.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12.5	46.5	12.5	30.5
End Time (s)	46.5	12.5	30.5	46.5
Yield/Force Off (s)	43	9	27	43
Yield/Force Off 170(s)	32	0	27	35
Local Start Time (s)	3.5	37.5	3.5	21.5
Local Yield (s)	34	0	18	34
Local Yield 170(s)	23	61	18	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 9 (13%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #4: N St./4th St.

Signal=Stop/Rights=Include
Initial Vol: 0 139 99
Lanes: 0 0 0 1 0

Signal=Uncontrol Rights=Include (west approach)
Initial Vol: 72, 358, 51
Lanes: 0, 1, 1, 1, 0

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.000
Avg Crit Del (sec/veh): 8.7
Avg Delay (sec/veh): 8.7
LOS: C

Signal=Uncontrol Rights=Include (east approach)
Lanes: 0, 0, 0, 0, 0
Initial Vol: 0, 0, 0

Lanes: 0 0 0 1 0
Initial Vol: 0 69 40
Signal=Stop/Rights=Include

Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	69	40	99	139	0	72	358	51	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	40	99	139	0	72	358	51	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	69	40	99	139	0	72	358	51	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	69	40	99	139	0	72	358	51	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	69	40	99	139	0	72	358	51	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	543	145	313	568	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	450	908	644	435	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	423	908	512	409	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.16	0.04	0.19	0.34	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	526	446	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.8	3.1	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	13.6	21.9	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	B	C	*	*	A	*	*	*	*	*
ApproachDel:		13.6			21.9			xxxxxx			xxxxxx	
ApproachLOS:		B			C			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↑						↑↑↱				
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5049						4934				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5049						4934				
Volume (vph)	72	427	0	0	0	0	0	710	124	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	427	0	0	0	0	0	710	124	0	0	0
RTOR Reduction (vph)	0	33	0	0	0	0	0	35	0	0	0	0
Lane Group Flow (vph)	0	466	0	0	0	0	0	799	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2236						2185				
v/s Ratio Prot		c0.09						c0.16				
v/s Ratio Perm												
v/c Ratio		0.21						0.37				
Uniform Delay, d1		12.0						13.0				
Progression Factor		1.26						1.00				
Incremental Delay, d2		0.2						0.5				
Delay (s)		15.3						13.4				
Level of Service		B						B				
Approach Delay (s)		15.3			0.0			13.4			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↱		↰	↑↑						↰↑↑↑↱	
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		0.99		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		5016		1770	3539						6352	
Flt Permitted		1.00		0.95	1.00						1.00	
Satd. Flow (perm)		5016		1770	3539						6352	
Volume (vph)	0	512	31	174	445	0	0	0	0	59	902	39
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	512	31	174	445	0	0	0	0	59	902	39
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	534	0	174	445	0	0	0	0	0	992	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		16.0		16.5	36.0						25.5	
Effective Green, g (s)		15.5		16.0	35.5						26.5	
Actuated g/C Ratio		0.22		0.23	0.51						0.38	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		1111		405	1795						2405	
v/s Ratio Prot		c0.11		c0.10	0.13						c0.16	
v/s Ratio Perm												
v/c Ratio		0.48		0.43	0.25						0.41	
Uniform Delay, d1		23.7		23.1	9.7						16.0	
Progression Factor		1.00		0.66	1.07						0.64	
Incremental Delay, d2		1.5		3.3	0.3						0.4	
Delay (s)		25.2		18.6	10.7						10.6	
Level of Service		C		B	B						B	
Approach Delay (s)		25.2			12.9			0.0			10.6	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

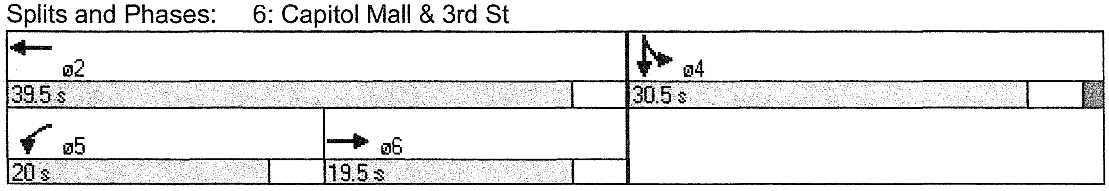
Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	39.5	30.5	20	19.5
Maximum Split (%)	56.4%	43.6%	28.6%	27.9%
Minimum Split (s)	39.5	30.5	7.5	19.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	26	20.5		6
Flash Dont Walk (s)	10	5		10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	18.5	58	18.5	38.5
End Time (s)	58	18.5	38.5	58
Yield/Force Off (s)	54.5	13.5	35	54.5
Yield/Force Off 170(s)	44.5	8.5	35	44.5
Local Start Time (s)	53.5	23	53.5	3.5
Local Yield (s)	19.5	48.5	0	19.5
Local Yield 170(s)	9.5	43.5	0	9.5

Intersection Summary

Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 35 (50%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		0.91			1.00			1.00	
Frpb, ped/bikes		1.00	0.87		0.99			0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			0.98			0.99	
Frt		1.00	0.85		0.99			0.98			0.99	
Flt Protected		1.00	1.00		1.00			0.98			0.99	
Satd. Flow (prot)		3539	1380		5016			1573			1612	
Flt Permitted		1.00	1.00		1.00			0.86			0.90	
Satd. Flow (perm)		3539	1380		5016			1379			1467	
Volume (vph)	0	546	25	0	545	28	63	110	25	41	120	11
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	546	25	0	545	28	63	110	25	41	120	11
RTOR Reduction (vph)	0	0	12	0	8	0	0	7	0	0	3	0
Lane Group Flow (vph)	0	546	13	0	565	0	0	191	0	0	169	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)		37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio		0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)		3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)		1896	739		2687			483			513	
v/s Ratio Prot		c0.15			0.11							
v/s Ratio Perm			0.01					c0.14			0.12	
v/c Ratio		0.29	0.02		0.21			0.40			0.33	
Uniform Delay, d1		8.9	7.6		8.5			17.2			16.7	
Progression Factor		1.21	1.75		0.37			0.86			0.97	
Incremental Delay, d2		0.3	0.0		0.2			2.4			1.6	
Delay (s)		11.1	13.4		3.3			17.2			17.8	
Level of Service		B	B		A			B			B	
Approach Delay (s)		11.2			3.3			17.2			17.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St

ø2	ø4
41.5 s	28.5 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑↑↱		↰↰	↑↑↑↱				
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.99				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4916		3433	4999				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4916		3433	4999				
Volume (vph)	340	272	0	0	329	55	244	626	43	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	340	272	0	0	329	55	244	626	43	0	0	0
RTOR Reduction (vph)	0	0	0	0	33	0	0	11	0	0	0	0
Lane Group Flow (vph)	340	272	0	0	351	0	244	658	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1264		1275	1857				
v/s Ratio Prot	c0.10	0.08			c0.07		0.07	c0.13				
v/s Ratio Perm												
v/c Ratio	0.49	0.15			0.28		0.19	0.35				
Uniform Delay, d1	24.9	8.9			20.8		14.9	15.9				
Progression Factor	0.89	0.26			1.00		0.52	0.49				
Incremental Delay, d2	2.5	0.2			0.5		0.3	0.5				
Delay (s)	24.5	2.5			21.3		8.0	8.3				
Level of Service	C	A			C		A	A				
Approach Delay (s)		14.7			21.3			8.2			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

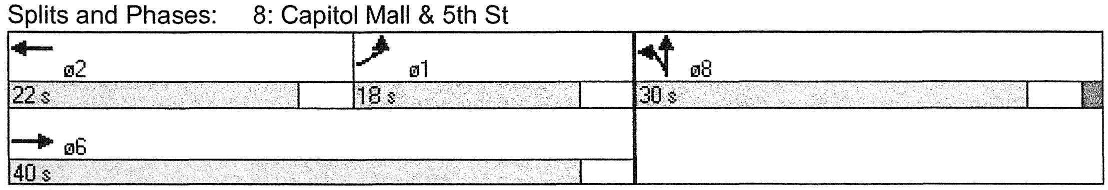
c Critical Lane Group

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	WBL	WBT	WBR	WBR2	SBT	SBR	SBR2
Lane Configurations							
Ideal Flow (vphpl)	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	0.91	0.95	1.00	0.91		
Frt	1.00	0.93	0.85	0.85	0.95		
Flt Protected	0.95	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1681	1580	1504	1583	4806		
Flt Permitted	0.95	1.00	1.00	1.00	1.00		
Satd. Flow (perm)	1681	1580	1504	1583	4806		
Volume (vph)	474	408	1000	143	525	257	46
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	474	408	1000	143	525	257	46
RTOR Reduction (vph)	17	0	0	49	9	0	0
Lane Group Flow (vph)	457	746	662	94	819	0	0
Turn Type	custom	Prot		custom			
Protected Phases		2			4		
Permitted Phases	2		2	2			
Actuated Green, G (s)	46.5	46.5	46.5	46.5	16.5		
Effective Green, g (s)	46.0	46.0	46.0	46.0	16.0		
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.23		
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5		
Lane Grp Cap (vph)	1105	1038	988	1040	1099		
v/s Ratio Prot		c0.47			c0.17		
v/s Ratio Perm	0.27		0.44	0.06			
v/c Ratio	0.41	0.72	0.67	0.09	0.74		
Uniform Delay, d1	5.6	7.8	7.4	4.4	25.1		
Progression Factor	0.65	0.69	0.67	0.45	1.00		
Incremental Delay, d2	1.1	4.0	3.4	0.2	4.6		
Delay (s)	4.7	9.4	8.3	2.1	29.7		
Level of Service	A	A	A	A	C		
Approach Delay (s)		7.4			29.7		
Approach LOS		A			C		

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	50	20
Maximum Split (%)	71.4%	28.6%
Minimum Split (s)	7.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		8.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	66.5	46.5
End Time (s)	46.5	66.5
Yield/Force Off (s)	43	63
Yield/Force Off 170(s)	43	55
Local Start Time (s)	3.5	53.5
Local Yield (s)	50	0
Local Yield 170(s)	50	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	60

Offset: 63 (90%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St

ø2	ø4
50 s	20 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					1.00		1.00	1.00				0.93
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6291		1770	5085				2585
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6291		1770	5085				2585
Volume (vph)	0	0	0	0	1484	155	320	701	0	0	0	130
Peak-hour factor, PHF	1.00	1.00	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	1484	155	320	701	0	0	0	130
RTOR Reduction (vph)	0	0	0	0	19	0	25	0	0	0	0	33
Lane Group Flow (vph)	0	0	0	0	1620	0	295	701	0	0	0	97
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					40.0		20.5	20.5				20.5
Effective Green, g (s)					41.0		21.0	21.0				21.0
Actuated g/C Ratio					0.59		0.30	0.30				0.30
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					3685		531	1526				776
v/s Ratio Prot					c0.26		c0.17	0.14				
v/s Ratio Perm												0.04
v/c Ratio					0.44		0.56	0.46				0.13
Uniform Delay, d1					8.1		20.6	19.9				17.8
Progression Factor					1.00		0.48	0.54				1.00
Incremental Delay, d2					0.4		3.9	0.9				0.3
Delay (s)					8.5		13.8	11.6				18.2
Level of Service					A		B	B				B
Approach Delay (s)		0.0			8.5			12.3			18.2	
Approach LOS		A			A			B			B	

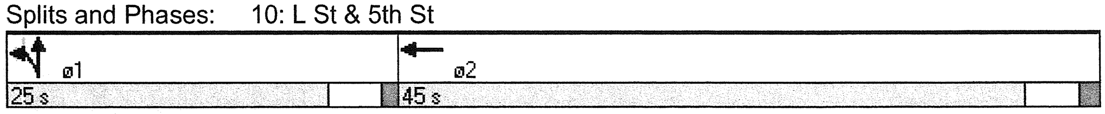
Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	45
Maximum Split (%)	35.7%	64.3%
Minimum Split (s)	25	45
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	11.5	31
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	62
End Time (s)	62	37
Yield/Force Off (s)	57.5	32
Yield/Force Off 170(s)	48.5	23
Local Start Time (s)	5	30
Local Yield (s)	25.5	0
Local Yield 170(s)	16.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations									
Ideal Flow (vphpl)	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		0.88	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		1.00	1.00	1.00		0.96	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	
Frt		0.98		0.85	1.00	1.00		0.95	
Flt Protected		1.00		1.00	0.95	0.99		0.97	
Satd. Flow (prot)		4931		2787	1610	3372		5989	
Flt Permitted		1.00		1.00	0.95	0.99		0.97	
Satd. Flow (perm)		4931		2787	1610	3372		5989	
Volume (vph)	1	419	69	161	229	348	7	924	411
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	419	69	161	229	348	7	924	411
RTOR Reduction (vph)	0	23	0	90	0	0	0	0	0
Lane Group Flow (vph)	0	466	0	71	186	391	0	1342	0
Confl. Peds. (#/hr)			60						60
Turn Type	Split			custom	Perm		Split		
Protected Phases	3	3				1	2	2	
Permitted Phases				1	1				
Actuated Green, G (s)		33.0		30.5	30.5	30.5		25.0	
Effective Green, g (s)		33.0		30.0	30.0	30.0		25.0	
Actuated g/C Ratio		0.33		0.30	0.30	0.30		0.25	
Clearance Time (s)		4.0		3.5	3.5	3.5		4.0	
Lane Grp Cap (vph)		1627		836	483	1012		1497	
v/s Ratio Prot		c0.09						c0.22	
v/s Ratio Perm				0.03	0.12	0.12			
v/c Ratio		0.29		0.08	0.39	0.39		1.11dr	
Uniform Delay, d1		24.8		25.1	27.7	27.7		36.2	
Progression Factor		1.00		1.00	1.04	1.04		1.00	
Incremental Delay, d2		0.4		0.2	2.2	1.1		8.8	
Delay (s)		25.2		25.3	31.0	29.9		45.0	
Level of Service		C		C	C	C		D	
Approach Delay (s)		25.2				30.3		45.0	
Approach LOS		C				C		D	

Intersection Summary			
HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.49		
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		

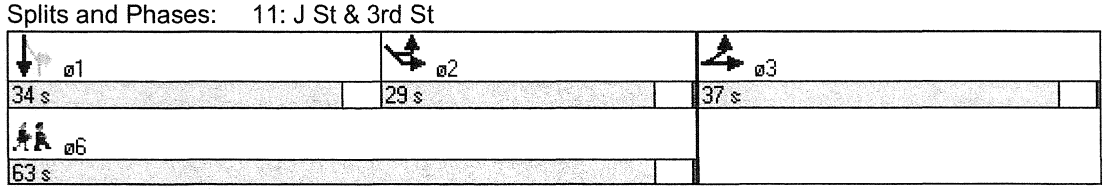
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2	3	6
Movement	SBTL	SEL	EBTL	Ped
Lead/Lag	Lead	Lag		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	29	37	63
Maximum Split (%)	34.0%	29.0%	37.0%	63.0%
Minimum Split (s)	7.5	29	37	63
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		14	22	48
Flash Dont Walk (s)		11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20	54	83	20
End Time (s)	54	83	20	83
Yield/Force Off (s)	50.5	79	16	79
Yield/Force Off 170(s)	50.5	68	5	68
Local Start Time (s)	41	75	4	41
Local Yield (s)	71.5	0	37	0
Local Yield 170(s)	71.5	89	26	89

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 79 (79%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.95					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1498					3263	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1498					3263	1441			
Volume (vph)	324	1172	130	0	0	0	0	449	407	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	324	1172	130	0	0	0	0	449	407	0	0	0
RTOR Reduction (vph)	158	0	75	0	0	0	0	9	9	0	0	0
Lane Group Flow (vph)	166	1172	55	0	0	0	0	590	248	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	21.0	21.0	21.0					21.0	21.0			
Effective Green, g (s)	21.0	21.0	21.0					21.0	21.0			
Actuated g/C Ratio	0.42	0.42	0.42					0.42	0.42			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	542	2535	629					1370	605			
v/s Ratio Prot	0.13	c0.19						c0.18				
v/s Ratio Perm			0.04						0.17			
v/c Ratio	0.31	0.46	0.09					0.43	0.41			
Uniform Delay, d1	9.7	10.4	8.7					10.3	10.2			
Progression Factor	1.07	0.69	1.05					1.00	1.00			
Incremental Delay, d2	1.2	0.5	0.2					1.0	2.0			
Delay (s)	11.5	7.7	9.3					11.3	12.2			
Level of Service	B	A	A					B	B			
Approach Delay (s)		8.6			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	25	25
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	28	3
End Time (s)	3	28
Yield/Force Off (s)	49	24
Yield/Force Off 170(s)	37	8
Local Start Time (s)	29	4
Local Yield (s)	0	25
Local Yield 170(s)	38	9

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 49 (98%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St

ø1	ø2
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6224		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6224		3433	3362				
Volume (vph)	0	0	0	0	2640	55	419	347	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	2640	55	419	347	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	14	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2692	0	405	347	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					75.5		17.5	17.5				
Effective Green, g (s)					75.0		17.0	17.0				
Actuated g/C Ratio					0.75		0.17	0.17				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					4668		584	572				
v/s Ratio Prot					c0.43		c0.12	0.10				
v/s Ratio Perm												
v/c Ratio					0.58		0.69	0.61				
Uniform Delay, d1					5.5		39.0	38.4				
Progression Factor					1.00		0.91	0.91				
Incremental Delay, d2					0.5		6.1	4.3				
Delay (s)					6.0		41.5	39.2				
Level of Service					A		D	D				
Approach Delay (s)		0.0			6.0			40.5			0.0	
Approach LOS		A			A			D			A	

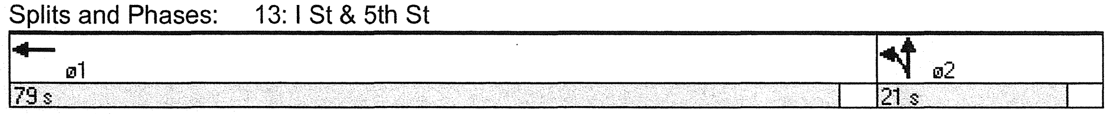
Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	79	21
Maximum Split (%)	79.0%	21.0%
Minimum Split (s)	79	21
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	64.5	5.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	44.5	23.5
End Time (s)	23.5	44.5
Yield/Force Off (s)	20	41
Yield/Force Off 170(s)	9	29
Local Start Time (s)	24.5	3.5
Local Yield (s)	0	21
Local Yield 170(s)	89	9

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 20 (20%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4839		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4839		1522	4806				
Volume (vph)	0	0	0	0	645	195	260	1515	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	645	195	260	1515	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	84	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	835	0	176	1515	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2032		639	2019				
v/s Ratio Prot					c0.17		0.12	c0.32				
v/s Ratio Perm												
v/c Ratio					0.41		0.28	0.75				
Uniform Delay, d1					10.2		9.5	12.3				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.6		1.1	2.6				
Delay (s)					10.8		10.6	14.9				
Level of Service					B		B	B				
Approach Delay (s)		0.0			10.8			14.3			0.0	
Approach LOS		A			B			B			A	

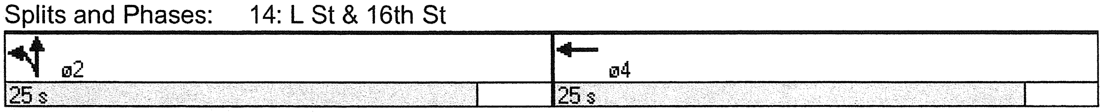
Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↱									↰↑↑	
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		0.86									0.91	
Frpb, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		6034									4989	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		6034									4989	
Volume (vph)	0	2166	760	0	0	0	0	0	0	155	248	0
Peak-hour factor, PHF	1.00	1.00	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	760	0	0	0	0	0	0	155	248	0
RTOR Reduction (vph)	0	63	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	2863	0	0	0	0	0	0	0	0	390	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		71.5									21.5	
Effective Green, g (s)		71.0									21.0	
Actuated g/C Ratio		0.71									0.21	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		4284									1048	
v/s Ratio Prot		c0.47									c0.08	
v/s Ratio Perm												
v/c Ratio		0.67									0.37	
Uniform Delay, d1		8.0									33.8	
Progression Factor		1.00									0.85	
Incremental Delay, d2		0.8									1.0	
Delay (s)		8.8									29.7	
Level of Service		A									C	
Approach Delay (s)		8.8			0.0			0.0			29.7	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
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		

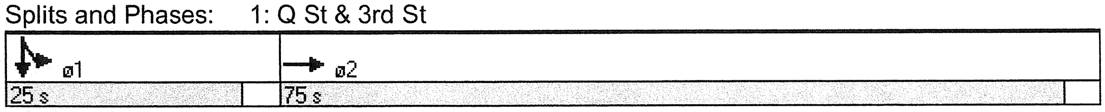
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	75
Maximum Split (%)	25.0%	75.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	90.5	15.5
End Time (s)	15.5	90.5
Yield/Force Off (s)	12	87
Yield/Force Off 170(s)	4	79
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	92

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	55

Offset: 87 (87%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↰↑↑						↑↱	↱
Ideal 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
Frpb, ped/bikes					1.00						0.99	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.98	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					4870						3122	1205
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					4870						3122	1205
Volume (vph)	0	0	0	132	568	0	0	0	0	0	271	192
Peak-hour factor, PHF	1.00	1.00	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	132	568	0	0	0	0	0	271	192
RTOR Reduction (vph)	0	0	0	0	61	0	0	0	0	0	25	104
Lane Group Flow (vph)	0	0	0	0	639	0	0	0	0	0	291	44
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2630						937	362
v/s Ratio Prot					c0.13						c0.09	
v/s Ratio Perm												0.04
v/c Ratio					0.24						0.31	0.12
Uniform Delay, d1					6.1						13.5	12.7
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.2						0.9	0.7
Delay (s)					6.3						14.4	13.4
Level of Service					A						B	B
Approach Delay (s)		0.0			6.3			0.0			14.1	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	9.4	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	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

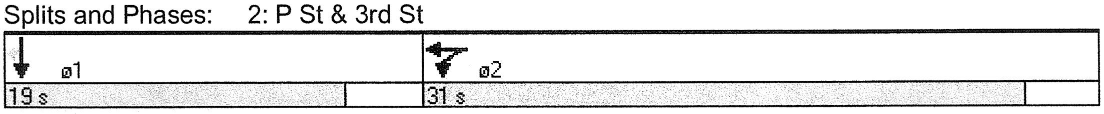
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.95	
Flt Protected	1.00			0.97	0.97	
Satd. Flow (prot)	1798			4952	3333	
Flt Permitted	1.00			0.97	0.97	
Satd. Flow (perm)	1798			4952	3333	
Volume (vph)	78	13	369	319	326	143
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	78	13	369	319	326	143
RTOR Reduction (vph)	8	0	0	213	0	0
Lane Group Flow (vph)	83	0	0	475	469	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			29.5	17.5	
Effective Green, g (s)	12.0			29.0	17.0	
Actuated g/C Ratio	0.17			0.41	0.24	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	308			2052	809	
v/s Ratio Prot	c0.05			c0.10	c0.14	
v/s Ratio Perm						
v/c Ratio	0.27			0.23	0.58	
Uniform Delay, d1	25.2			13.3	23.4	
Progression Factor	1.00			0.24	1.00	
Incremental Delay, d2	2.1			0.2	3.0	
Delay (s)	27.3			3.5	26.4	
Level of Service	C			A	C	
Approach Delay (s)	27.3			3.5	26.4	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

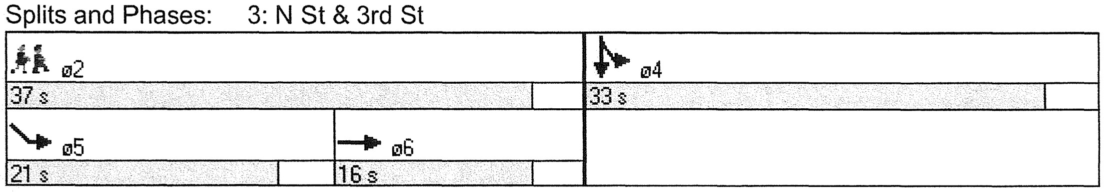
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	37	33	21	16
Maximum Split (%)	52.9%	47.1%	30.0%	22.9%
Minimum Split (s)	37	33	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	22.5	20.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	57.5	20.5	41.5
End Time (s)	57.5	20.5	41.5	57.5
Yield/Force Off (s)	54	17	38	54
Yield/Force Off 170(s)	43	8	38	46
Local Start Time (s)	3.5	40.5	3.5	24.5
Local Yield (s)	37	0	21	37
Local Yield 170(s)	26	61	21	29

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

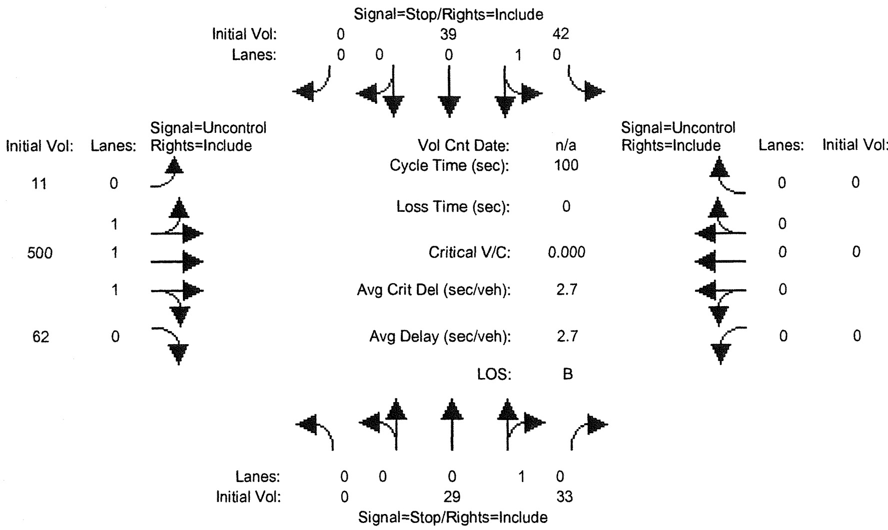
Offset: 17 (24%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Near Term AM

Intersection #4: N St./4th St.



Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	29	33	42	39	0	11	500	62	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	29	33	42	39	0	11	500	62	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	29	33	42	39	0	11	500	62	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	29	33	42	39	0	11	500	62	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	29	33	42	39	0	11	500	62	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	568	198	218	599	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	435	849	742	418	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	427	849	664	410	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.07	0.04	0.06	0.10	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	580	511	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.4	0.6	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	11.9	13.4	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	B	B	*	*	A	*	*	*	*	*
ApproachDel:		11.9			13.4			xxxxxx			xxxxxx	
ApproachLOS:		B			B			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↑						↑↑↱				
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5058						4899				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5058						4899				
Volume (vph)	63	523	0	0	0	0	0	865	194	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	523	0	0	0	0	0	865	194	0	0	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	51	0	0	0	0
Lane Group Flow (vph)	0	565	0	0	0	0	0	1008	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2240						2170				
v/s Ratio Prot		c0.11						c0.21				
v/s Ratio Perm												
v/c Ratio		0.25						0.46				
Uniform Delay, d1		12.2						13.7				
Progression Factor		1.41						1.00				
Incremental Delay, d2		0.3						0.7				
Delay (s)		17.6						14.4				
Level of Service		B						B				
Approach Delay (s)		17.6			0.0			14.4			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

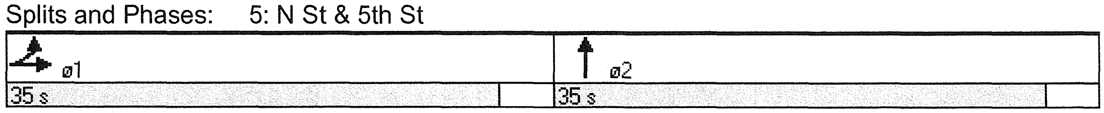
c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱		↰	↑↑						↰↑↑↱	
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						0.96	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		5040		1770	3539						6088	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		5040		1770	3539						6088	
Volume (vph)	0	849	35	79	186	0	0	0	0	325	554	284
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	849	35	79	186	0	0	0	0	325	554	284
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	83	0
Lane Group Flow (vph)	0	878	0	79	186	0	0	0	0	0	1080	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		20.0		12.5	36.0						25.5	
Effective Green, g (s)		19.5		12.0	35.5						26.5	
Actuated g/C Ratio		0.28		0.17	0.51						0.38	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		1404		303	1795						2305	
v/s Ratio Prot		c0.17		c0.04	0.05						c0.18	
v/s Ratio Perm												
v/c Ratio		0.63		0.26	0.10						0.47	
Uniform Delay, d1		22.1		25.2	9.0						16.4	
Progression Factor		1.00		0.69	1.50						0.68	
Incremental Delay, d2		2.1		2.1	0.1						0.7	
Delay (s)		24.2		19.4	13.6						11.9	
Level of Service		C		B	B						B	
Approach Delay (s)		24.2			15.3			0.0			11.9	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

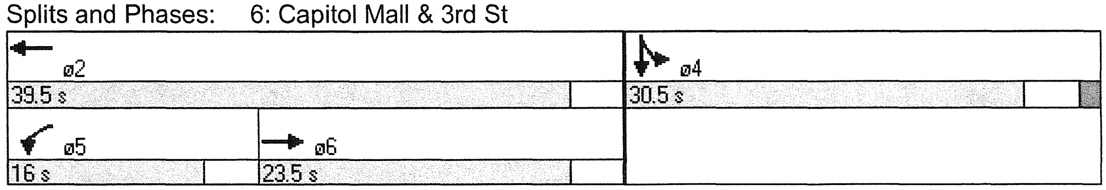
c Critical Lane Group

Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	39.5	30.5	16	23.5
Maximum Split (%)	56.4%	43.6%	22.9%	33.6%
Minimum Split (s)	39.5	30.5	7.5	23.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	26	20.5		10
Flash Dont Walk (s)	10	5		10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	22.5	62	22.5	38.5
End Time (s)	62	22.5	38.5	62
Yield/Force Off (s)	58.5	17.5	35	58.5
Yield/Force Off 170(s)	48.5	12.5	35	48.5
Local Start Time (s)	57.5	27	57.5	3.5
Local Yield (s)	23.5	52.5	0	23.5
Local Yield 170(s)	13.5	47.5	0	13.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 35 (50%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		0.91			1.00			1.00	
Frpb, ped/bikes		1.00	0.87		0.98			0.96			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			0.98			0.98	
Frt		1.00	0.85		0.98			0.95			1.00	
Flt Protected		1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)		3539	1380		4863			1489			1613	
Flt Permitted		1.00	1.00		1.00			0.93			0.94	
Satd. Flow (perm)		3539	1380		4863			1405			1532	
Volume (vph)	0	1005	169	0	249	47	10	12	13	37	119	6
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1005	169	0	249	47	10	12	13	37	119	6
RTOR Reduction (vph)	0	0	78	0	22	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	1005	91	0	274	0	0	27	0	0	160	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)		37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio		0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)		3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)		1896	739		2605			492			536	
v/s Ratio Prot		c0.28			0.06							
v/s Ratio Perm			0.07					0.02			c0.10	
v/c Ratio		0.53	0.12		0.11			0.05			0.30	
Uniform Delay, d1		10.5	8.1		8.0			15.1			16.5	
Progression Factor		0.89	2.54		0.33			0.85			0.90	
Incremental Delay, d2		0.9	0.3		0.1			0.2			1.4	
Delay (s)		10.2	20.8		2.7			13.1			16.2	
Level of Service		B	C		A			B			B	
Approach Delay (s)		11.8			2.7			13.1			16.2	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

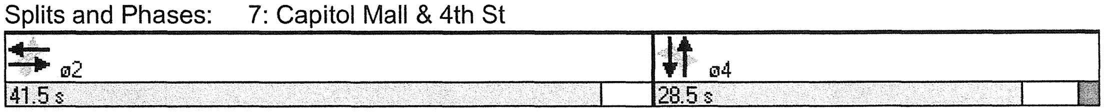
c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.98		1.00	0.94				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.93				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4861		3433	4458				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4861		3433	4458				
Volume (vph)	492	563	0	0	158	37	138	309	286	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	563	0	0	158	37	138	309	286	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	165	0	0	0	0
Lane Group Flow (vph)	492	563	0	0	168	0	138	430	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1250		1275	1656				
v/s Ratio Prot	c0.14	c0.16			0.03		0.04	c0.10				
v/s Ratio Perm												
v/c Ratio	0.72	0.31			0.13		0.11	0.26				
Uniform Delay, d1	26.1	9.8			20.0		14.4	15.3				
Progression Factor	0.68	0.11			1.00		0.43	0.12				
Incremental Delay, d2	5.5	0.4			0.2		0.2	0.3				
Delay (s)	23.2	1.5			20.2		6.4	2.2				
Level of Service	C	A			C		A	A				
Approach Delay (s)		11.6			20.2			3.0			0.0	
Approach LOS		B			C			A			A	

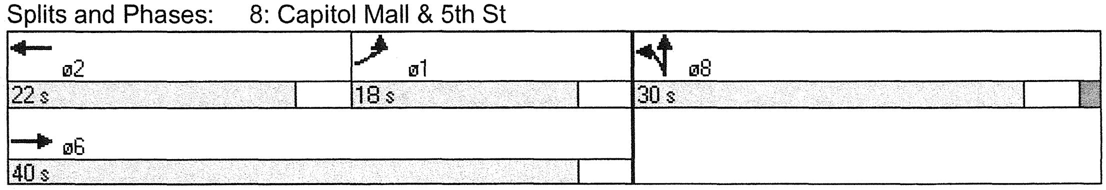
Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	55

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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	0.91	1.00					0.91	
Frt				1.00	1.00	0.85					1.00	
Flt Protected				0.95	0.99	1.00					1.00	
Satd. Flow (prot)				1610	3340	1583					5079	
Flt Permitted				0.95	0.99	1.00					1.00	
Satd. Flow (perm)				1610	3340	1583					5079	
Volume (vph)	0	0	0	276	245	107	0	0	0	0	886	7
Peak-hour factor, PHF	1.00	1.00	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	276	245	107	0	0	0	0	886	7
RTOR Reduction (vph)	0	0	0	37	37	58	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	134	313	49	0	0	0	0	892	0
Turn Type				custom		custom						
Protected Phases											4	
Permitted Phases				2	2	2						
Actuated Green, G (s)				32.5	32.5	32.5					30.5	
Effective Green, g (s)				32.0	32.0	32.0					30.0	
Actuated g/C Ratio				0.46	0.46	0.46					0.43	
Clearance Time (s)				3.5	3.5	3.5					3.5	
Lane Grp Cap (vph)				736	1527	724					2177	
v/s Ratio Prot											c0.18	
v/s Ratio Perm				0.08	c0.09	0.03						
v/c Ratio				0.18	0.20	0.07					0.41	
Uniform Delay, d1				11.2	11.4	10.6					13.9	
Progression Factor				0.78	0.82	0.69					1.00	
Incremental Delay, d2				0.5	0.3	0.2					0.6	
Delay (s)				9.3	9.6	7.5					14.4	
Level of Service				A	A	A					B	
Approach Delay (s)		0.0			9.2			0.0			14.4	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		

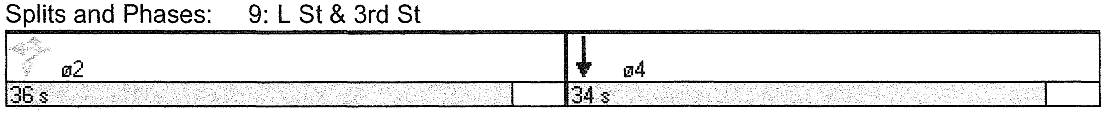
c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	36	34
Maximum Split (%)	51.4%	48.6%
Minimum Split (s)	7.5	34
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		22.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	2.5	38.5
End Time (s)	38.5	2.5
Yield/Force Off (s)	35	69
Yield/Force Off 170(s)	35	61
Local Start Time (s)	3.5	39.5
Local Yield (s)	36	0
Local Yield 170(s)	36	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 69 (99%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					0.99		1.00	1.00				0.95
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.98		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6236		1770	5085				2656
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6236		1770	5085				2656
Volume (vph)	0	0	0	0	568	83	106	465	0	0	0	335
Peak-hour factor, PHF	1.00	1.00	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	568	83	106	465	0	0	0	335
RTOR Reduction (vph)	0	0	0	0	38	0	51	0	0	0	0	78
Lane Group Flow (vph)	0	0	0	0	613	0	55	465	0	0	0	257
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					25.0		35.5	35.5				35.5
Effective Green, g (s)					26.0		36.0	36.0				36.0
Actuated g/C Ratio					0.37		0.51	0.51				0.51
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					2316		910	2615				1366
v/s Ratio Prot					c0.10		0.03	0.09				
v/s Ratio Perm												c0.10
v/c Ratio					0.26		0.06	0.18				0.19
Uniform Delay, d1					15.3		8.5	9.1				9.1
Progression Factor					1.00		0.53	0.51				1.00
Incremental Delay, d2					0.3		0.1	0.1				0.3
Delay (s)					15.6		4.6	4.8				9.4
Level of Service					B		A	A				A
Approach Delay (s)		0.0			15.6			4.7			9.4	
Approach LOS		A			B			A			A	

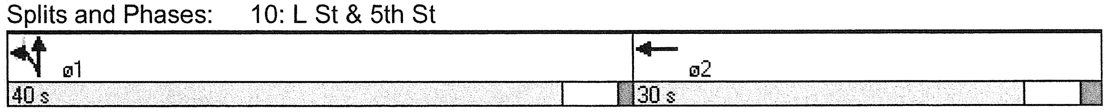
Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	40	30
Maximum Split (%)	57.1%	42.9%
Minimum Split (s)	40	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	26.5	16
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	7
End Time (s)	7	37
Yield/Force Off (s)	2.5	32
Yield/Force Off 170(s)	63.5	23
Local Start Time (s)	5	45
Local Yield (s)	40.5	0
Local Yield 170(s)	31.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.93	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4955		1640	1504	1610	3354		6136	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4955		1640	1504	1610	3354		6136	
Volume (vph)	23	1702	235	40	105	102	116	11	1697	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
Adj. Flow (vph)	23	1702	235	40	105	102	116	11	1697	547
RTOR Reduction (vph)	0	18	0	9	9	0	0	0	0	0
Lane Group Flow (vph)	0	1942	0	69	58	70	148	0	2255	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		37.0		6.5	6.5	6.5	6.5		35.0	
Effective Green, g (s)		37.0		6.0	6.0	6.0	6.0		35.0	
Actuated g/C Ratio		0.37		0.06	0.06	0.06	0.06		0.35	
Clearance Time (s)		4.0		3.5	3.5	3.5	3.5		4.0	
Lane Grp Cap (vph)		1833		98	90	97	201		2148	
v/s Ratio Prot		c0.39		c0.04		0.04	c0.04		c0.37	
v/s Ratio Perm					0.04					
v/c Ratio		1.06		0.70	0.64	0.72	0.74		1.05	
Uniform Delay, d1		31.5		46.1	45.9	46.2	46.2		32.5	
Progression Factor		1.00		1.00	1.00	1.15	1.15		1.00	
Incremental Delay, d2		38.9		34.2	30.0	36.9	21.1		34.0	
Delay (s)		70.4		80.3	75.9	90.1	74.3		66.5	
Level of Service		E		F	E	F	E		E	
Approach Delay (s)		70.4		78.3			79.4		66.5	
Approach LOS		E		E			E		E	

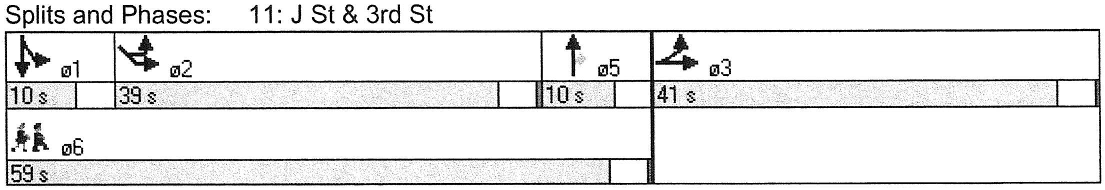
Intersection Summary			
HCM Average Control Delay	69.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	39	41	10	59
Maximum Split (%)	10.0%	39.0%	41.0%	10.0%	59.0%
Minimum Split (s)	10	39	41	10	59
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		24	26		44
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	35	45	94	84	35
End Time (s)	45	84	35	94	94
Yield/Force Off (s)	41.5	80	31	90.5	90
Yield/Force Off 170(s)	41.5	69	20	90.5	79
Local Start Time (s)	55	65	14	4	55
Local Yield (s)	61.5	0	51	10.5	10
Local Yield 170(s)	61.5	89	40	10.5	99

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	120

Offset: 80 (80%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.96					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.95	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1514					3215	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1514					3215	1441			
Volume (vph)	680	2558	335	0	0	0	0	252	297	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	680	2558	335	0	0	0	0	252	297	0	0	0
RTOR Reduction (vph)	195	0	147	0	0	0	0	1	1	0	0	0
Lane Group Flow (vph)	485	2558	188	0	0	0	0	384	163	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	56.0	56.0	56.0					36.0	36.0			
Effective Green, g (s)	56.0	56.0	56.0					36.0	36.0			
Actuated g/C Ratio	0.56	0.56	0.56					0.36	0.36			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	722	3380	848					1157	519			
v/s Ratio Prot	0.38	c0.42						c0.12				
v/s Ratio Perm			0.12						0.11			
v/c Ratio	0.67	0.76	0.22					0.33	0.31			
Uniform Delay, d1	15.5	16.8	11.0					23.3	23.1			
Progression Factor	0.92	0.71	1.39					1.00	1.00			
Incremental Delay, d2	0.5	0.1	0.1					0.8	1.6			
Delay (s)	14.8	12.1	15.4					24.0	24.7			
Level of Service	B	B	B					C	C			
Approach Delay (s)		13.0			0.0			24.2			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
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

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	60	40
Maximum Split (%)	60.0%	40.0%
Minimum Split (s)	60	40
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	44	20
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	43	3
End Time (s)	3	43
Yield/Force Off (s)	99	39
Yield/Force Off 170(s)	87	23
Local Start Time (s)	44	4
Local Yield (s)	0	40
Local Yield 170(s)	88	24

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 99 (99%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St

ø1	ø2
60 s	40 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↱		↰↰	↑↑				
Ideal 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		0.97	0.95				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6117		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6117		3433	3362				
Volume (vph)	0	0	0	0	753	81	108	764	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	753	81	108	764	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	36	0	43	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	798	0	65	764	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					16.5		26.5	26.5				
Effective Green, g (s)					16.0		26.0	26.0				
Actuated g/C Ratio					0.32		0.52	0.52				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					1957		1785	1748				
v/s Ratio Prot					c0.13		0.02	c0.23				
v/s Ratio Perm												
v/c Ratio					0.41		0.04	0.44				
Uniform Delay, d1					13.3		5.9	7.5				
Progression Factor					1.00		1.99	1.26				
Incremental Delay, d2					0.6		0.0	0.6				
Delay (s)					13.9		11.7	10.0				
Level of Service					B		B	A				
Approach Delay (s)		0.0			13.9			10.2			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		

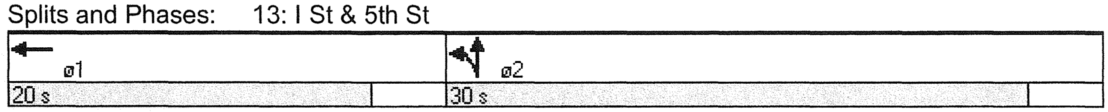
c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	20	30
Maximum Split (%)	40.0%	60.0%
Minimum Split (s)	20	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	5.5	14.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	15.5	35.5
End Time (s)	35.5	15.5
Yield/Force Off (s)	32	12
Yield/Force Off 170(s)	21	0
Local Start Time (s)	33.5	3.5
Local Yield (s)	0	30
Local Yield 170(s)	39	18

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 32 (64%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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)					4913		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4913		1522	4806				
Volume (vph)	0	0	0	0	678	131	242	1247	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	678	131	242	1247	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	75	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	798	0	167	1247	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2063		639	2019				
v/s Ratio Prot					c0.16		0.11	c0.26				
v/s Ratio Perm												
v/c Ratio					0.39		0.26	0.62				
Uniform Delay, d1					10.0		9.4	11.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.5		1.0	1.4				
Delay (s)					10.6		10.4	12.8				
Level of Service					B		B	B				
Approach Delay (s)		0.0			10.6			12.4			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St

ø2	ø4
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.97									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		6139									5006	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		6139									5006	
Volume (vph)	0	677	188	0	0	0	0	0	0	206	444	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	677	188	0	0	0	0	0	0	206	444	0
RTOR Reduction (vph)	0	72	0	0	0	0	0	0	0	0	144	0
Lane Group Flow (vph)	0	793	0	0	0	0	0	0	0	0	506	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		27.5									15.5	
Effective Green, g (s)		27.0									15.0	
Actuated g/C Ratio		0.54									0.30	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3315									1502	
v/s Ratio Prot		c0.13									c0.10	
v/s Ratio Perm												
v/c Ratio		0.24									0.34	
Uniform Delay, d1		6.1									13.6	
Progression Factor		1.00									1.30	
Incremental Delay, d2		0.2									0.1	
Delay (s)		6.2									17.7	
Level of Service		A									B	
Approach Delay (s)		6.2			0.0			0.0			17.7	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.2	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	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	22.5	41.5
End Time (s)	41.5	22.5
Yield/Force Off (s)	38	19
Yield/Force Off 170(s)	30	11
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 19 (38%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St

ø1	ø2
19 s	31 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.97	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.94	0.85
Flt Protected					1.00						1.00	1.00
Satd. Flow (prot)					4903						2922	1205
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					4903						2922	1205
Volume (vph)	0	0	0	137	2521	0	0	0	0	0	513	773
Peak-hour factor, PHF	1.00	1.00	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	137	2521	0	0	0	0	0	513	773
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	0	0	0	2646	0	0	0	0	0	898	386
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2648						877	362
v/s Ratio Prot					c0.54						0.31	
v/s Ratio Perm												c0.32
v/c Ratio					1.00						1.02	1.07
Uniform Delay, d1					11.5						17.5	17.5
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					17.3						36.5	65.6
Delay (s)					28.8						54.0	83.1
Level of Service					C						D	F
Approach Delay (s)		0.0			28.8			0.0			62.8	
Approach LOS		A			C			A			E	

Intersection Summary			
HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	75

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St

ø1	ø2
19 s	31 s

Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.97			1.00	0.91	
Flt Protected	1.00			0.99	0.98	
Satd. Flow (prot)	1777			5054	3224	
Flt Permitted	1.00			0.99	0.98	
Satd. Flow (perm)	1777			5054	3224	
Volume (vph)	81	19	148	1059	154	232
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	19	148	1059	154	232
RTOR Reduction (vph)	12	0	0	26	0	0
Lane Group Flow (vph)	88	0	0	1181	386	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			32.5	14.5	
Effective Green, g (s)	12.0			32.0	14.0	
Actuated g/C Ratio	0.17			0.46	0.20	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2310	645	
v/s Ratio Prot	c0.05			c0.23	c0.12	
v/s Ratio Perm						
v/c Ratio	0.29			0.51	0.60	
Uniform Delay, d1	25.3			13.5	25.4	
Progression Factor	1.00			1.10	1.00	
Incremental Delay, d2	2.4			0.6	4.1	
Delay (s)	27.6			15.4	29.5	
Level of Service	C			B	C	
Approach Delay (s)	27.6			15.4	29.5	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

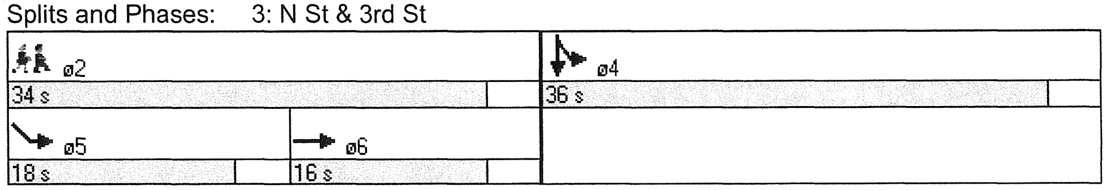
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	36	18	16
Maximum Split (%)	48.6%	51.4%	25.7%	22.9%
Minimum Split (s)	34	36	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	19.5	23.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12.5	46.5	12.5	30.5
End Time (s)	46.5	12.5	30.5	46.5
Yield/Force Off (s)	43	9	27	43
Yield/Force Off 170(s)	32	0	27	35
Local Start Time (s)	3.5	37.5	3.5	21.5
Local Yield (s)	34	0	18	34
Local Yield 170(s)	23	61	18	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

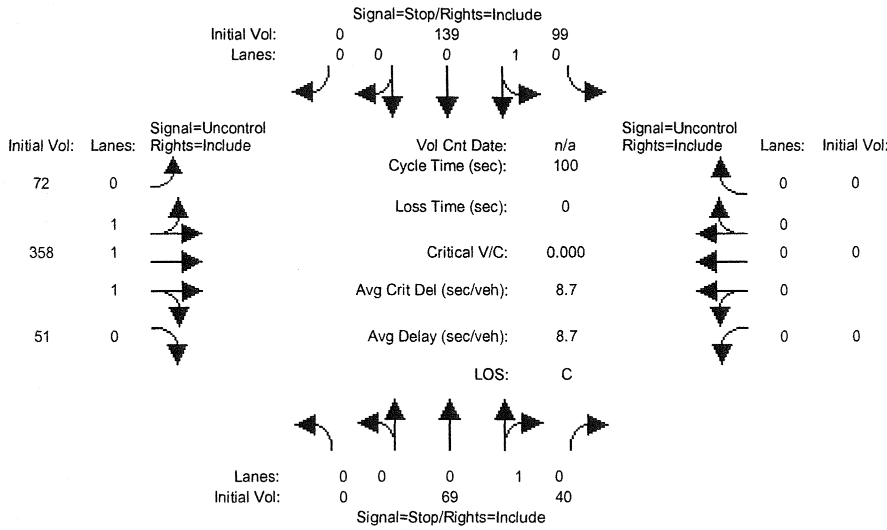
Offset: 9 (13%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Near Term PM

Intersection #4: N St./4th St.



Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	69	40	99	139	0	72	358	51	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	40	99	139	0	72	358	51	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	69	40	99	139	0	72	358	51	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	69	40	99	139	0	72	358	51	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	69	40	99	139	0	72	358	51	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	543	145	313	568	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	450	908	644	435	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	423	908	512	409	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.16	0.04	0.19	0.34	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	526	446	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.8	3.1	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	13.6	21.9	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	B	C	*	*	A	*	*	*	*	*
ApproachDel:		13.6			21.9			xxxxxx			xxxxxx	
ApproachLOS:		B			C			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↑						↑↑↱				
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5049						4953				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5049						4953				
Volume (vph)	72	427	0	0	0	0	0	843	125	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	427	0	0	0	0	0	843	125	0	0	0
RTOR Reduction (vph)	0	33	0	0	0	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	466	0	0	0	0	0	940	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2236						2193				
v/s Ratio Prot		c0.09						c0.19				
v/s Ratio Perm												
v/c Ratio		0.21						0.43				
Uniform Delay, d1		12.0						13.4				
Progression Factor		1.25						1.00				
Incremental Delay, d2		0.2						0.6				
Delay (s)		15.2						14.0				
Level of Service		B						B				
Approach Delay (s)		15.2			0.0			14.0			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↱		↰	↑↑						↰↑↑↑↱	
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						0.94	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		5025		1770	3539						5997	
Flt Permitted		1.00		0.95	1.00						1.00	
Satd. Flow (perm)		5025		1770	3539						5997	
Volume (vph)	0	594	31	274	632	0	0	0	0	79	924	706
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	594	31	274	632	0	0	0	0	79	924	706
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	133	0
Lane Group Flow (vph)	0	617	0	274	632	0	0	0	0	0	1576	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		16.0		16.5	36.0						25.5	
Effective Green, g (s)		15.5		16.0	35.5						26.5	
Actuated g/C Ratio		0.22		0.23	0.51						0.38	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		1113		405	1795						2270	
v/s Ratio Prot		c0.12		c0.15	0.18						c0.26	
v/s Ratio Perm												
v/c Ratio		0.55		0.68	0.35						0.95dr	
Uniform Delay, d1		24.2		24.6	10.3						18.3	
Progression Factor		1.00		0.51	0.87						0.82	
Incremental Delay, d2		2.0		8.5	0.5						1.3	
Delay (s)		26.2		21.1	9.6						16.3	
Level of Service		C		C	A						B	
Approach Delay (s)		26.2			13.1			0.0			16.3	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

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

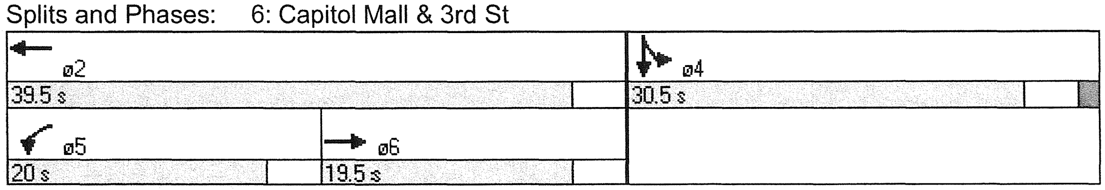
6: Capitol Mall & 3rd St

Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	39.5	30.5	20	19.5
Maximum Split (%)	56.4%	43.6%	28.6%	27.9%
Minimum Split (s)	39.5	30.5	7.5	19.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	26	20.5		6
Flash Dont Walk (s)	10	5		10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	18.5	58	18.5	38.5
End Time (s)	58	18.5	38.5	58
Yield/Force Off (s)	54.5	13.5	35	54.5
Yield/Force Off 170(s)	44.5	8.5	35	44.5
Local Start Time (s)	53.5	23	53.5	3.5
Local Yield (s)	19.5	48.5	0	19.5
Local Yield 170(s)	9.5	43.5	0	9.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 35 (50%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		0.91			1.00			1.00	
Frpb, ped/bikes		1.00	0.87		1.00			0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			0.98			0.99	
Frt		1.00	0.85		1.00			0.98			0.99	
Flt Protected		1.00	1.00		1.00			0.98			0.99	
Satd. Flow (prot)		3539	1380		5039			1573			1612	
Flt Permitted		1.00	1.00		1.00			0.86			0.90	
Satd. Flow (perm)		3539	1380		5039			1379			1467	
Volume (vph)	0	648	25	0	832	28	63	110	25	41	120	11
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	648	25	0	832	28	63	110	25	41	120	11
RTOR Reduction (vph)	0	0	12	0	5	0	0	7	0	0	3	0
Lane Group Flow (vph)	0	648	13	0	855	0	0	191	0	0	169	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)		37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio		0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)		3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)		1896	739		2699			483			513	
v/s Ratio Prot		c0.18			0.17							
v/s Ratio Perm			0.01					c0.14			0.12	
v/c Ratio		0.34	0.02		0.32			0.40			0.33	
Uniform Delay, d1		9.2	7.6		9.1			17.2			16.7	
Progression Factor		1.21	1.59		0.23			0.89			1.00	
Incremental Delay, d2		0.4	0.0		0.3			2.4			1.5	
Delay (s)		11.5	12.1		2.3			17.7			18.1	
Level of Service		B	B		A			B			B	
Approach Delay (s)		11.6			2.3			17.7			18.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

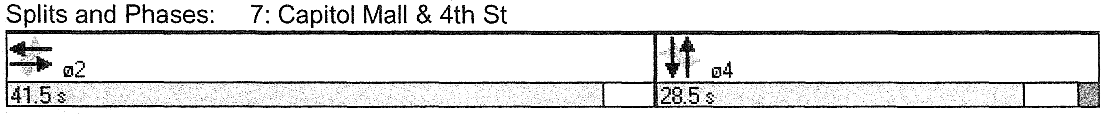
c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.98				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4983		3433	4922				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4983		3433	4922				
Volume (vph)	341	373	0	0	582	55	278	675	94	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	341	373	0	0	582	55	278	675	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	26	0	0	0	0
Lane Group Flow (vph)	341	373	0	0	621	0	278	743	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1281		1275	1828				
v/s Ratio Prot	c0.10	0.11			c0.12		0.08	c0.15				
v/s Ratio Perm												
v/c Ratio	0.50	0.20			0.49		0.22	0.41				
Uniform Delay, d1	24.9	9.2			22.1		15.0	16.3				
Progression Factor	0.83	0.22			1.00		0.48	0.43				
Incremental Delay, d2	2.4	0.2			1.3		0.4	0.6				
Delay (s)	23.0	2.3			23.4		7.6	7.7				
Level of Service	C	A			C		A	A				
Approach Delay (s)		12.2			23.4			7.7			0.0	
Approach LOS		B			C			A			A	

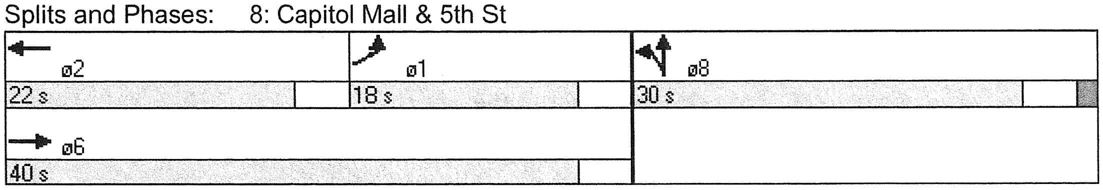
Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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	0.91	1.00					0.91	
Frt				1.00	1.00	0.85					0.99	
Flt Protected				0.95	0.99	1.00					1.00	
Satd. Flow (prot)				1610	3366	1583					5044	
Flt Permitted				0.95	0.99	1.00					1.00	
Satd. Flow (perm)				1610	3366	1583					5044	
Volume (vph)	0	0	0	904	1260	263	0	0	0	0	804	46
Peak-hour factor, PHF	1.00	1.00	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	904	1260	263	0	0	0	0	804	46
RTOR Reduction (vph)	0	0	0	3	3	90	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	694	1464	173	0	0	0	0	841	0
Turn Type				custom		custom						
Protected Phases											4	
Permitted Phases				2	2	2						
Actuated Green, G (s)				46.5	46.5	46.5					16.5	
Effective Green, g (s)				46.0	46.0	46.0					16.0	
Actuated g/C Ratio				0.66	0.66	0.66					0.23	
Clearance Time (s)				3.5	3.5	3.5					3.5	
Lane Grp Cap (vph)				1058	2212	1040					1153	
v/s Ratio Prot											c0.17	
v/s Ratio Perm				0.43	c0.43	0.11						
v/c Ratio				0.66	0.66	0.17					0.73	
Uniform Delay, d1				7.2	7.3	4.6					25.0	
Progression Factor				0.69	0.68	0.46					1.00	
Incremental Delay, d2				3.0	1.5	0.3					4.1	
Delay (s)				8.0	6.4	2.4					29.1	
Level of Service				A	A	A					C	
Approach Delay (s)		0.0			6.4			0.0			29.1	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		

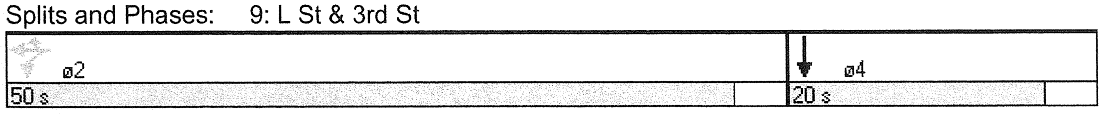
c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	50	20
Maximum Split (%)	71.4%	28.6%
Minimum Split (s)	7.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		8.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	66.5	46.5
End Time (s)	46.5	66.5
Yield/Force Off (s)	43	63
Yield/Force Off 170(s)	43	55
Local Start Time (s)	3.5	53.5
Local Yield (s)	50	0
Local Yield 170(s)	50	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	60

Offset: 63 (90%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↱		↰	↑↑↑				↱↱
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					1.00		1.00	1.00				0.93
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6340		1770	5085				2585
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6340		1770	5085				2585
Volume (vph)	0	0	0	0	1816	105	390	680	0	0	0	188
Peak-hour factor, PHF	1.00	1.00	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	1816	105	390	680	0	0	0	188
RTOR Reduction (vph)	0	0	0	0	12	0	11	0	0	0	0	14
Lane Group Flow (vph)	0	0	0	0	1909	0	379	680	0	0	0	174
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					40.0		20.5	20.5				20.5
Effective Green, g (s)					41.0		21.0	21.0				21.0
Actuated g/C Ratio					0.59		0.30	0.30				0.30
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					3713		531	1526				776
v/s Ratio Prot					c0.30		c0.21	0.13				
v/s Ratio Perm												0.07
v/c Ratio					0.51		0.71	0.45				0.22
Uniform Delay, d1					8.6		21.8	19.8				18.4
Progression Factor					1.00		0.61	0.63				1.00
Incremental Delay, d2					0.5		7.3	0.9				0.7
Delay (s)					9.1		20.6	13.4				19.1
Level of Service					A		C	B				B
Approach Delay (s)		0.0			9.1			16.0			19.1	
Approach LOS		A			A			B			B	

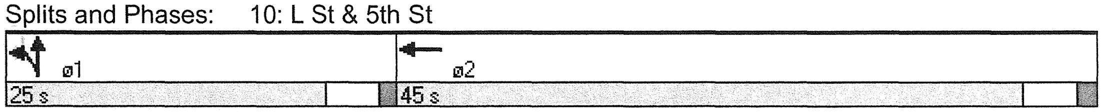
Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	45
Maximum Split (%)	35.7%	64.3%
Minimum Split (s)	25	45
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	11.5	31
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	62
End Time (s)	62	37
Yield/Force Off (s)	57.5	32
Yield/Force Off 170(s)	48.5	23
Local Start Time (s)	5	30
Local Yield (s)	25.5	0
Local Yield 170(s)	16.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.98	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4955		1733	1504	1610	3372		6094	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4955		1733	1504	1610	3372		6094	
Volume (vph)	1	653	79	120	161	229	350	7	1159	421
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)	1	653	79	120	161	229	350	7	1159	421
RTOR Reduction (vph)	0	15	0	5	44	0	0	0	0	0
Lane Group Flow (vph)	0	718	0	134	98	187	392	0	1587	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		23.0		12.0	12.0	17.5	17.5		32.0	
Effective Green, g (s)		23.0		12.0	12.0	17.0	17.0		32.0	
Actuated g/C Ratio		0.23		0.12	0.12	0.17	0.17		0.32	
Clearance Time (s)		4.0		4.0	4.0	3.5	3.5		4.0	
Lane Grp Cap (vph)		1140		208	180	274	573		1950	
v/s Ratio Prot		c0.14		c0.08		0.12	c0.12		c0.26	
v/s Ratio Perm					0.07					
v/c Ratio		0.63		0.64	0.54	0.68	0.68		0.88dr	
Uniform Delay, d1		34.7		42.0	41.4	39.0	39.0		31.3	
Progression Factor		1.00		1.00	1.00	0.92	0.92		1.00	
Incremental Delay, d2		2.6		14.3	11.3	12.5	6.3		3.9	
Delay (s)		37.3		56.3	52.8	48.5	42.3		35.1	
Level of Service		D		E	D	D	D		D	
Approach Delay (s)		37.3		54.5			44.3		35.1	
Approach LOS		D		D			D		D	

Intersection Summary			
HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

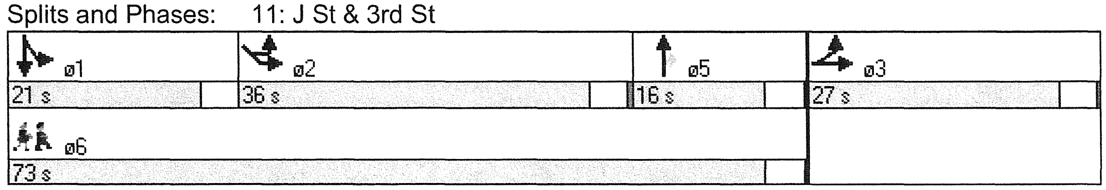
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	21	36	27	16	73
Maximum Split (%)	21.0%	36.0%	27.0%	16.0%	73.0%
Minimum Split (s)	7.5	36	27	8	73
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		21	12		58
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	85	6	58	42	85
End Time (s)	6	42	85	58	58
Yield/Force Off (s)	2.5	38	81	54	54
Yield/Force Off 170(s)	2.5	27	70	54	43
Local Start Time (s)	47	68	20	4	47
Local Yield (s)	64.5	0	43	16	16
Local Yield 170(s)	64.5	89	32	16	5

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 38 (38%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.95					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.95	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1498					3231	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1498					3231	1441			
Volume (vph)	324	1583	188	0	0	0	0	378	408	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	324	1583	188	0	0	0	0	378	408	0	0	0
RTOR Reduction (vph)	188	0	109	0	0	0	0	2	2	0	0	0
Lane Group Flow (vph)	136	1583	79	0	0	0	0	549	233	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	21.0	21.0	21.0					21.0	21.0			
Effective Green, g (s)	21.0	21.0	21.0					21.0	21.0			
Actuated g/C Ratio	0.42	0.42	0.42					0.42	0.42			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	542	2535	629					1357	605			
v/s Ratio Prot	0.11	c0.26						c0.17				
v/s Ratio Perm			0.05						0.16			
v/c Ratio	0.25	0.62	0.13					0.40	0.38			
Uniform Delay, d1	9.4	11.4	8.9					10.1	10.0			
Progression Factor	0.31	0.54	0.30					1.00	1.00			
Incremental Delay, d2	0.7	0.8	0.3					0.9	1.8			
Delay (s)	3.7	6.9	2.9					11.0	11.9			
Level of Service	A	A	A					B	B			
Approach Delay (s)		6.1			0.0			11.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	7.5	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	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	25	25
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	28	3
End Time (s)	3	28
Yield/Force Off (s)	49	24
Yield/Force Off 170(s)	37	8
Local Start Time (s)	29	4
Local Yield (s)	0	25
Local Yield 170(s)	38	9

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 49 (98%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St

ø1	ø2
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6224		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6224		3433	3362				
Volume (vph)	0	0	0	0	2640	55	299	396	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	2640	55	299	396	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	14	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2692	0	285	396	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					75.5		17.5	17.5				
Effective Green, g (s)					75.0		17.0	17.0				
Actuated g/C Ratio					0.75		0.17	0.17				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					4668		584	572				
v/s Ratio Prot					c0.43		0.08	c0.12				
v/s Ratio Perm												
v/c Ratio					0.58		0.49	0.69				
Uniform Delay, d1					5.5		37.6	39.0				
Progression Factor					1.00		1.03	1.03				
Incremental Delay, d2					0.5		2.7	6.2				
Delay (s)					6.0		41.5	46.5				
Level of Service					A		D	D				
Approach Delay (s)		0.0			6.0			44.4			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

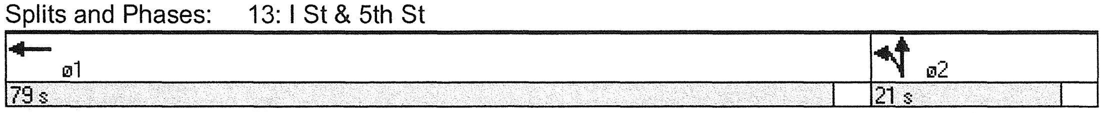
c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	79	21
Maximum Split (%)	79.0%	21.0%
Minimum Split (s)	79	21
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	64.5	5.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	44.5	23.5
End Time (s)	23.5	44.5
Yield/Force Off (s)	20	41
Yield/Force Off 170(s)	9	29
Local Start Time (s)	24.5	3.5
Local Yield (s)	0	21
Local Yield 170(s)	89	9

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 20 (20%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4842		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4842		1522	4806				
Volume (vph)	0	0	0	0	668	198	260	1538	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	668	198	260	1538	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	78	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	862	0	182	1538	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2034		639	2019				
v/s Ratio Prot					c0.18		0.12	c0.32				
v/s Ratio Perm												
v/c Ratio					0.42		0.29	0.76				
Uniform Delay, d1					10.2		9.6	12.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.6		1.1	2.8				
Delay (s)					10.9		10.7	15.1				
Level of Service					B		B	B				
Approach Delay (s)		0.0			10.9			14.5			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	13.3	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	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St

ø2	ø4
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↱									↰↑↑	
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		0.86									0.91	
Frpb, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		6036									4988	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		6036									4988	
Volume (vph)	0	2176	760	0	0	0	0	0	0	159	248	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2176	760	0	0	0	0	0	0	159	248	0
RTOR Reduction (vph)	0	63	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	2873	0	0	0	0	0	0	0	0	394	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		71.5									21.5	
Effective Green, g (s)		71.0									21.0	
Actuated g/C Ratio		0.71									0.21	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		4286									1047	
v/s Ratio Prot		c0.48									c0.08	
v/s Ratio Perm												
v/c Ratio		0.67									0.38	
Uniform Delay, d1		8.0									33.9	
Progression Factor		1.00									0.87	
Incremental Delay, d2		0.8									1.0	
Delay (s)		8.9									30.5	
Level of Service		A									C	
Approach Delay (s)		8.9			0.0			0.0			30.5	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	75
Maximum Split (%)	25.0%	75.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	90.5	15.5
End Time (s)	15.5	90.5
Yield/Force Off (s)	12	87
Yield/Force Off 170(s)	4	79
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	92

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	55

Offset: 87 (87%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St

ø1	ø2
25 s	75 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.98	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.97	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					4870						3058	1205
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					4870						3058	1205
Volume (vph)	0	0	0	132	568	0	0	0	0	0	275	251
Peak-hour factor, PHF	1.00	1.00	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	132	568	0	0	0	0	0	275	251
RTOR Reduction (vph)	0	0	0	0	61	0	0	0	0	0	53	118
Lane Group Flow (vph)	0	0	0	0	639	0	0	0	0	0	306	50
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2630						917	362
v/s Ratio Prot					c0.13						c0.10	
v/s Ratio Perm												0.04
v/c Ratio					0.24						0.33	0.14
Uniform Delay, d1					6.1						13.6	12.8
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.2						1.0	0.8
Delay (s)					6.3						14.6	13.6
Level of Service					A						B	B
Approach Delay (s)		0.0			6.3			0.0			14.3	
Approach LOS		A			A			A			B	

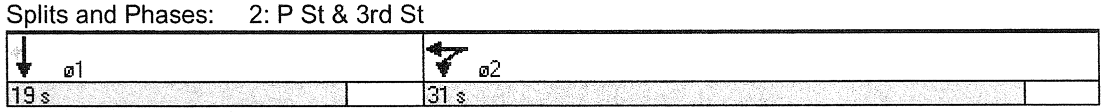
Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.95	
Flt Protected	1.00			0.98	0.97	
Satd. Flow (prot)	1798			4962	3333	
Flt Permitted	1.00			0.98	0.97	
Satd. Flow (perm)	1798			4962	3333	
Volume (vph)	78	13	374	381	326	143
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	78	13	374	381	326	143
RTOR Reduction (vph)	8	0	0	213	0	0
Lane Group Flow (vph)	83	0	0	542	469	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			29.5	17.5	
Effective Green, g (s)	12.0			29.0	17.0	
Actuated g/C Ratio	0.17			0.41	0.24	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	308			2056	809	
v/s Ratio Prot	c0.05			c0.11	c0.14	
v/s Ratio Perm						
v/c Ratio	0.27			0.26	0.58	
Uniform Delay, d1	25.2			13.5	23.4	
Progression Factor	1.00			1.26	1.00	
Incremental Delay, d2	2.1			0.3	3.0	
Delay (s)	27.3			17.3	26.4	
Level of Service	C			B	C	
Approach Delay (s)	27.3			17.3	26.4	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

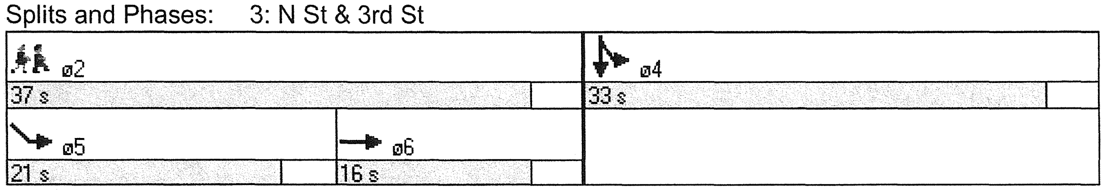
Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	37	33	21	16
Maximum Split (%)	52.9%	47.1%	30.0%	22.9%
Minimum Split (s)	37	33	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	22.5	20.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	57.5	20.5	41.5
End Time (s)	57.5	20.5	41.5	57.5
Yield/Force Off (s)	54	17	38	54
Yield/Force Off 170(s)	43	8	38	46
Local Start Time (s)	3.5	40.5	3.5	24.5
Local Yield (s)	37	0	21	37
Local Yield 170(s)	26	61	21	29

Intersection Summary

Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

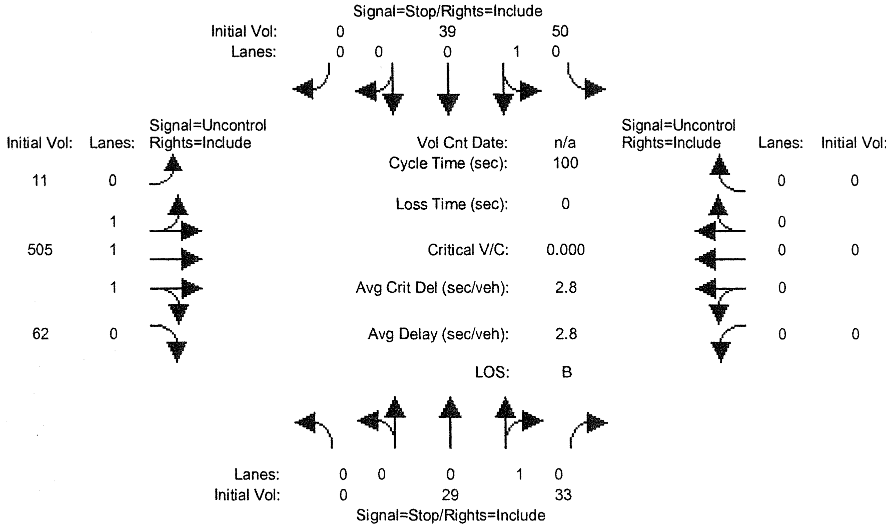
Offset: 17 (24%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Near Term+Project AM

Intersection #4: N St./4th St.



Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	29	33	50	39	0	11	505	62	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	29	33	50	39	0	11	505	62	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	29	33	50	39	0	11	505	62	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	29	33	50	39	0	11	505	62	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	29	33	50	39	0	11	505	62	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	573	199	220	604	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	432	847	741	415	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	424	847	662	407	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.07	0.04	0.08	0.10	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	577	520	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.4	0.6	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	12.0	13.4	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	B	B	*	*	A	*	*	*	*	*
ApproachDel:		12.0			13.4			xxxxxx			xxxxxx	
ApproachLOS:		B			B			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5059						4902				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5059						4902				
Volume (vph)	63	536	0	0	0	0	0	884	194	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	63	536	0	0	0	0	0	884	194	0	0	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	50	0	0	0	0
Lane Group Flow (vph)	0	578	0	0	0	0	0	1028	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2240						2171				
v/s Ratio Prot		c0.11						c0.21				
v/s Ratio Perm												
v/c Ratio		0.26						0.47				
Uniform Delay, d1		12.3						13.7				
Progression Factor		1.02						1.00				
Incremental Delay, d2		0.3						0.7				
Delay (s)		12.8						14.5				
Level of Service		B						B				
Approach Delay (s)		12.8			0.0			14.5			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary

Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↱					↰	↑↱	
Ideal Flow (vphpl)	1900	1900	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		1.00	0.95					1.00	0.95	
Frpb, 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	0.99		1.00	0.99					1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	5041		1770	3518					1593	3342	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	5041		1770	3518					1593	3342	
Volume (vph)	49	838	35	109	221	9	0	0	0	366	591	349
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	838	35	109	221	9	0	0	0	366	591	349
RTOR Reduction (vph)	0	6	0	0	4	0	0	0	0	0	123	0
Lane Group Flow (vph)	49	867	0	109	226	0	0	0	0	366	817	0
Confl. Peds. (#/hr)			60						60			
Parking (#/hr)										0		
Turn Type	Prot			Prot						Split		
Protected Phases	1	6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)	6.5	22.0		8.0	23.5					28.0	28.0	
Effective Green, g (s)	6.0	21.5		7.5	23.0					29.0	29.0	
Actuated g/C Ratio	0.09	0.31		0.11	0.33					0.41	0.41	
Clearance Time (s)	3.5	3.5		3.5	3.5					5.0	5.0	
Lane Grp Cap (vph)	152	1548		190	1156					660	1385	
v/s Ratio Prot	0.03	c0.17		c0.06	0.06					0.23	c0.24	
v/s Ratio Perm												
v/c Ratio	0.32	0.56		0.57	0.20					0.55	0.59	
Uniform Delay, d1	30.1	20.3		29.7	16.9					15.6	15.9	
Progression Factor	1.00	1.00		1.35	0.54					0.75	0.71	
Incremental Delay, d2	5.5	1.5		11.9	0.4					2.9	1.6	
Delay (s)	35.6	21.8		52.1	9.5					14.7	12.9	
Level of Service	D	C		D	A					B	B	
Approach Delay (s)		22.5			23.2			0.0			13.4	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

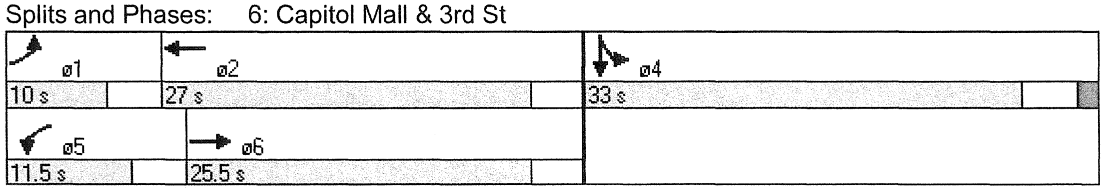
c Critical Lane Group

Phase Number	1	2	4	5	6
Movement	EBL	WBT	SBTL	WBL	EBT
Lead/Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	27	33	11.5	25.5
Maximum Split (%)	14.3%	38.6%	47.1%	16.4%	36.4%
Minimum Split (s)	8	27	33	7.5	25.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	1.5	0	0
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		11.5	10		10
Flash Dont Walk (s)		12	18		12
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	58	68	25	58	69.5
End Time (s)	68	25	58	69.5	25
Yield/Force Off (s)	64.5	21.5	53	66	21.5
Yield/Force Off 170(s)	64.5	9.5	35	66	9.5
Local Start Time (s)	62	2	29	62	3.5
Local Yield (s)	68.5	25.5	57	0	25.5
Local Yield 170(s)	68.5	13.5	39	0	13.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 66 (94%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.87		0.98			0.96			0.97	
Flpb, ped/bikes	0.93	1.00	1.00		1.00			0.99			0.98	
Frt	1.00	1.00	0.85		0.97			0.95			0.96	
Flt Protected	0.95	1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)	1643	3539	1380		4836			1495			1527	
Flt Permitted	0.55	1.00	1.00		1.00			0.92			0.94	
Satd. Flow (perm)	958	3539	1380		4836			1389			1447	
Volume (vph)	45	990	169	0	258	56	10	12	13	52	127	71
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	990	169	0	258	56	10	12	13	52	127	71
RTOR Reduction (vph)	0	0	78	0	26	0	0	8	0	0	20	0
Lane Group Flow (vph)	45	990	91	0	288	0	0	27	0	0	230	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)	38.0	38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)	37.5	37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio	0.54	0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)	3.5	3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)	513	1896	739		2591			486			506	
v/s Ratio Prot		c0.28			0.06							
v/s Ratio Perm	0.05		0.07					0.02			c0.16	
v/c Ratio	0.09	0.52	0.12		0.11			0.05			0.45	
Uniform Delay, d1	7.9	10.5	8.1		8.0			15.1			17.6	
Progression Factor	0.71	0.69	0.55		0.35			0.95			0.90	
Incremental Delay, d2	0.3	0.9	0.3		0.1			0.2			2.9	
Delay (s)	5.9	8.1	4.7		2.9			14.5			18.6	
Level of Service	A	A	A		A			B			B	
Approach Delay (s)		7.5			2.9			14.5			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

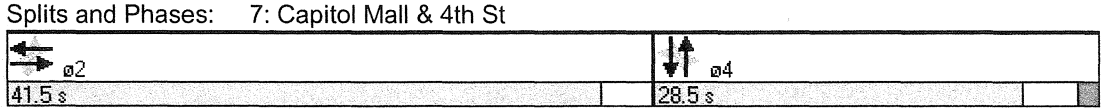
c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.98		1.00	0.94				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.93				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4861		3433	4458				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4861		3433	4458				
Volume (vph)	464	591	0	0	158	37	157	309	286	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	464	591	0	0	158	37	157	309	286	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	153	0	0	0	0
Lane Group Flow (vph)	464	591	0	0	168	0	157	442	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1250		1275	1656				
v/s Ratio Prot	c0.14	c0.17			0.03		0.05	c0.10				
v/s Ratio Perm												
v/c Ratio	0.68	0.32			0.13		0.12	0.27				
Uniform Delay, d1	25.9	9.9			20.0		14.5	15.3				
Progression Factor	0.45	0.17			1.00		0.43	0.13				
Incremental Delay, d2	4.6	0.4			0.2		0.2	0.4				
Delay (s)	16.2	2.1			20.2		6.4	2.3				
Level of Service	B	A			C		A	A				
Approach Delay (s)		8.3			20.2			3.2			0.0	
Approach LOS		A			C			A			A	

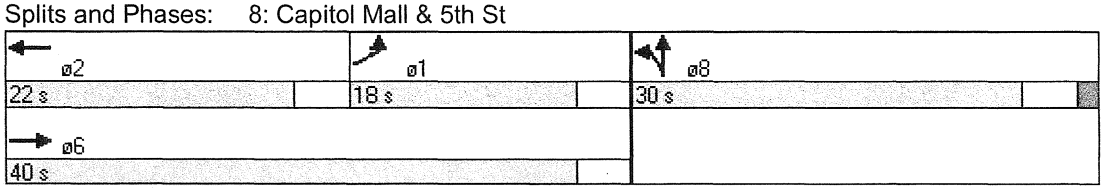
Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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				0.91	0.91	1.00	1.00	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected				0.95	0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1610	3331	1583	1770	1863			3535	
Flt Permitted				0.95	0.98	1.00	0.19	1.00			1.00	
Satd. Flow (perm)				1610	3331	1583	352	1863			3535	
Volume (vph)	0	0	0	314	245	77	29	30	0	0	938	7
Peak-hour factor, PHF	1.00	1.00	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	314	245	77	29	30	0	0	938	7
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	180	379	35	29	30	0	0	944	0
Turn Type				custom		custom	custom					
Protected Phases											4	
Permitted Phases				2	2	2	8	8				
Actuated Green, G (s)				32.5	32.5	32.5	30.5	30.5			30.5	
Effective Green, g (s)				32.0	32.0	32.0	30.0	30.0			30.0	
Actuated g/C Ratio				0.46	0.46	0.46	0.43	0.43			0.43	
Clearance Time (s)				3.5	3.5	3.5	3.5	3.5			3.5	
Lane Grp Cap (vph)				736	1523	724	151	798			1515	
v/s Ratio Prot											c0.27	
v/s Ratio Perm				0.11	c0.11	0.02	0.08	0.02				
v/c Ratio				0.24	0.25	0.05	0.19	0.04			0.62	
Uniform Delay, d1				11.6	11.6	10.5	12.5	11.6			15.6	
Progression Factor				0.74	0.74	0.48	0.30	0.09			1.00	
Incremental Delay, d2				0.8	0.4	0.1	2.7	0.1			1.9	
Delay (s)				9.4	9.0	5.2	6.5	1.2			17.5	
Level of Service				A	A	A	A	A			B	
Approach Delay (s)		0.0			8.7			3.8			17.5	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

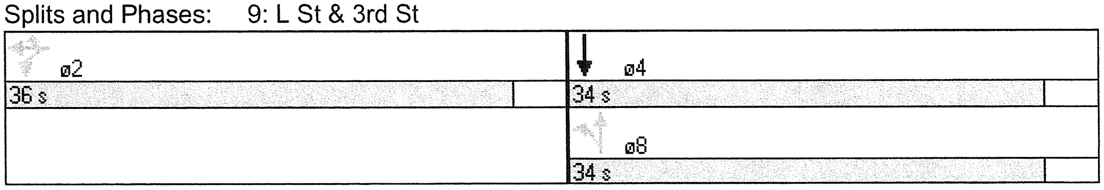
c Critical Lane Group

Phase Number	2	4	8
Movement	WBTL	SBT	NBTL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	Max	Max	Max
Maximum Split (s)	36	34	34
Maximum Split (%)	51.4%	48.6%	48.6%
Minimum Split (s)	7.5	7.5	34
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	0	0	0
Minimum Initial (s)	4	4	4
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			18.5
Flash Dont Walk (s)			12
Dual Entry	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	32.5	68.5	68.5
End Time (s)	68.5	32.5	32.5
Yield/Force Off (s)	65	29	29
Yield/Force Off 170(s)	65	29	17
Local Start Time (s)	3.5	39.5	39.5
Local Yield (s)	36	0	0
Local Yield 170(s)	36	0	58

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 29 (41%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↱		↰	↑↑↑				↱↱
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					0.99		1.00	1.00				0.95
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.98		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6220		1770	5085				2656
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6220		1770	5085				2656
Volume (vph)	0	0	0	0	574	93	76	467	0	0	0	335
Peak-hour factor, PHF	1.00	1.00	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	574	93	76	467	0	0	0	335
RTOR Reduction (vph)	0	0	0	0	42	0	37	0	0	0	0	77
Lane Group Flow (vph)	0	0	0	0	625	0	39	467	0	0	0	258
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					25.0		35.5	35.5				35.5
Effective Green, g (s)					26.0		36.0	36.0				36.0
Actuated g/C Ratio					0.37		0.51	0.51				0.51
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					2310		910	2615				1366
v/s Ratio Prot					c0.10		0.02	0.09				
v/s Ratio Perm												c0.10
v/c Ratio					0.27		0.04	0.18				0.19
Uniform Delay, d1					15.4		8.4	9.1				9.1
Progression Factor					1.00		0.45	0.52				1.00
Incremental Delay, d2					0.3		0.1	0.1				0.3
Delay (s)					15.7		3.9	4.9				9.5
Level of Service					B		A	A				A
Approach Delay (s)		0.0			15.7			4.7			9.5	
Approach LOS		A			B			A			A	

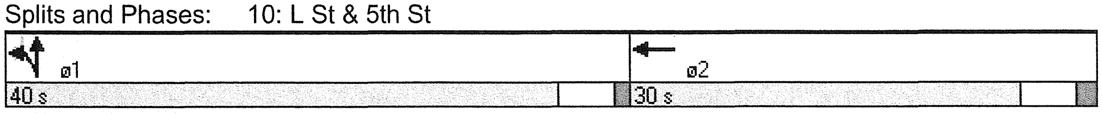
Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	40	30
Maximum Split (%)	57.1%	42.9%
Minimum Split (s)	40	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	26.5	16
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	7
End Time (s)	7	37
Yield/Force Off (s)	2.5	32
Yield/Force Off 170(s)	63.5	23
Local Start Time (s)	5	45
Local Yield (s)	40.5	0
Local Yield 170(s)	31.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.91	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4955		1613	1504	1610	3354		6136	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4955		1613	1504	1610	3354		6136	
Volume (vph)	23	1724	238	30	105	102	116	11	1718	554
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)	23	1724	238	30	105	102	116	11	1718	554
RTOR Reduction (vph)	0	18	0	9	9	0	0	0	0	0
Lane Group Flow (vph)	0	1967	0	64	53	70	148	0	2283	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		37.0		6.5	6.5	6.5	6.5		35.0	
Effective Green, g (s)		37.0		6.0	6.0	6.0	6.0		35.0	
Actuated g/C Ratio		0.37		0.06	0.06	0.06	0.06		0.35	
Clearance Time (s)		4.0		3.5	3.5	3.5	3.5		4.0	
Lane Grp Cap (vph)		1833		97	90	97	201		2148	
v/s Ratio Prot		c0.40		c0.04		0.04	c0.04		c0.37	
v/s Ratio Perm					0.03					
v/c Ratio		1.07		0.66	0.58	0.72	0.74		1.06	
Uniform Delay, d1		31.5		46.0	45.8	46.2	46.2		32.5	
Progression Factor		1.00		1.00	1.00	1.15	1.15		1.00	
Incremental Delay, d2		43.8		29.7	24.8	36.9	21.1		38.7	
Delay (s)		75.3		75.6	70.6	90.1	74.4		71.2	
Level of Service		E		E	E	F	E		E	
Approach Delay (s)		75.3		73.3			79.4		71.2	
Approach LOS		E		E			E		E	

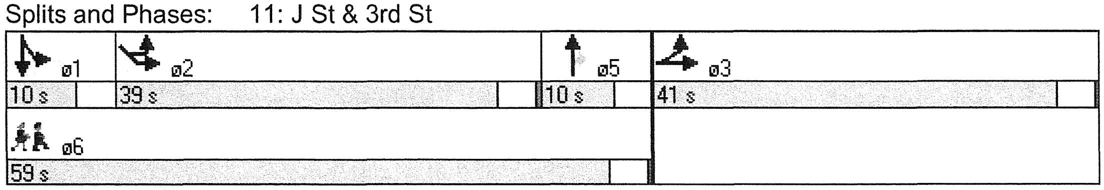
Intersection Summary			
HCM Average Control Delay	73.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	39	41	10	59
Maximum Split (%)	10.0%	39.0%	41.0%	10.0%	59.0%
Minimum Split (s)	7.5	39	41	7.5	59
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		24	26		44
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	35	45	94	84	35
End Time (s)	45	84	35	94	94
Yield/Force Off (s)	41.5	80	31	90.5	90
Yield/Force Off 170(s)	41.5	69	20	90.5	79
Local Start Time (s)	55	65	14	4	55
Local Yield (s)	61.5	0	51	10.5	10
Local Yield 170(s)	61.5	89	40	10.5	99

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	120

Offset: 80 (80%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.96					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1514					3242	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1514					3242	1441			
Volume (vph)	680	2558	335	0	0	0	0	294	297	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	680	2558	335	0	0	0	0	294	297	0	0	0
RTOR Reduction (vph)	167	0	147	0	0	0	0	1	1	0	0	0
Lane Group Flow (vph)	513	2558	188	0	0	0	0	414	175	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	56.0	56.0	56.0					36.0	36.0			
Effective Green, g (s)	56.0	56.0	56.0					36.0	36.0			
Actuated g/C Ratio	0.56	0.56	0.56					0.36	0.36			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	722	3380	848					1167	519			
v/s Ratio Prot	0.40	c0.42						c0.13				
v/s Ratio Perm			0.12						0.12			
v/c Ratio	0.71	0.76	0.22					0.36	0.34			
Uniform Delay, d1	16.1	16.8	11.0					23.5	23.3			
Progression Factor	0.84	0.71	1.39					1.00	1.00			
Incremental Delay, d2	0.5	0.1	0.1					0.8	1.8			
Delay (s)	14.0	12.1	15.4					24.3	25.1			
Level of Service	B	B	B					C	C			
Approach Delay (s)		12.8			0.0			24.6			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
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		

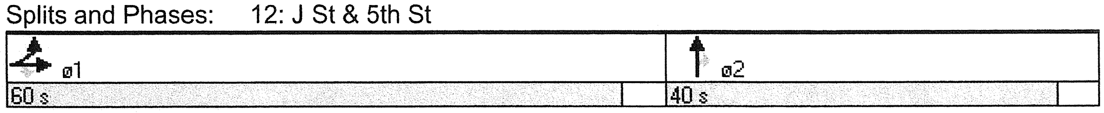
c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	60	40
Maximum Split (%)	60.0%	40.0%
Minimum Split (s)	60	40
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	44	20
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	43	3
End Time (s)	3	43
Yield/Force Off (s)	99	39
Yield/Force Off 170(s)	87	23
Local Start Time (s)	44	4
Local Yield (s)	0	40
Local Yield 170(s)	88	24

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 99 (99%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6117		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6117		3433	3362				
Volume (vph)	0	0	0	0	753	81	118	766	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	753	81	118	766	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	36	0	43	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	798	0	75	766	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					16.5		26.5	26.5				
Effective Green, g (s)					16.0		26.0	26.0				
Actuated g/C Ratio					0.32		0.52	0.52				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					1957		1785	1748				
v/s Ratio Prot					c0.13		0.02	c0.23				
v/s Ratio Perm												
v/c Ratio					0.41		0.04	0.44				
Uniform Delay, d1					13.3		5.9	7.5				
Progression Factor					1.00		2.08	1.33				
Incremental Delay, d2					0.6		0.0	0.6				
Delay (s)					13.9		12.3	10.5				
Level of Service					B		B	B				
Approach Delay (s)		0.0			13.9			10.7			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

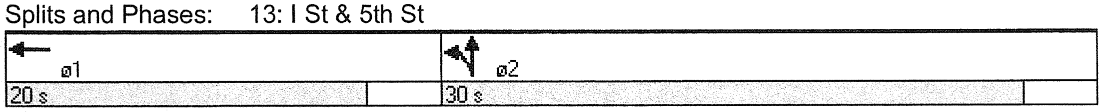
c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	20	30
Maximum Split (%)	40.0%	60.0%
Minimum Split (s)	20	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	5.5	14.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	15.5	35.5
End Time (s)	35.5	15.5
Yield/Force Off (s)	32	12
Yield/Force Off 170(s)	21	0
Local Start Time (s)	33.5	3.5
Local Yield (s)	0	30
Local Yield 170(s)	39	18

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 32 (64%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↱		↰	↰↑↑				
Ideal 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		0.86	0.86				
Frpb, 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)					4914		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4914		1522	4806				
Volume (vph)	0	0	0	0	683	131	242	1247	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	683	131	242	1247	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	74	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	803	0	168	1247	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2064		639	2019				
v/s Ratio Prot					c0.16		0.11	c0.26				
v/s Ratio Perm												
v/c Ratio					0.39		0.26	0.62				
Uniform Delay, d1					10.1		9.5	11.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.6		1.0	1.4				
Delay (s)					10.6		10.5	12.8				
Level of Service					B		B	B				
Approach Delay (s)		0.0			10.6			12.4			0.0	
Approach LOS		A			B			B			A	

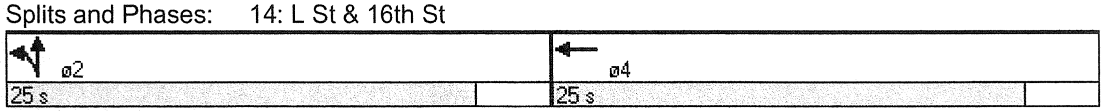
Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.97									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		6147									5005	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		6147									5005	
Volume (vph)	0	705	188	0	0	0	0	0	0	210	444	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	705	188	0	0	0	0	0	0	210	444	0
RTOR Reduction (vph)	0	72	0	0	0	0	0	0	0	0	139	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	0	0	0	515	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		27.5									15.5	
Effective Green, g (s)		27.0									15.0	
Actuated g/C Ratio		0.54									0.30	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3319									1502	
v/s Ratio Prot		c0.13									c0.10	
v/s Ratio Perm												
v/c Ratio		0.25									0.34	
Uniform Delay, d1		6.1									13.7	
Progression Factor		1.00									1.28	
Incremental Delay, d2		0.2									0.1	
Delay (s)		6.3									17.5	
Level of Service		A									B	
Approach Delay (s)		6.3			0.0			0.0			17.5	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

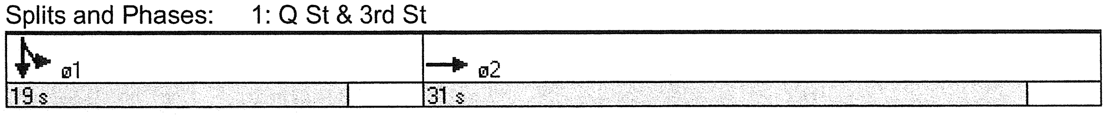
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	22.5	41.5
End Time (s)	41.5	22.5
Yield/Force Off (s)	38	19
Yield/Force Off 170(s)	30	11
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 19 (38%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.97	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.93	0.85
Flt Protected					1.00						1.00	1.00
Satd. Flow (prot)					4903						2907	1205
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					4903						2907	1205
Volume (vph)	0	0	0	137	2521	0	0	0	0	0	517	848
Peak-hour factor, PHF	1.00	1.00	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	137	2521	0	0	0	0	0	517	848
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	0	0	0	2646	0	0	0	0	0	940	423
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2648						872	362
v/s Ratio Prot					c0.54						0.32	
v/s Ratio Perm												c0.35
v/c Ratio					1.00						1.12dr	1.17
Uniform Delay, d1					11.5						17.5	17.5
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					17.3						53.6	101.2
Delay (s)					28.8						71.1	118.7
Level of Service					C						E	F
Approach Delay (s)		0.0			28.8			0.0			85.9	
Approach LOS		A			C			A			F	

Intersection Summary			
HCM Average Control Delay	48.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

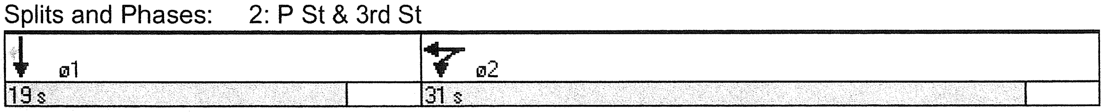
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	90

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.97			1.00	0.91	
Flt Protected	1.00			0.99	0.98	
Satd. Flow (prot)	1777			5055	3224	
Flt Permitted	1.00			0.99	0.98	
Satd. Flow (perm)	1777			5055	3224	
Volume (vph)	81	19	154	1138	154	232
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	19	154	1138	154	232
RTOR Reduction (vph)	12	0	0	25	0	0
Lane Group Flow (vph)	88	0	0	1267	386	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			32.5	14.5	
Effective Green, g (s)	12.0			32.0	14.0	
Actuated g/C Ratio	0.17			0.46	0.20	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2311	645	
v/s Ratio Prot	c0.05			c0.25	c0.12	
v/s Ratio Perm						
v/c Ratio	0.29			0.55	0.60	
Uniform Delay, d1	25.3			13.8	25.4	
Progression Factor	1.00			0.89	1.00	
Incremental Delay, d2	2.4			0.2	4.1	
Delay (s)	27.6			12.5	29.5	
Level of Service	C			B	C	
Approach Delay (s)	27.6			12.5	29.5	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

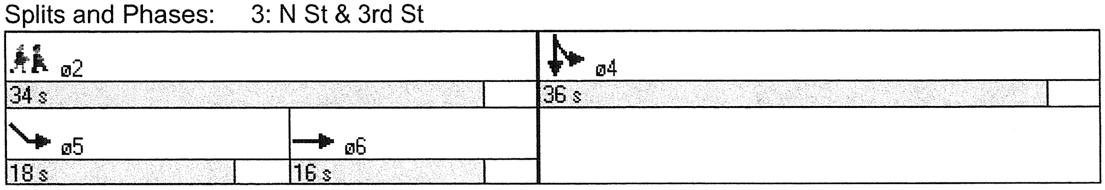
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	36	18	16
Maximum Split (%)	48.6%	51.4%	25.7%	22.9%
Minimum Split (s)	34	36	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	19.5	23.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12.5	46.5	12.5	30.5
End Time (s)	46.5	12.5	30.5	46.5
Yield/Force Off (s)	43	9	27	43
Yield/Force Off 170(s)	32	0	27	35
Local Start Time (s)	3.5	37.5	3.5	21.5
Local Yield (s)	34	0	18	34
Local Yield 170(s)	23	61	18	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 9 (13%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Near Term+Project PM

Intersection #4: N St./4th St.

Signal=Stop/Rights=Include
Initial Vol: 0 139 109
Lanes: 0 0 0 1 0

Signal=Uncontrol
Rights=Include
Initial Vol: 72, 364, 51
Lanes: 0, 1, 1, 1, 0

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.000
Avg Crit Del (sec/veh): 9.1
Avg Delay (sec/veh): 9.1
LOS: C

Signal=Uncontrol
Rights=Include
Lanes: 0, 0, 0, 0, 0
Initial Vol: 0, 0, 0

Lanes: 0 0 0 1 0
Initial Vol: 0 69 40
Signal=Stop/Rights=Include

Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	69	40	109	139	0	72	364	51	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	40	109	139	0	72	364	51	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	69	40	109	139	0	72	364	51	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	69	40	109	139	0	72	364	51	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	69	40	109	139	0	72	364	51	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	549	147	315	574	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	446	905	642	432	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	420	905	510	406	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.16	0.04	0.21	0.34	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	522	446	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.8	3.3	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	13.7	22.7	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	B	C	*	*	A	*	*	*	*	*
ApproachDel:		13.7			22.7			xxxxxx			xxxxxx	
ApproachLOS:		B			C			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↑						↑↑↱				
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5050						4960				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5050						4960				
Volume (vph)	72	443	0	0	0	0	0	896	125	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	443	0	0	0	0	0	896	125	0	0	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	26	0	0	0	0
Lane Group Flow (vph)	0	483	0	0	0	0	0	995	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2236						2197				
v/s Ratio Prot		c0.10						c0.20				
v/s Ratio Perm												
v/c Ratio		0.22						0.45				
Uniform Delay, d1		12.0						13.6				
Progression Factor		1.22						1.00				
Incremental Delay, d2		0.2						0.7				
Delay (s)		14.9						14.3				
Level of Service		B						B				
Approach Delay (s)		14.9			0.0			14.3			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		1.00	0.95					1.00	0.95	
Frpb, ped/bikes	1.00	0.99		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	0.99		1.00	0.99					1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	5018		1770	3519					1593	3302	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	5018		1770	3519					1593	3302	
Volume (vph)	123	577	31	311	677	27	0	0	0	173	972	788
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	123	577	31	311	677	27	0	0	0	173	972	788
RTOR Reduction (vph)	0	8	0	0	4	0	0	0	0	0	181	0
Lane Group Flow (vph)	123	600	0	311	700	0	0	0	0	173	1579	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		
Turn Type	Prot			Prot						Split		
Protected Phases	1	6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)	6.5	12.5		12.5	18.5					33.0	33.0	
Effective Green, g (s)	6.0	12.0		12.0	18.0					34.0	34.0	
Actuated g/C Ratio	0.09	0.17		0.17	0.26					0.49	0.49	
Clearance Time (s)	3.5	3.5		3.5	3.5					5.0	5.0	
Lane Grp Cap (vph)	152	860		303	905					774	1604	
v/s Ratio Prot	0.07	0.12		c0.18	c0.20					0.11	c0.48	
v/s Ratio Perm												
v/c Ratio	0.81	0.70		1.03	0.77					0.22	0.98	
Uniform Delay, d1	31.4	27.3		29.0	24.1					10.4	17.7	
Progression Factor	1.00	1.00		0.78	0.76					0.74	0.82	
Incremental Delay, d2	35.5	4.7		57.3	6.1					0.6	17.5	
Delay (s)	67.0	32.0		79.9	24.5					8.3	32.1	
Level of Service	E	C		E	C					A	C	
Approach Delay (s)		37.8			41.5			0.0			29.9	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

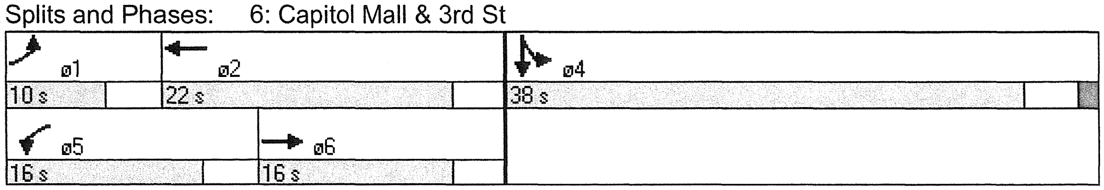
c Critical Lane Group

Phase Number	1	2	4	5	6
Movement	EBL	WBT	SBTL	WBL	EBT
Lead/Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	22	38	16	16
Maximum Split (%)	14.3%	31.4%	54.3%	22.9%	22.9%
Minimum Split (s)	8	22	38	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	1.5	0	0
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		6.5	15		0.5
Flash Dont Walk (s)		12	18		12
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	10.5	20.5	42.5	10.5	26.5
End Time (s)	20.5	42.5	10.5	26.5	42.5
Yield/Force Off (s)	17	39	5.5	23	39
Yield/Force Off 170(s)	17	27	57.5	23	27
Local Start Time (s)	57.5	67.5	19.5	57.5	3.5
Local Yield (s)	64	16	52.5	0	16
Local Yield 170(s)	64	4	34.5	0	4

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	80

Offset: 23 (33%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.87		0.99			0.99			0.97	
Flpb, ped/bikes	0.97	1.00	1.00		1.00			0.99			0.99	
Frt	1.00	1.00	0.85		0.99			0.98			0.96	
Flt Protected	0.95	1.00	1.00		1.00			0.98			0.99	
Satd. Flow (prot)	1720	3539	1380		5000			1581			1519	
Flt Permitted	0.27	1.00	1.00		1.00			0.84			0.90	
Satd. Flow (perm)	493	3539	1380		5000			1355			1379	
Volume (vph)	127	597	25	0	859	55	63	110	25	60	130	93
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	597	25	0	859	55	63	110	25	60	130	93
RTOR Reduction (vph)	0	0	12	0	10	0	0	7	0	0	25	0
Lane Group Flow (vph)	127	597	13	0	904	0	0	191	0	0	258	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)	38.0	38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)	37.5	37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio	0.54	0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)	3.5	3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)	264	1896	739		2679			474			483	
v/s Ratio Prot		0.17			0.18							
v/s Ratio Perm	c0.26		0.01					0.14			c0.19	
v/c Ratio	0.48	0.31	0.02		0.34			0.40			0.53	
Uniform Delay, d1	10.2	9.1	7.6		9.2			17.2			18.2	
Progression Factor	2.18	2.22	3.69		0.24			0.91			0.98	
Incremental Delay, d2	5.0	0.4	0.0		0.3			2.5			4.0	
Delay (s)	27.2	20.5	28.2		2.6			18.1			21.9	
Level of Service	C	C	C		A			B			C	
Approach Delay (s)		21.9			2.6			18.1			21.9	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

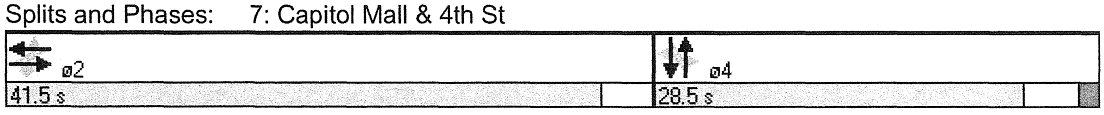
c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.98				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4983		3433	4922				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4983		3433	4922				
Volume (vph)	274	409	0	0	582	55	331	675	94	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	274	409	0	0	582	55	331	675	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	26	0	0	0	0
Lane Group Flow (vph)	274	409	0	0	621	0	331	743	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1281		1275	1828				
v/s Ratio Prot	c0.08	0.12			c0.12		0.10	c0.15				
v/s Ratio Perm												
v/c Ratio	0.40	0.22			0.49		0.26	0.41				
Uniform Delay, d1	24.3	9.3			22.1		15.3	16.3				
Progression Factor	0.87	0.27			1.00		0.47	0.42				
Incremental Delay, d2	1.7	0.3			1.3		0.5	0.6				
Delay (s)	22.8	2.8			23.4		7.6	7.5				
Level of Service	C	A			C		A	A				
Approach Delay (s)		10.8			23.4			7.5			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

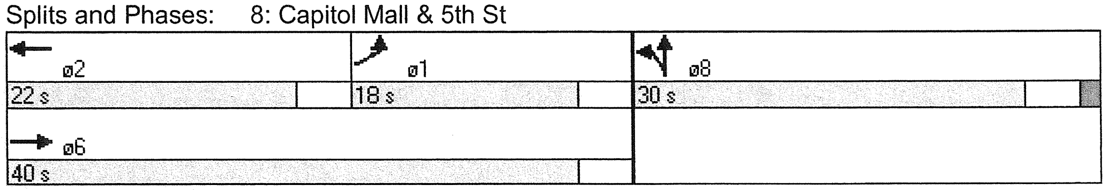
c Critical Lane Group

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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				0.91	0.91	1.00	1.00	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1610	3390	1583	1770	1863			3515	
Flt Permitted				0.95	1.00	1.00	0.15	1.00			1.00	
Satd. Flow (perm)				1610	3390	1583	276	1863			3515	
Volume (vph)	0	0	0	517	1260	193	37	70	0	0	953	46
Peak-hour factor, PHF	1.00	1.00	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	517	1260	193	37	70	0	0	953	46
RTOR Reduction (vph)	0	0	0	0	0	97	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	0	517	1260	97	37	70	0	0	994	0
Turn Type				custom		custom	custom					
Protected Phases											4	
Permitted Phases				2	2	2	8	8				
Actuated Green, G (s)				35.5	35.5	35.5	27.5	27.5			27.5	
Effective Green, g (s)				35.0	35.0	35.0	27.0	27.0			27.0	
Actuated g/C Ratio				0.50	0.50	0.50	0.39	0.39			0.39	
Clearance Time (s)				3.5	3.5	3.5	3.5	3.5			3.5	
Lane Grp Cap (vph)				805	1695	792	106	719			1356	
v/s Ratio Prot											c0.28	
v/s Ratio Perm				0.32	c0.37	0.06	0.13	0.04				
v/c Ratio				0.64	0.74	0.12	0.35	0.10			0.73	
Uniform Delay, d1				12.9	13.9	9.3	15.3	13.7			18.4	
Progression Factor				0.71	0.70	0.47	0.77	0.57			1.00	
Incremental Delay, d2				3.6	2.7	0.3	5.1	0.2			3.5	
Delay (s)				12.8	12.5	4.6	16.9	8.0			22.0	
Level of Service				B	B	A	B	A			C	
Approach Delay (s)		0.0			11.8			11.0			22.0	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

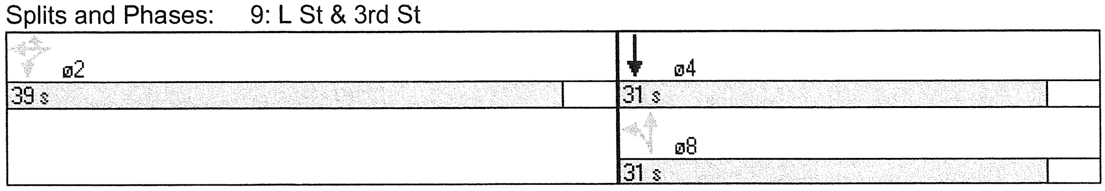
c Critical Lane Group

Phase Number	2	4	8
Movement	WBTL	SBT	NBTL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	Max	Max	Max
Maximum Split (s)	39	31	31
Maximum Split (%)	55.7%	44.3%	44.3%
Minimum Split (s)	7.5	7.5	31
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	0	0	0
Minimum Initial (s)	4	4	4
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			15.5
Flash Dont Walk (s)			12
Dual Entry	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	62.5	31.5	31.5
End Time (s)	31.5	62.5	62.5
Yield/Force Off (s)	28	59	59
Yield/Force Off 170(s)	28	59	47
Local Start Time (s)	3.5	42.5	42.5
Local Yield (s)	39	0	0
Local Yield 170(s)	39	0	58

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	60

Offset: 59 (84%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					1.00		1.00	1.00				0.93
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6311		1770	5085				2585
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6311		1770	5085				2585
Volume (vph)	0	0	0	0	1812	155	320	683	0	0	0	188
Peak-hour factor, PHF	1.00	1.00	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	1812	155	320	683	0	0	0	188
RTOR Reduction (vph)	0	0	0	0	19	0	11	0	0	0	0	15
Lane Group Flow (vph)	0	0	0	0	1948	0	309	683	0	0	0	173
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					40.0		20.5	20.5				20.5
Effective Green, g (s)					41.0		21.0	21.0				21.0
Actuated g/C Ratio					0.59		0.30	0.30				0.30
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					3696		531	1526				776
v/s Ratio Prot					c0.31		c0.17	0.13				
v/s Ratio Perm												0.07
v/c Ratio					0.53		0.58	0.45				0.22
Uniform Delay, d1					8.7		20.8	19.8				18.4
Progression Factor					1.00		0.68	0.70				1.00
Incremental Delay, d2					0.5		4.3	0.9				0.7
Delay (s)					9.2		18.4	14.7				19.0
Level of Service					A		B	B				B
Approach Delay (s)		0.0			9.2			15.9			19.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	45
Maximum Split (%)	35.7%	64.3%
Minimum Split (s)	25	45
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	11.5	31
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	62
End Time (s)	62	37
Yield/Force Off (s)	57.5	32
Yield/Force Off 170(s)	48.5	23
Local Start Time (s)	5	30
Local Yield (s)	25.5	0
Local Yield 170(s)	16.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.94	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4952		1660	1504	1610	3372		6090	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4952		1660	1504	1610	3372		6090	
Volume (vph)	1	687	85	70	161	229	350	7	1235	454
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)	1	687	85	70	161	229	350	7	1235	454
RTOR Reduction (vph)	0	15	0	26	43	0	0	0	0	0
Lane Group Flow (vph)	0	758	0	93	69	187	392	0	1696	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		23.0		12.0	12.0	17.5	17.5		32.0	
Effective Green, g (s)		23.0		12.0	12.0	17.0	17.0		32.0	
Actuated g/C Ratio		0.23		0.12	0.12	0.17	0.17		0.32	
Clearance Time (s)		4.0		4.0	4.0	3.5	3.5		4.0	
Lane Grp Cap (vph)		1139		199	180	274	573		1949	
v/s Ratio Prot		c0.15		c0.06		0.12	c0.12		c0.28	
v/s Ratio Perm					0.05					
v/c Ratio		0.67		0.47	0.38	0.68	0.68		0.94dr	
Uniform Delay, d1		35.0		41.0	40.6	39.0	39.0		32.0	
Progression Factor		1.00		1.00	1.00	0.92	0.92		1.00	
Incremental Delay, d2		3.1		7.8	6.1	12.5	6.3		5.6	
Delay (s)		38.1		48.8	46.6	48.4	42.2		37.7	
Level of Service		D		D	D	D	D		D	
Approach Delay (s)		38.1		47.8			44.2		37.7	
Approach LOS		D		D			D		D	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

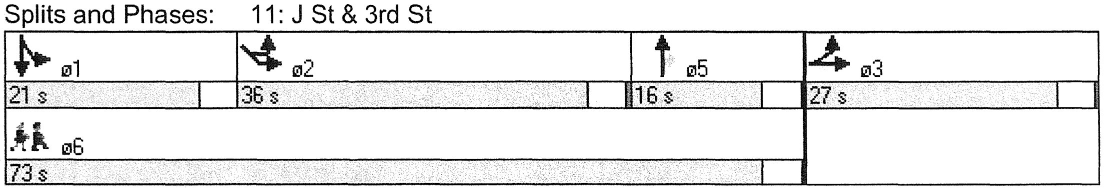
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	21	36	27	16	73
Maximum Split (%)	21.0%	36.0%	27.0%	16.0%	73.0%
Minimum Split (s)	7.5	36	27	8	73
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		21	12		58
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	85	6	58	42	85
End Time (s)	6	42	85	58	58
Yield/Force Off (s)	2.5	38	81	54	54
Yield/Force Off 170(s)	2.5	27	70	54	43
Local Start Time (s)	47	68	20	4	47
Local Yield (s)	64.5	0	43	16	16
Local Yield 170(s)	64.5	89	32	16	5

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 38 (38%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.95					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1498					3254	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1498					3254	1441			
Volume (vph)	324	1583	188	0	0	0	0	431	408	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	324	1583	188	0	0	0	0	431	408	0	0	0
RTOR Reduction (vph)	167	0	109	0	0	0	0	2	2	0	0	0
Lane Group Flow (vph)	157	1583	79	0	0	0	0	586	249	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	21.0	21.0	21.0					21.0	21.0			
Effective Green, g (s)	21.0	21.0	21.0					21.0	21.0			
Actuated g/C Ratio	0.42	0.42	0.42					0.42	0.42			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	542	2535	629					1367	605			
v/s Ratio Prot	0.12	c0.26						c0.18				
v/s Ratio Perm			0.05						0.17			
v/c Ratio	0.29	0.62	0.13					0.43	0.41			
Uniform Delay, d1	9.6	11.4	8.9					10.3	10.2			
Progression Factor	0.36	0.56	0.42					1.00	1.00			
Incremental Delay, d2	0.8	0.7	0.3					1.0	2.1			
Delay (s)	4.3	7.1	4.0					11.2	12.2			
Level of Service	A	A	A					B	B			
Approach Delay (s)		6.4			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

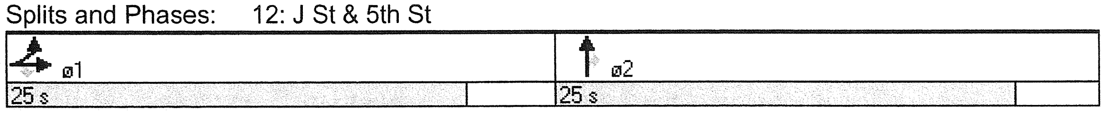
c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	25	25
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	28	3
End Time (s)	3	28
Yield/Force Off (s)	49	24
Yield/Force Off 170(s)	37	8
Local Start Time (s)	29	4
Local Yield (s)	0	25
Local Yield 170(s)	38	9

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 49 (98%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6224		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6224		3433	3362				
Volume (vph)	0	0	0	0	2640	55	349	399	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	2640	55	349	399	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	14	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2692	0	335	399	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					75.5		17.5	17.5				
Effective Green, g (s)					75.0		17.0	17.0				
Actuated g/C Ratio					0.75		0.17	0.17				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					4668		584	572				
v/s Ratio Prot					c0.43		0.10	c0.12				
v/s Ratio Perm												
v/c Ratio					0.58		0.57	0.70				
Uniform Delay, d1					5.5		38.2	39.1				
Progression Factor					1.00		1.02	1.02				
Incremental Delay, d2					0.5		3.7	6.3				
Delay (s)					6.0		42.8	46.3				
Level of Service					A		D	D				
Approach Delay (s)		0.0			6.0			44.7			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

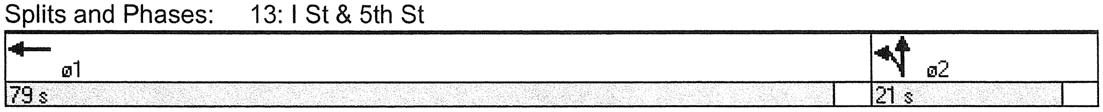
c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	79	21
Maximum Split (%)	79.0%	21.0%
Minimum Split (s)	79	21
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	64.5	5.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	44.5	23.5
End Time (s)	23.5	44.5
Yield/Force Off (s)	20	41
Yield/Force Off 170(s)	9	29
Local Start Time (s)	24.5	3.5
Local Yield (s)	0	21
Local Yield 170(s)	89	9

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 20 (20%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4846		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4846		1522	4806				
Volume (vph)	0	0	0	0	682	198	260	1538	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	682	198	260	1538	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	74	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	876	0	186	1538	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2035		639	2019				
v/s Ratio Prot					c0.18		0.12	c0.32				
v/s Ratio Perm												
v/c Ratio					0.43		0.29	0.76				
Uniform Delay, d1					10.3		9.6	12.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.7		1.2	2.8				
Delay (s)					10.9		10.7	15.1				
Level of Service					B		B	B				
Approach Delay (s)		0.0			10.9			14.5			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St

ø2	ø4
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↱									↰↑↑	
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		0.86									0.91	
Frpb, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		5971									4985	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		5971									4985	
Volume (vph)	0	2400	1050	0	0	0	0	0	0	230	340	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2400	1050	0	0	0	0	0	0	230	340	0
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	3413	0	0	0	0	0	0	0	0	562	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		71.5									21.5	
Effective Green, g (s)		71.0									21.0	
Actuated g/C Ratio		0.71									0.21	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		4239									1047	
v/s Ratio Prot		c0.57									c0.11	
v/s Ratio Perm												
v/c Ratio		0.96dr									0.54	
Uniform Delay, d1		9.8									35.2	
Progression Factor		1.00									0.81	
Incremental Delay, d2		1.7									1.8	
Delay (s)		11.5									30.4	
Level of Service		B									C	
Approach Delay (s)		11.5			0.0			0.0			30.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

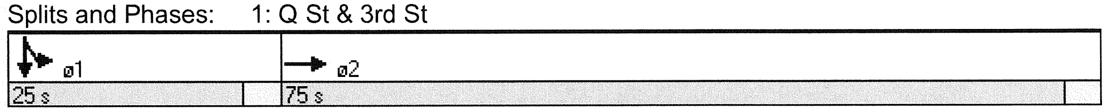
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	75
Maximum Split (%)	25.0%	75.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	90.5	15.5
End Time (s)	15.5	90.5
Yield/Force Off (s)	12	87
Yield/Force Off 170(s)	4	79
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	92

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	60

Offset: 87 (87%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.99	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.98	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					4863						3117	1205
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					4863						3117	1205
Volume (vph)	0	0	0	170	620	0	0	0	0	0	400	320
Peak-hour factor, PHF	1.00	1.00	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	170	620	0	0	0	0	0	400	320
RTOR Reduction (vph)	0	0	0	0	78	0	0	0	0	0	27	171
Lane Group Flow (vph)	0	0	0	0	712	0	0	0	0	0	442	80
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2626						935	362
v/s Ratio Prot					c0.15						c0.14	
v/s Ratio Perm												0.07
v/c Ratio					0.27						0.47	0.22
Uniform Delay, d1					6.2						14.3	13.1
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.3						1.7	1.4
Delay (s)					6.5						16.0	14.5
Level of Service					A						B	B
Approach Delay (s)		0.0			6.5			0.0			15.5	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	10.8	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	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

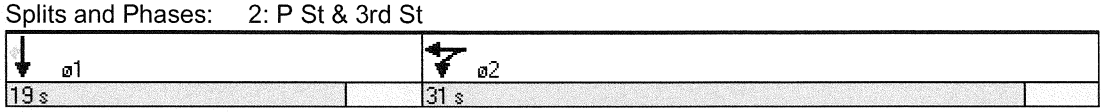
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.96	
Flt Protected	1.00			0.98	0.96	
Satd. Flow (prot)	1780			4974	3347	
Flt Permitted	1.00			0.98	0.96	
Satd. Flow (perm)	1780			4974	3347	
Volume (vph)	90	20	400	490	470	170
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	20	400	490	470	170
RTOR Reduction (vph)	12	0	0	164	0	0
Lane Group Flow (vph)	98	0	0	726	640	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			29.5	17.5	
Effective Green, g (s)	12.0			29.0	17.0	
Actuated g/C Ratio	0.17			0.41	0.24	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2061	813	
v/s Ratio Prot	c0.06			c0.15	c0.19	
v/s Ratio Perm						
v/c Ratio	0.32			0.35	0.79	
Uniform Delay, d1	25.4			14.1	24.8	
Progression Factor	1.00			0.54	1.00	
Incremental Delay, d2	2.8			0.4	7.6	
Delay (s)	28.2			8.0	32.4	
Level of Service	C			A	C	
Approach Delay (s)	28.2			8.0	32.4	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

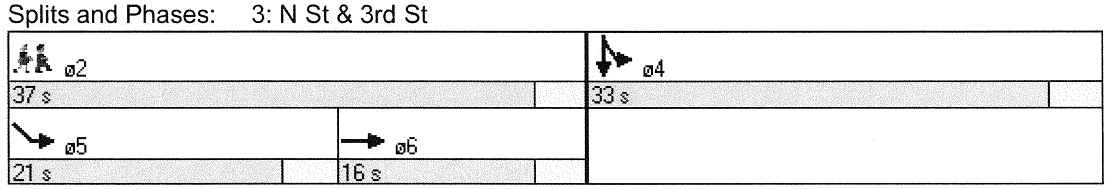
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	37	33	21	16
Maximum Split (%)	52.9%	47.1%	30.0%	22.9%
Minimum Split (s)	37	33	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	22.5	20.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	57.5	20.5	41.5
End Time (s)	57.5	20.5	41.5	57.5
Yield/Force Off (s)	54	17	38	54
Yield/Force Off 170(s)	43	8	38	46
Local Start Time (s)	3.5	40.5	3.5	24.5
Local Yield (s)	37	0	21	37
Local Yield 170(s)	26	61	21	29

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

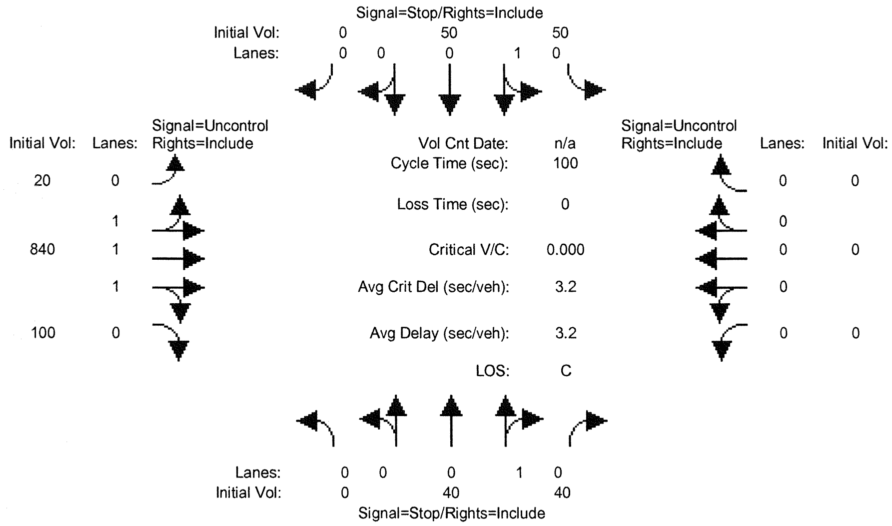
Offset: 17 (24%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
2025 AM

Intersection #4: N St./4th St.



Street Name:		4th St						N St				
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	40	40	50	50	0	20	840	100	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	40	40	50	50	0	20	840	100	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	40	40	50	50	0	20	840	100	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	40	40	50	50	0	20	840	100	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	40	40	50	50	0	20	840	100	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	945	330	355	995	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	264	716	604	247	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	257	716	491	240	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.16	0.06	0.10	0.21	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	378	323	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.8	1.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	17.0	21.1	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	C	*	*	A	*	*	*	*	*
ApproachDel:		17.0			21.1			xxxxxx			xxxxxx	
ApproachLOS:		C			C			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		5066						4863				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		5066						4863				
Volume (vph)	70	860	0	0	0	0	0	1040	290	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	860	0	0	0	0	0	1040	290	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	46	0	0	0	0
Lane Group Flow (vph)	0	917	0	0	0	0	0	1284	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2244						2154				
v/s Ratio Prot		c0.18						c0.26				
v/s Ratio Perm												
v/c Ratio		0.41						0.60				
Uniform Delay, d1		13.3						14.8				
Progression Factor		1.42						1.00				
Incremental Delay, d2		0.5						1.2				
Delay (s)		19.3						16.0				
Level of Service		B						B				
Approach Delay (s)		19.3			0.0			16.0			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70
Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow	

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						0.96	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		5044		1770	3539						6078	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		5044		1770	3539						6078	
Volume (vph)	0	1060	40	90	450	0	0	0	0	350	740	400
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1060	40	90	450	0	0	0	0	350	740	400
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	94	0
Lane Group Flow (vph)	0	1094	0	90	450	0	0	0	0	0	1396	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		20.0		12.5	36.0						25.5	
Effective Green, g (s)		19.5		12.0	35.5						26.5	
Actuated g/C Ratio		0.28		0.17	0.51						0.38	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		1405		303	1795						2301	
v/s Ratio Prot		c0.22		c0.05	0.13						c0.23	
v/s Ratio Perm												
v/c Ratio		0.78		0.30	0.25						0.61	
Uniform Delay, d1		23.3		25.3	9.7						17.5	
Progression Factor		1.00		0.77	1.98						0.84	
Incremental Delay, d2		4.3		2.4	0.3						1.1	
Delay (s)		27.6		21.9	19.6						15.7	
Level of Service		C		C	B						B	
Approach Delay (s)		27.6			20.0			0.0			15.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

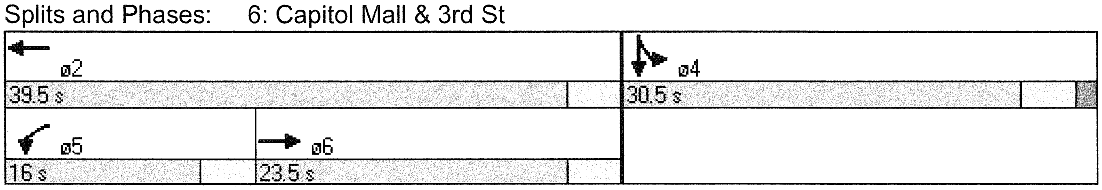
c Critical Lane Group

Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	39.5	30.5	16	23.5
Maximum Split (%)	56.4%	43.6%	22.9%	33.6%
Minimum Split (s)	39.5	30.5	7.5	23.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	26	20.5		10
Flash Dont Walk (s)	10	5		10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	22.5	62	22.5	38.5
End Time (s)	62	22.5	38.5	62
Yield/Force Off (s)	58.5	17.5	35	58.5
Yield/Force Off 170(s)	48.5	12.5	35	48.5
Local Start Time (s)	57.5	27	57.5	3.5
Local Yield (s)	23.5	52.5	0	23.5
Local Yield 170(s)	13.5	47.5	0	13.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 35 (50%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		0.91			1.00			1.00	
Frpb, ped/bikes		1.00	0.87		0.99			0.96			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			0.99			0.98	
Frt		1.00	0.85		0.98			0.95			0.99	
Flt Protected		1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)		3536	1380		4937			1494			1612	
Flt Permitted		0.95	1.00		0.92			0.95			0.94	
Satd. Flow (perm)		3362	1380		4546			1427			1530	
Volume (vph)	10	1200	200	10	520	60	10	20	20	40	140	10
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	1200	200	10	520	60	10	20	20	40	140	10
RTOR Reduction (vph)	0	0	93	0	20	0	0	13	0	0	3	0
Lane Group Flow (vph)	0	1210	107	0	570	0	0	37	0	0	187	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)		37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio		0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)		3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)		1801	739		2435			499			536	
v/s Ratio Prot												
v/s Ratio Perm		c0.36	0.08		0.13			0.03			c0.12	
v/c Ratio		0.67	0.14		0.23			0.07			0.35	
Uniform Delay, d1		11.8	8.2		8.6			15.2			16.8	
Progression Factor		0.94	2.50		0.51			0.80			0.76	
Incremental Delay, d2		1.3	0.3		0.2			0.3			1.6	
Delay (s)		12.4	20.7		4.6			12.4			14.5	
Level of Service		B	C		A			B			B	
Approach Delay (s)		13.6			4.6			12.4			14.5	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

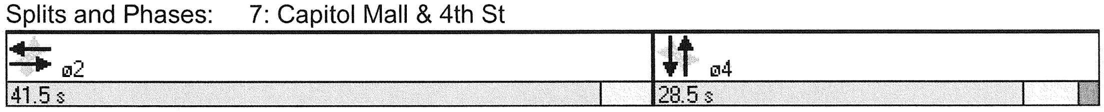
c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St



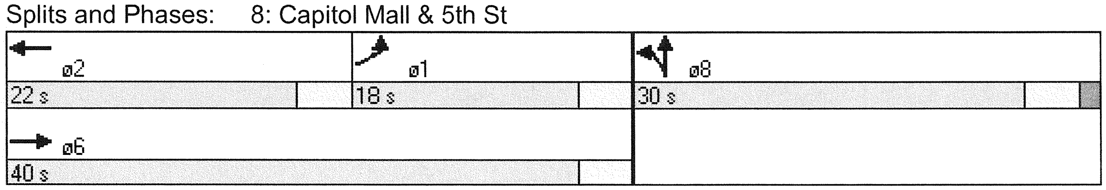
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0				
Lane Util. Factor	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.98		1.00	0.95				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.94				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4817		3433	4567				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4817		3433	4567				
Volume (vph)	610	650	0	0	170	50	420	460	300	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	610	650	0	0	170	50	420	460	300	0	0	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	131	0	0	0	0
Lane Group Flow (vph)	610	650	0	0	183	0	420	629	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1239		1275	1696				
v/s Ratio Prot	c0.18	c0.18			0.04		0.12	c0.14				
v/s Ratio Perm												
v/c Ratio	0.89	0.36			0.15		0.33	0.37				
Uniform Delay, d1	27.2	10.1			20.1		15.8	16.0				
Progression Factor	0.62	0.12			1.00		0.41	0.23				
Incremental Delay, d2	12.5	0.4			0.3		0.6	0.5				
Delay (s)	29.3	1.6			20.3		7.1	4.2				
Level of Service	C	A			C		A	A				
Approach Delay (s)		15.0			20.3			5.2			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	55
Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow	

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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	0.91	1.00					0.91	
Frt				1.00	1.00	0.85					0.99	
Flt Protected				0.95	0.99	1.00					1.00	
Satd. Flow (prot)				1610	3356	1583					5049	
Flt Permitted				0.95	0.99	1.00					1.00	
Satd. Flow (perm)				1610	3356	1583					5049	
Volume (vph)	0	0	0	490	570	170	0	0	0	0	1000	50
Peak-hour factor, PHF	1.00	1.00	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	490	570	170	0	0	0	0	1000	50
RTOR Reduction (vph)	0	0	0	26	26	92	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	319	689	78	0	0	0	0	1043	0
Turn Type				custom		custom						
Protected Phases											4	
Permitted Phases				2	2	2						
Actuated Green, G (s)				32.5	32.5	32.5					30.5	
Effective Green, g (s)				32.0	32.0	32.0					30.0	
Actuated g/C Ratio				0.46	0.46	0.46					0.43	
Clearance Time (s)				3.5	3.5	3.5					3.5	
Lane Grp Cap (vph)				736	1534	724					2164	
v/s Ratio Prot											c0.21	
v/s Ratio Perm				0.20	c0.21	0.05						
v/c Ratio				0.43	0.45	0.11					0.48	
Uniform Delay, d1				12.9	13.0	10.8					14.4	
Progression Factor				1.00	1.00	1.00					1.00	
Incremental Delay, d2				1.9	1.0	0.3					0.8	
Delay (s)				14.7	13.9	11.1					15.2	
Level of Service				B	B	B					B	
Approach Delay (s)		0.0			13.8			0.0			15.2	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

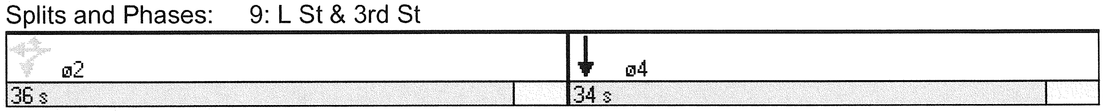
c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	36	34
Maximum Split (%)	51.4%	48.6%
Minimum Split (s)	7.5	34
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		22.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	2.5	38.5
End Time (s)	38.5	2.5
Yield/Force Off (s)	35	69
Yield/Force Off 170(s)	35	61
Local Start Time (s)	3.5	39.5
Local Yield (s)	36	0
Local Yield 170(s)	36	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	55

Offset: 69 (99%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



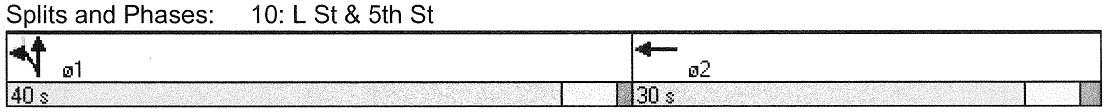
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.86		1.00	0.91				0.88
Frpb, ped/bikes					0.99		1.00	1.00				0.95
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.97		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6174		1770	5085				2656
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6174		1770	5085				2656
Volume (vph)	0	0	0	0	1140	240	160	960	0	0	0	380
Peak-hour factor, PHF	1.00	1.00	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	1140	240	160	960	0	0	0	380
RTOR Reduction (vph)	0	0	0	0	54	0	8	0	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1326	0	152	960	0	0	0	371
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					25.0		35.5	35.5				35.5
Effective Green, g (s)					26.0		36.0	36.0				36.0
Actuated g/C Ratio					0.37		0.51	0.51				0.51
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					2293		910	2615				1366
v/s Ratio Prot					c0.21		0.09	c0.19				
v/s Ratio Perm												0.14
v/c Ratio					0.58		0.17	0.37				0.27
Uniform Delay, d1					17.6		9.0	10.2				9.6
Progression Factor					1.00		0.34	0.50				1.00
Incremental Delay, d2					1.1		0.3	0.3				0.5
Delay (s)					18.7		3.3	5.4				10.1
Level of Service					B		A	A				B
Approach Delay (s)		0.0			18.7			5.1			10.1	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	40	30
Maximum Split (%)	57.1%	42.9%
Minimum Split (s)	40	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	26.5	16
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	7
End Time (s)	7	37
Yield/Force Off (s)	2.5	32
Yield/Force Off 170(s)	63.5	23
Local Start Time (s)	5	45
Local Yield (s)	40.5	0
Local Yield 170(s)	31.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70
Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow	

Splits and Phases: 10: L St & 5th St



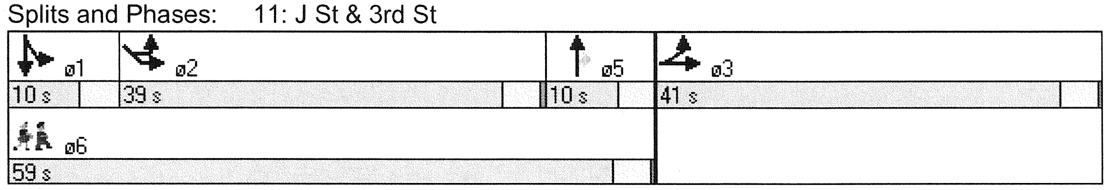
Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		1.00	1.00	1.00	1.00		0.98	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00		1.00	
Frt		0.98		0.92	0.85	1.00	1.00		0.97	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4953		1620	1504	1610	3362		6158	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4953		1620	1504	1610	3362		6158	
Volume (vph)	100	1990	270	40	130	170	220	100	1880	580
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)	100	1990	270	40	130	170	220	100	1880	580
RTOR Reduction (vph)	0	16	0	2	2	0	0	0	0	0
Lane Group Flow (vph)	0	2344	0	90	76	126	264	0	2560	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		37.0		6.5	6.5	6.5	6.5		35.0	
Effective Green, g (s)		37.0		6.0	6.0	6.0	6.0		35.0	
Actuated g/C Ratio		0.37		0.06	0.06	0.06	0.06		0.35	
Clearance Time (s)		4.0		3.5	3.5	3.5	3.5		4.0	
Lane Grp Cap (vph)		1833		97	90	97	202		2155	
v/s Ratio Prot		c0.47		c0.06		0.08	c0.08		c0.42	
v/s Ratio Perm					0.05					
v/c Ratio		1.28		0.93	0.85	1.30	1.31		1.19	
Uniform Delay, d1		31.5		46.8	46.5	47.0	47.0		32.5	
Progression Factor		1.00		1.00	1.00	1.14	1.14		1.00	
Incremental Delay, d2		129.7		73.6	59.2	190.1	168.4		89.6	
Delay (s)		161.2		120.3	105.7	243.9	222.2		122.1	
Level of Service		F		F	F	F	F		F	
Approach Delay (s)		161.2		113.6			229.2		122.1	
Approach LOS		F		F			F		F	

Intersection Summary			
HCM Average Control Delay	146.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	39	41	10	59
Maximum Split (%)	10.0%	39.0%	41.0%	10.0%	59.0%
Minimum Split (s)	7.5	39	41	7.5	59
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		24	26		44
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	35	45	94	84	35
End Time (s)	45	84	35	94	94
Yield/Force Off (s)	41.5	80	31	90.5	90
Yield/Force Off 170(s)	41.5	69	20	90.5	79
Local Start Time (s)	55	65	14	4	55
Local Yield (s)	61.5	0	51	10.5	10
Local Yield 170(s)	61.5	89	40	10.5	99

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	150
Offset: 80 (80%), Referenced to phase 2:SEL, Start of Yellow	

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.96					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6030	1514					3262	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6030	1514					3262	1441			
Volume (vph)	780	3110	380	0	0	0	0	630	570	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	780	3110	380	0	0	0	0	630	570	0	0	0
RTOR Reduction (vph)	48	2	167	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	673	3167	213	0	0	0	0	842	358	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	56.0	56.0	56.0					36.0	36.0			
Effective Green, g (s)	56.0	56.0	56.0					36.0	36.0			
Actuated g/C Ratio	0.56	0.56	0.56					0.36	0.36			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	722	3377	848					1174	519			
v/s Ratio Prot	0.52	c0.53						c0.26				
v/s Ratio Perm			0.14						0.25			
v/c Ratio	0.93	0.94	0.25					0.72	0.69			
Uniform Delay, d1	20.3	20.4	11.3					27.6	27.2			
Progression Factor	0.74	0.75	1.47					1.00	1.00			
Incremental Delay, d2	2.8	0.7	0.1					3.8	7.3			
Delay (s)	17.8	16.1	16.7					31.4	34.6			
Level of Service	B	B	B					C	C			
Approach Delay (s)		16.4			0.0			32.3			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	60	40
Maximum Split (%)	60.0%	40.0%
Minimum Split (s)	60	40
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	44	20
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	43	3
End Time (s)	3	43
Yield/Force Off (s)	99	39
Yield/Force Off 170(s)	87	23
Local Start Time (s)	44	4
Local Yield (s)	0	40
Local Yield 170(s)	88	24

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100
Offset: 99 (99%), Referenced to phase 1:EBTL, Start of Yellow	

Splits and Phases: 12: J St & 5th St

ø1	ø2
60 s	40 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6136		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6136		3433	3362				
Volume (vph)	0	0	0	0	1210	110	200	1160	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	1210	110	200	1160	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	5	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1291	0	195	1160	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					16.5		26.5	26.5				
Effective Green, g (s)					16.0		26.0	26.0				
Actuated g/C Ratio					0.32		0.52	0.52				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					1964		1785	1748				
v/s Ratio Prot					c0.21		0.06	c0.35				
v/s Ratio Perm												
v/c Ratio					0.66		0.11	0.66				
Uniform Delay, d1					14.6		6.1	8.8				
Progression Factor					1.00		1.34	1.40				
Incremental Delay, d2					1.7		0.1	1.0				
Delay (s)					16.4		8.2	13.4				
Level of Service					B		A	B				
Approach Delay (s)		0.0			16.4			12.6			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	117.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	20	30
Maximum Split (%)	40.0%	60.0%
Minimum Split (s)	20	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	5.5	14.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	15.5	35.5
End Time (s)	35.5	15.5
Yield/Force Off (s)	32	12
Yield/Force Off 170(s)	21	0
Local Start Time (s)	33.5	3.5
Local Yield (s)	0	30
Local Yield 170(s)	39	18

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 32 (64%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St

ø1	ø2
20 s	30 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↱		↰	↰↑↑				
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4866		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4866		1522	4806				
Volume (vph)	0	0	0	0	810	210	400	1420	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	810	210	400	1420	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	49	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1014	0	351	1420	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2044		639	2019				
v/s Ratio Prot					c0.21		0.23	c0.30				
v/s Ratio Perm												
v/c Ratio					0.50		0.55	0.70				
Uniform Delay, d1					10.6		10.9	11.9				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.9		3.4	2.1				
Delay (s)					11.5		14.3	14.0				
Level of Service					B		B	B				
Approach Delay (s)		0.0			11.5			14.1			0.0	
Approach LOS		A			B			B			A	

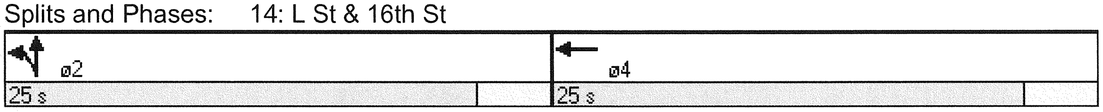
Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		6095									5014	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		6095									5014	
Volume (vph)	0	1120	380	0	0	0	0	0	0	240	600	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1120	380	0	0	0	0	0	0	240	600	0
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	48	0
Lane Group Flow (vph)	0	1465	0	0	0	0	0	0	0	0	792	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		27.5									15.5	
Effective Green, g (s)		27.0									15.0	
Actuated g/C Ratio		0.54									0.30	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3291									1504	
v/s Ratio Prot		c0.24									c0.16	
v/s Ratio Perm												
v/c Ratio		0.45									0.53	
Uniform Delay, d1		7.0									14.5	
Progression Factor		1.00									1.17	
Incremental Delay, d2		0.4									0.1	
Delay (s)		7.4									17.2	
Level of Service		A									B	
Approach Delay (s)		7.4			0.0			0.0			17.2	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	10.9	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	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

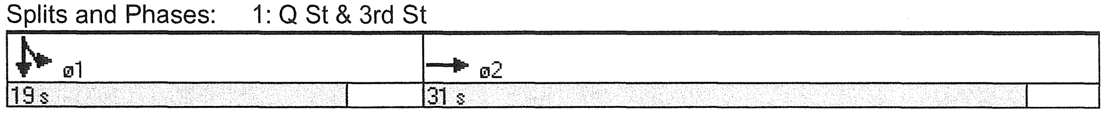
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	22.5	41.5
End Time (s)	41.5	22.5
Yield/Force Off (s)	38	19
Yield/Force Off 170(s)	30	11
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 19 (38%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.97	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.93	0.85
Flt Protected					1.00						1.00	1.00
Satd. Flow (prot)					4901						2910	1205
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					4901						2910	1205
Volume (vph)	0	0	0	170	2710	0	0	0	0	0	670	1080
Peak-hour factor, PHF	1.00	1.00	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	170	2710	0	0	0	0	0	670	1080
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	0	0	0	2866	0	0	0	0	0	1209	539
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2647						873	362
v/s Ratio Prot					c0.58						0.42	
v/s Ratio Perm												c0.45
v/c Ratio					1.08						1.43dr	1.49
Uniform Delay, d1					11.5						17.5	17.5
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					44.7						180.5	234.6
Delay (s)					56.2						198.0	252.1
Level of Service					E						F	F
Approach Delay (s)		0.0			56.2			0.0			214.7	
Approach LOS		A			E			A			F	

Intersection Summary			
HCM Average Control Delay	116.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.5%	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

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	110

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St

ø1	ø2
19 s	31 s

Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.91	
Flt Protected	1.00			0.99	0.98	
Satd. Flow (prot)	1780			5052	3234	
Flt Permitted	1.00			0.99	0.98	
Satd. Flow (perm)	1780			5052	3234	
Volume (vph)	90	20	190	1270	320	430
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	20	190	1270	320	430
RTOR Reduction (vph)	12	0	0	28	0	0
Lane Group Flow (vph)	98	0	0	1432	750	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			32.5	14.5	
Effective Green, g (s)	12.0			32.0	14.0	
Actuated g/C Ratio	0.17			0.46	0.20	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2309	647	
v/s Ratio Prot	c0.06			c0.28	c0.23	
v/s Ratio Perm						
v/c Ratio	0.32			0.62	1.34dr	
Uniform Delay, d1	25.4			14.4	28.0	
Progression Factor	1.00			1.36	1.00	
Incremental Delay, d2	2.8			0.5	88.1	
Delay (s)	28.2			20.0	116.1	
Level of Service	C			B	F	
Approach Delay (s)	28.2			20.0	116.1	
Approach LOS	C			B	F	

Intersection Summary			
HCM Average Control Delay	51.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

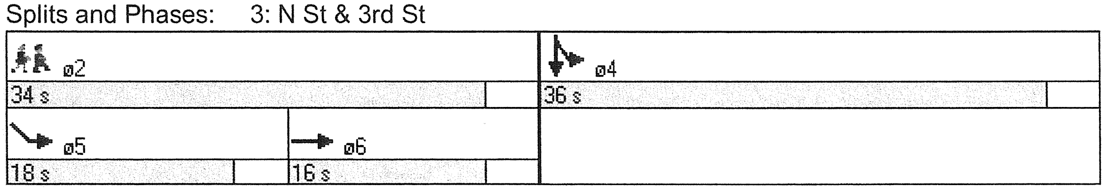
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	36	18	16
Maximum Split (%)	48.6%	51.4%	25.7%	22.9%
Minimum Split (s)	34	36	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	19.5	23.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12.5	46.5	12.5	30.5
End Time (s)	46.5	12.5	30.5	46.5
Yield/Force Off (s)	43	9	27	43
Yield/Force Off 170(s)	32	0	27	35
Local Start Time (s)	3.5	37.5	3.5	21.5
Local Yield (s)	34	0	18	34
Local Yield 170(s)	23	61	18	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	75

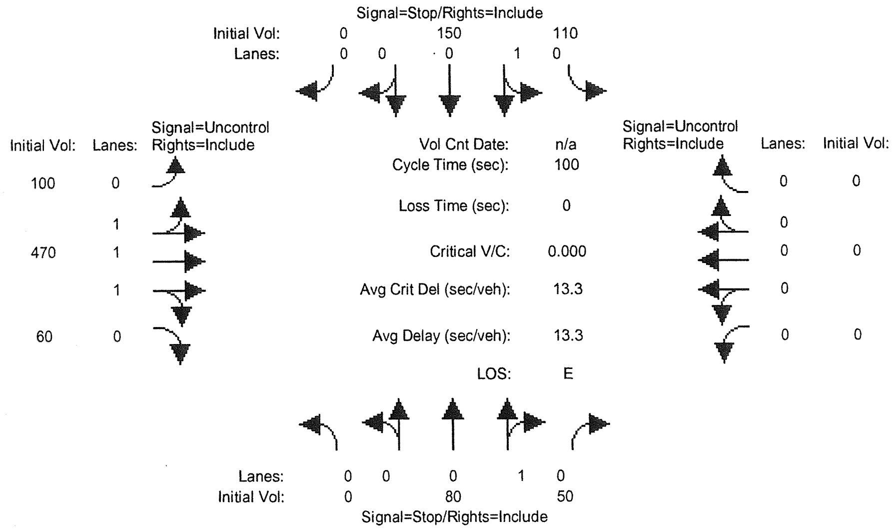
Offset: 9 (13%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
2025 PM

Intersection #4: N St./4th St.



Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	80	50	110	150	0	100	470	60	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	80	50	110	150	0	100	470	60	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	80	50	110	150	0	100	470	60	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	80	50	110	150	0	100	470	60	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	80	50	110	150	0	100	470	60	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	715	187	412	745	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	359	861	554	345	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	330	861	398	317	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.24	0.06	0.28	0.47	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	432	347	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	1.2	5.8	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	16.9	40.7	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	E	*	*	A	*	*	*	*	*
ApproachDel:		16.9			40.7			xxxxxx			xxxxxx	
ApproachLOS:		C			E			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5049						4895				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5049						4895				
Volume (vph)	90	540	0	0	0	0	0	1090	250	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	540	0	0	0	0	0	1090	250	0	0	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	53	0	0	0	0
Lane Group Flow (vph)	0	608	0	0	0	0	0	1287	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2236						2168				
v/s Ratio Prot		c0.12						c0.26				
v/s Ratio Perm												
v/c Ratio		0.27						0.59				
Uniform Delay, d1		12.4						14.7				
Progression Factor		1.42						1.00				
Incremental Delay, d2		0.2						1.2				
Delay (s)		17.8						15.9				
Level of Service		B						B				
Approach Delay (s)		17.8			0.0			15.9			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						0.93	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		5022		1770	3539						5934	
Flt Permitted		1.00		0.95	1.00						1.00	
Satd. Flow (perm)		5022		1770	3539						5934	
Volume (vph)	0	730	40	330	700	0	0	0	0	90	1100	1100
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	730	40	330	700	0	0	0	0	90	1100	1100
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	111	0
Lane Group Flow (vph)	0	761	0	330	700	0	0	0	0	0	2179	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		16.0		16.5	36.0						25.5	
Effective Green, g (s)		15.5		16.0	35.5						26.5	
Actuated g/C Ratio		0.22		0.23	0.51						0.38	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		1112		405	1795						2246	
v/s Ratio Prot		c0.15		c0.19	0.20						c0.37	
v/s Ratio Perm												
v/c Ratio		0.68		0.81	0.39						1.53dr	
Uniform Delay, d1		25.0		25.6	10.6						21.4	
Progression Factor		1.00		0.52	0.88						0.78	
Incremental Delay, d2		3.4		15.4	0.6						6.4	
Delay (s)		28.4		28.8	9.9						23.2	
Level of Service		C		C	A						C	
Approach Delay (s)		28.4			16.0			0.0			23.2	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	22.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

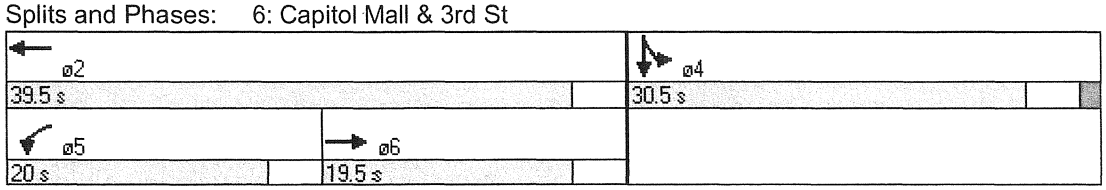
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	39.5	30.5	20	19.5
Maximum Split (%)	56.4%	43.6%	28.6%	27.9%
Minimum Split (s)	39.5	30.5	7.5	19.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	26	20.5		6
Flash Dont Walk (s)	10	5		10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	18.5	58	18.5	38.5
End Time (s)	58	18.5	38.5	58
Yield/Force Off (s)	54.5	13.5	35	54.5
Yield/Force Off 170(s)	44.5	8.5	35	44.5
Local Start Time (s)	53.5	23	53.5	3.5
Local Yield (s)	19.5	48.5	0	19.5
Local Yield 170(s)	9.5	43.5	0	9.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	75

Offset: 35 (50%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		0.91			1.00			1.00	
Frpb, ped/bikes		1.00	0.87		0.99			0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			0.98			0.99	
Frt		1.00	0.85		0.99			0.98			0.99	
Flt Protected		1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)		3536	1380		5024			1577			1602	
Flt Permitted		0.94	1.00		0.93			0.87			0.89	
Satd. Flow (perm)		3333	1380		4688			1386			1436	
Volume (vph)	10	770	40	10	940	40	70	130	30	50	140	20
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	770	40	10	940	40	70	130	30	50	140	20
RTOR Reduction (vph)	0	0	19	0	7	0	0	8	0	0	5	0
Lane Group Flow (vph)	0	780	21	0	984	0	0	222	0	0	205	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)		37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio		0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)		3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)		1786	739		2511			485			503	
v/s Ratio Prot												
v/s Ratio Perm		c0.23	0.02		0.21			c0.16			0.14	
v/c Ratio		0.44	0.03		0.39			0.46			0.41	
Uniform Delay, d1		9.8	7.7		9.5			17.6			17.2	
Progression Factor		1.21	1.69		0.20			0.79			1.00	
Incremental Delay, d2		0.5	0.0		0.4			2.9			1.9	
Delay (s)		12.4	13.0		2.3			16.8			19.1	
Level of Service		B	B		A			B			B	
Approach Delay (s)		12.5			2.3			16.8			19.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

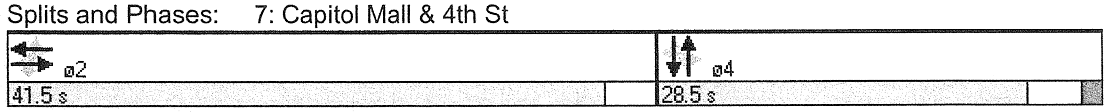
c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑↱		↰↰	↑↑↱				
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.98				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4971		3433	4943				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4971		3433	4943				
Volume (vph)	410	440	0	0	660	70	330	840	100	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	410	440	0	0	660	70	330	840	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	21	0	0	0	0
Lane Group Flow (vph)	410	440	0	0	711	0	330	919	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1278		1275	1836				
v/s Ratio Prot	c0.12	0.12			c0.14		0.10	c0.19				
v/s Ratio Perm												
v/c Ratio	0.60	0.24			0.56		0.26	0.50				
Uniform Delay, d1	25.4	9.4			22.5		15.3	17.0				
Progression Factor	0.77	0.21			1.00		0.46	0.41				
Incremental Delay, d2	3.5	0.3			1.8		0.4	0.8				
Delay (s)	23.2	2.3			24.3		7.4	7.8				
Level of Service	C	A			C		A	A				
Approach Delay (s)		12.4			24.3			7.7			0.0	
Approach LOS		B			C			A			A	

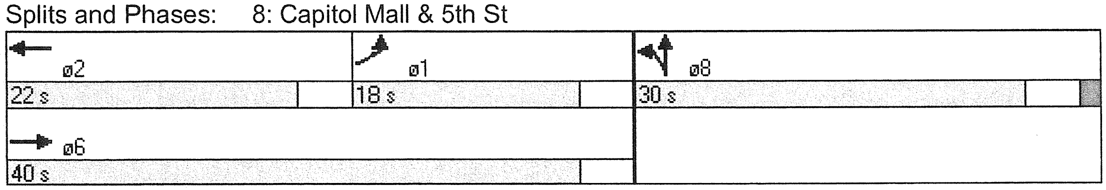
Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱					↑↑↱	
Ideal Flow (vphpl)	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	0.91	1.00					0.91	
Frt				1.00	1.00	0.85					0.99	
Flt Protected				0.95	0.99	1.00					1.00	
Satd. Flow (prot)				1610	3361	1583					5037	
Flt Permitted				0.95	0.99	1.00					1.00	
Satd. Flow (perm)				1610	3361	1583					5037	
Volume (vph)	0	0	0	1100	1410	340	0	0	0	0	1180	80
Peak-hour factor, PHF	1.00	1.00	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	1100	1410	340	0	0	0	0	1180	80
RTOR Reduction (vph)	0	0	0	0	0	117	0	0	0	0	11	0
Lane Group Flow (vph)	0	0	0	808	1702	223	0	0	0	0	1249	0
Turn Type				custom		custom						
Protected Phases											4	
Permitted Phases				2	2	2						
Actuated Green, G (s)				46.5	46.5	46.5					16.5	
Effective Green, g (s)				46.0	46.0	46.0					16.0	
Actuated g/C Ratio				0.66	0.66	0.66					0.23	
Clearance Time (s)				3.5	3.5	3.5					3.5	
Lane Grp Cap (vph)				1058	2209	1040					1151	
v/s Ratio Prot											c0.25	
v/s Ratio Perm				0.50	c0.51	0.14						
v/c Ratio				0.76	0.77	0.21					1.09	
Uniform Delay, d1				8.3	8.3	4.8					27.0	
Progression Factor				0.66	0.64	0.46					1.00	
Incremental Delay, d2				4.5	2.3	0.4					52.8	
Delay (s)				10.0	7.6	2.6					79.8	
Level of Service				A	A	A					E	
Approach Delay (s)		0.0			7.7			0.0			79.8	
Approach LOS		A			A			A			E	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

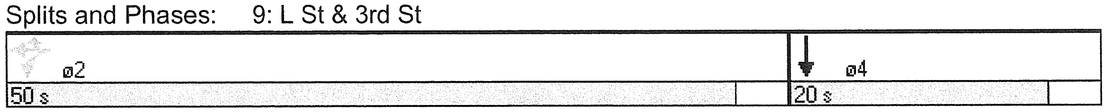
c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	50	20
Maximum Split (%)	71.4%	28.6%
Minimum Split (s)	7.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		8.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	66.5	46.5
End Time (s)	46.5	66.5
Yield/Force Off (s)	43	63
Yield/Force Off 170(s)	43	55
Local Start Time (s)	3.5	53.5
Local Yield (s)	50	0
Local Yield 170(s)	50	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	60

Offset: 63 (90%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					1.00		1.00	1.00				0.93
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6287		1770	5085				2585
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6287		1770	5085				2585
Volume (vph)	0	0	0	0	2020	220	440	880	0	0	0	240
Peak-hour factor, PHF	1.00	1.00	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	2020	220	440	880	0	0	0	240
RTOR Reduction (vph)	0	0	0	0	8	0	6	0	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	2232	0	434	880	0	0	0	232
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					40.0		20.5	20.5				20.5
Effective Green, g (s)					41.0		21.0	21.0				21.0
Actuated g/C Ratio					0.59		0.30	0.30				0.30
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					3682		531	1526				776
v/s Ratio Prot					c0.35		c0.25	0.17				
v/s Ratio Perm												0.09
v/c Ratio					0.61		0.82	0.58				0.30
Uniform Delay, d1					9.3		22.7	20.7				18.8
Progression Factor					1.00		0.77	0.78				1.00
Incremental Delay, d2					0.7		11.3	1.4				1.0
Delay (s)					10.1		28.8	17.6				19.8
Level of Service					B		C	B				B
Approach Delay (s)		0.0			10.1			21.3			19.8	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		

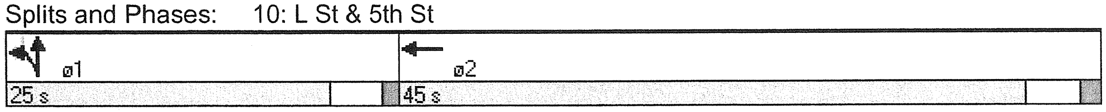
c Critical Lane Group

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	45
Maximum Split (%)	35.7%	64.3%
Minimum Split (s)	25	45
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	11.5	31
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	62
End Time (s)	62	37
Yield/Force Off (s)	57.5	32
Yield/Force Off 170(s)	48.5	23
Local Start Time (s)	5	30
Local Yield (s)	25.5	0
Local Yield 170(s)	16.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.95	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4920		1678	1504	1610	3365		6089	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4920		1678	1504	1610	3365		6089	
Volume (vph)	70	790	120	120	220	380	520	80	1610	620
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)	70	790	120	120	220	380	520	80	1610	620
RTOR Reduction (vph)	0	18	0	13	13	0	0	0	0	0
Lane Group Flow (vph)	0	962	0	170	144	290	610	0	2310	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		23.0		12.0	12.0	17.5	17.5		32.0	
Effective Green, g (s)		23.0		12.0	12.0	17.0	17.0		32.0	
Actuated g/C Ratio		0.23		0.12	0.12	0.17	0.17		0.32	
Clearance Time (s)		4.0		4.0	4.0	3.5	3.5		4.0	
Lane Grp Cap (vph)		1132		201	180	274	572		1948	
v/s Ratio Prot		c0.20		c0.10		0.18	c0.18		c0.38	
v/s Ratio Perm					0.10					
v/c Ratio		0.85		0.84	0.80	1.06	1.07		1.29dr	
Uniform Delay, d1		36.8		43.1	42.8	41.5	41.5		34.0	
Progression Factor		1.00		1.00	1.00	0.94	0.95		1.00	
Incremental Delay, d2		8.1		33.1	29.9	70.1	56.2		89.2	
Delay (s)		44.9		76.2	72.7	109.3	95.5		123.2	
Level of Service		D		E	E	F	F		F	
Approach Delay (s)		44.9		74.6			99.9		123.2	
Approach LOS		D		E			F		F	

Intersection Summary			
HCM Average Control Delay	98.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

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

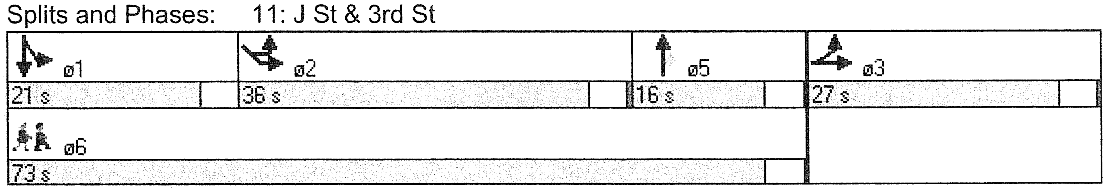
c Critical Lane Group

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	21	36	27	16	73
Maximum Split (%)	21.0%	36.0%	27.0%	16.0%	73.0%
Minimum Split (s)	7.5	36	27	8	73
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		21	12		58
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	85	6	58	42	85
End Time (s)	6	42	85	58	58
Yield/Force Off (s)	2.5	38	81	54	54
Yield/Force Off 170(s)	2.5	27	70	54	43
Local Start Time (s)	47	68	20	4	47
Local Yield (s)	64.5	0	43	16	16
Local Yield 170(s)	64.5	89	32	16	5

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	120

Offset: 38 (38%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.95					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1498					3264	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1498					3264	1441			
Volume (vph)	550	2330	240	0	0	0	0	580	520	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	550	2330	240	0	0	0	0	580	520	0	0	0
RTOR Reduction (vph)	103	0	139	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	447	2330	101	0	0	0	0	772	328	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	21.0	21.0	21.0					21.0	21.0			
Effective Green, g (s)	21.0	21.0	21.0					21.0	21.0			
Actuated g/C Ratio	0.42	0.42	0.42					0.42	0.42			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	542	2535	629					1371	605			
v/s Ratio Prot	0.35	c0.39						c0.24				
v/s Ratio Perm			0.07						0.23			
v/c Ratio	0.82	0.92	0.16					0.56	0.54			
Uniform Delay, d1	12.9	13.7	9.0					11.0	10.9			
Progression Factor	0.77	0.82	0.60					1.00	1.00			
Incremental Delay, d2	1.4	0.7	0.0					1.7	3.5			
Delay (s)	11.3	11.9	5.5					12.7	14.4			
Level of Service	B	B	A					B	B			
Approach Delay (s)		11.3			0.0			13.2			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

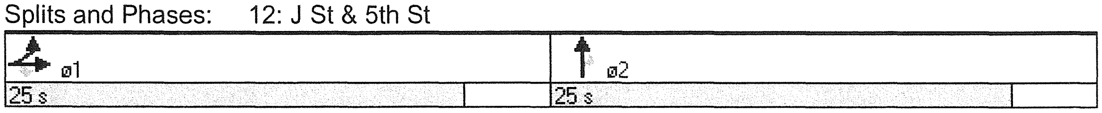
c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	25	25
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	28	3
End Time (s)	3	28
Yield/Force Off (s)	49	24
Yield/Force Off 170(s)	37	8
Local Start Time (s)	29	4
Local Yield (s)	0	25
Local Yield 170(s)	38	9

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	60

Offset: 49 (98%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6224		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6224		3433	3362				
Volume (vph)	0	0	0	0	2940	60	570	560	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	2940	60	570	560	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	7	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2997	0	563	560	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					75.5		17.5	17.5				
Effective Green, g (s)					75.0		17.0	17.0				
Actuated g/C Ratio					0.75		0.17	0.17				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					4668		584	572				
v/s Ratio Prot					c0.48		0.16	c0.17				
v/s Ratio Perm												
v/c Ratio					0.64		0.96	0.98				
Uniform Delay, d1					6.0		41.2	41.3				
Progression Factor					1.00		1.04	1.04				
Incremental Delay, d2					0.7		23.3	26.7				
Delay (s)					6.7		66.1	69.6				
Level of Service					A		E	E				
Approach Delay (s)		0.0			6.7			67.9			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	129.5%	ICU Level of Service	H
Analysis Period (min)	15		

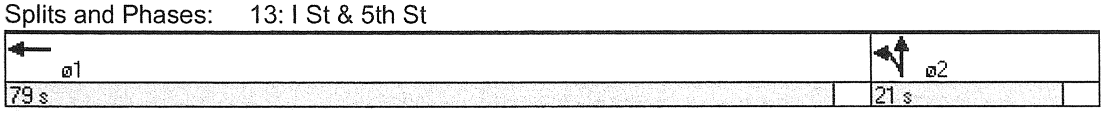
c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	79	21
Maximum Split (%)	79.0%	21.0%
Minimum Split (s)	79	21
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	64.5	5.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	44.5	23.5
End Time (s)	23.5	44.5
Yield/Force Off (s)	20	41
Yield/Force Off 170(s)	9	29
Local Start Time (s)	24.5	3.5
Local Yield (s)	0	21
Local Yield 170(s)	89	9

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 20 (20%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4858		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4858		1522	4806				
Volume (vph)	0	0	0	0	880	240	330	1730	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	880	240	330	1730	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	38	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1118	0	292	1730	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2040		639	2019				
v/s Ratio Prot					c0.23		0.19	c0.36				
v/s Ratio Perm												
v/c Ratio					0.55		0.46	0.86				
Uniform Delay, d1					10.9		10.4	13.1				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					1.1		2.3	5.0				
Delay (s)					12.0		12.7	18.1				
Level of Service					B		B	B				
Approach Delay (s)		0.0			12.0			17.2			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St

ø2	ø4
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↱									↰↑↑	
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		0.86									0.91	
Frpb, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		5973									4984	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		5973									4984	
Volume (vph)	0	2410	1050	0	0	0	0	0	0	234	340	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2410	1050	0	0	0	0	0	0	234	340	0
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	3423	0	0	0	0	0	0	0	0	566	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		71.5									21.5	
Effective Green, g (s)		71.0									21.0	
Actuated g/C Ratio		0.71									0.21	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		4241									1047	
v/s Ratio Prot		c0.57									c0.11	
v/s Ratio Perm												
v/c Ratio		0.96dr									0.54	
Uniform Delay, d1		9.8									35.2	
Progression Factor		1.00									0.82	
Incremental Delay, d2		1.7									1.8	
Delay (s)		11.6									30.7	
Level of Service		B									C	
Approach Delay (s)		11.6			0.0			0.0			30.7	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

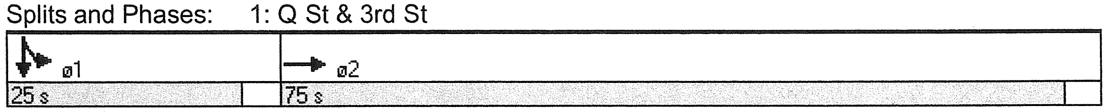
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	75
Maximum Split (%)	25.0%	75.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	90.5	15.5
End Time (s)	15.5	90.5
Yield/Force Off (s)	12	87
Yield/Force Off 170(s)	4	79
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	92

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	60

Offset: 87 (87%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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
Frpb, ped/bikes					1.00						0.98	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.97	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					4863						3071	1205
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					4863						3071	1205
Volume (vph)	0	0	0	170	620	0	0	0	0	0	404	379
Peak-hour factor, PHF	1.00	1.00	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	170	620	0	0	0	0	0	404	379
RTOR Reduction (vph)	0	0	0	0	78	0	0	0	0	0	46	171
Lane Group Flow (vph)	0	0	0	0	712	0	0	0	0	0	468	99
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2626						921	362
v/s Ratio Prot					c0.15						c0.15	
v/s Ratio Perm												0.08
v/c Ratio					0.27						0.51	0.27
Uniform Delay, d1					6.2						14.5	13.3
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.3						2.0	1.9
Delay (s)					6.5						16.4	15.2
Level of Service					A						B	B
Approach Delay (s)		0.0			6.5			0.0			16.0	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

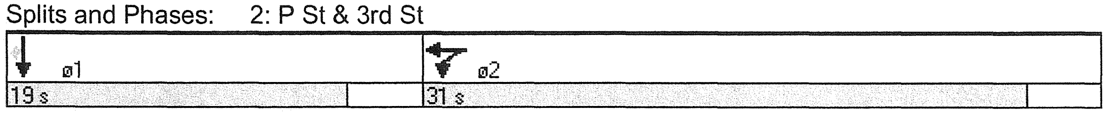
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.96	
Flt Protected	1.00			0.98	0.96	
Satd. Flow (prot)	1780			4980	3347	
Flt Permitted	1.00			0.98	0.96	
Satd. Flow (perm)	1780			4980	3347	
Volume (vph)	90	20	405	552	470	170
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	20	405	552	470	170
RTOR Reduction (vph)	12	0	0	164	0	0
Lane Group Flow (vph)	98	0	0	793	640	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			29.5	17.5	
Effective Green, g (s)	12.0			29.0	17.0	
Actuated g/C Ratio	0.17			0.41	0.24	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2063	813	
v/s Ratio Prot	c0.06			c0.16	c0.19	
v/s Ratio Perm						
v/c Ratio	0.32			0.38	0.79	
Uniform Delay, d1	25.4			14.3	24.8	
Progression Factor	1.00			0.96	1.00	
Incremental Delay, d2	2.8			0.3	7.6	
Delay (s)	28.2			14.1	32.4	
Level of Service	C			B	C	
Approach Delay (s)	28.2			14.1	32.4	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

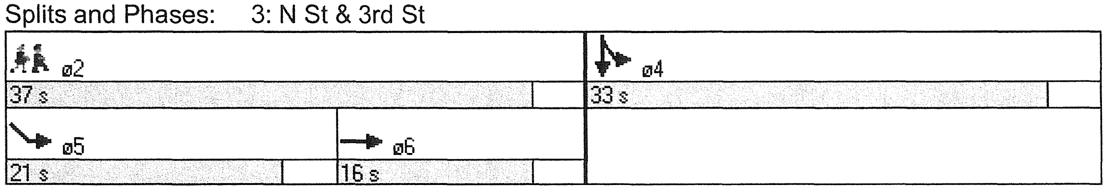
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	37	33	21	16
Maximum Split (%)	52.9%	47.1%	30.0%	22.9%
Minimum Split (s)	37	33	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	22.5	20.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	57.5	20.5	41.5
End Time (s)	57.5	20.5	41.5	57.5
Yield/Force Off (s)	54	17	38	54
Yield/Force Off 170(s)	43	8	38	46
Local Start Time (s)	3.5	40.5	3.5	24.5
Local Yield (s)	37	0	21	37
Local Yield 170(s)	26	61	21	29

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 17 (24%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
2025+Project AM

Intersection #4: N St./4th St.

Signal=Stop/Rights=Include
Initial Vol: 0 50 58
Lanes: 0 0 0 1 0

Initial Vol:	Lanes:	Signal=Uncontrol Rights=Include			Signal=Uncontrol Rights=Include	Lanes:	Initial Vol:
20	0		Vol Cnt Date:	n/a		0	0
			Cycle Time (sec):	100			
	1		Loss Time (sec):	0		0	
845	1		Critical V/C:	0.000		0	0
	1		Avg Crit Del (sec/veh):	3.3		0	
100	0		Avg Delay (sec/veh):	3.3		0	0
			LOS:	C			

Lanes: 0 0 0 1 0
Initial Vol: 0 40 40
Signal=Stop/Rights=Include

Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	40	40	58	50	0	20	845	100	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	40	40	58	50	0	20	845	100	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	40	40	58	50	0	20	845	100	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	40	40	58	50	0	20	845	100	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	40	40	58	50	0	20	845	100	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	950	332	357	1000	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	262	715	602	245	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	255	715	489	239	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.16	0.06	0.12	0.21	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	376	329	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.8	1.4	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	17.1	21.2	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	C	*	*	A	*	*	*	*	*
ApproachDel:		17.1			21.2			xxxxxx			xxxxxx	
ApproachLOS:		C			C			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		5066						4866				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		5066						4866				
Volume (vph)	70	873	0	0	0	0	0	1059	290	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	873	0	0	0	0	0	1059	290	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	44	0	0	0	0
Lane Group Flow (vph)	0	930	0	0	0	0	0	1305	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2244						2155				
v/s Ratio Prot		c0.18						c0.27				
v/s Ratio Perm												
v/c Ratio		0.41						0.61				
Uniform Delay, d1		13.3						14.8				
Progression Factor		1.03						1.00				
Incremental Delay, d2		0.5						1.3				
Delay (s)		14.2						16.1				
Level of Service		B						B				
Approach Delay (s)		14.2			0.0			16.1			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

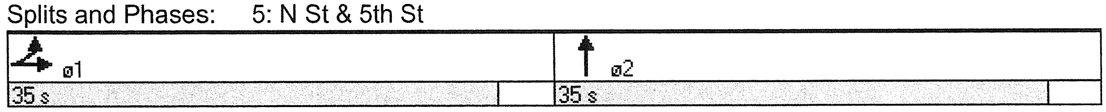
c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↱					↰	↑↱	
Ideal Flow (vphpl)	1900	1900	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		1.00	0.95					1.00	0.95	
Frpb, 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	0.99		1.00	1.00					1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	5045		1770	3530					1593	3349	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	5045		1770	3530					1593	3349	
Volume (vph)	49	1049	40	120	485	9	0	0	0	391	777	435
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	1049	40	120	485	9	0	0	0	391	777	435
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	0	0	110	0
Lane Group Flow (vph)	49	1083	0	120	492	0	0	0	0	391	1102	0
Confl. Peds. (#/hr)			60						60			
Parking (#/hr)										0		
Turn Type	Prot			Prot						Split		
Protected Phases	1	6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)	6.5	22.0		8.0	23.5					28.0	28.0	
Effective Green, g (s)	6.0	21.5		7.5	23.0					29.0	29.0	
Actuated g/C Ratio	0.09	0.31		0.11	0.33					0.41	0.41	
Clearance Time (s)	3.5	3.5		3.5	3.5					5.0	5.0	
Lane Grp Cap (vph)	152	1550		190	1160					660	1387	
v/s Ratio Prot	0.03	c0.21		c0.07	0.14					0.25	c0.33	
v/s Ratio Perm												
v/c Ratio	0.32	0.70		0.63	0.42					0.59	0.79	
Uniform Delay, d1	30.1	21.4		29.9	18.3					15.9	17.9	
Progression Factor	1.00	1.00		1.57	0.35					0.78	0.75	
Incremental Delay, d2	5.5	2.6		14.5	1.1					3.0	3.7	
Delay (s)	35.6	24.0		61.4	7.5					15.4	17.2	
Level of Service	D	C		E	A					B	B	
Approach Delay (s)		24.5			18.0			0.0			16.8	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

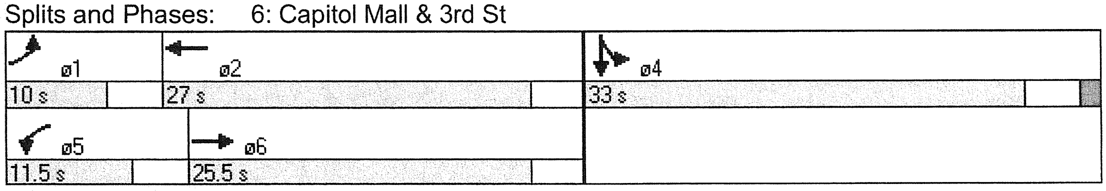
c Critical Lane Group

Phase Number	1	2	4	5	6
Movement	EBL	WBT	SBTL	WBL	EBT
Lead/Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	27	33	11.5	25.5
Maximum Split (%)	14.3%	38.6%	47.1%	16.4%	36.4%
Minimum Split (s)	8	27	33	7.5	25.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	1.5	0	0
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		11.5	10		10
Flash Dont Walk (s)		12	18		12
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	58	68	25	58	69.5
End Time (s)	68	25	58	69.5	25
Yield/Force Off (s)	64.5	21.5	53	66	21.5
Yield/Force Off 170(s)	64.5	9.5	35	66	9.5
Local Start Time (s)	62	2	29	62	3.5
Local Yield (s)	68.5	25.5	57	0	25.5
Local Yield 170(s)	68.5	13.5	39	0	13.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 66 (94%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.87		0.99			0.96			0.97	
Flpb, ped/bikes	0.95	1.00	1.00		1.00			0.99			0.98	
Frt	1.00	1.00	0.85		0.98			0.95			0.96	
Flt Protected	0.95	1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)	1687	3539	1380		4921			1498			1535	
Flt Permitted	0.40	1.00	1.00		0.92			0.93			0.94	
Satd. Flow (perm)	718	3539	1380		4536			1413			1452	
Volume (vph)	55	1185	200	10	529	69	10	20	20	55	148	75
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	1185	200	10	529	69	10	20	20	55	148	75
RTOR Reduction (vph)	0	0	93	0	23	0	0	13	0	0	19	0
Lane Group Flow (vph)	55	1185	107	0	585	0	0	37	0	0	259	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)	38.0	38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)	37.5	37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio	0.54	0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)	3.5	3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)	385	1896	739		2430			495			508	
v/s Ratio Prot		c0.33										
v/s Ratio Perm	0.08		0.08		0.13			0.03			c0.18	
v/c Ratio	0.14	0.62	0.14		0.24			0.07			0.51	
Uniform Delay, d1	8.2	11.3	8.2		8.7			15.2			18.0	
Progression Factor	0.62	0.66	0.24		0.52			0.90			0.83	
Incremental Delay, d2	0.6	1.2	0.3		0.2			0.3			3.5	
Delay (s)	5.6	8.7	2.3		4.7			14.0			18.4	
Level of Service	A	A	A		A			B			B	
Approach Delay (s)		7.7			4.7			14.0			18.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St

ø2	ø4
41.5 s	28.5 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.98		1.00	0.95				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.94				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4817		3433	4567				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4817		3433	4567				
Volume (vph)	582	678	0	0	170	50	439	460	300	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	582	678	0	0	170	50	439	460	300	0	0	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	122	0	0	0	0
Lane Group Flow (vph)	582	678	0	0	183	0	439	638	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1239		1275	1696				
v/s Ratio Prot	c0.17	c0.19			0.04		0.13	c0.14				
v/s Ratio Perm												
v/c Ratio	0.85	0.37			0.15		0.34	0.38				
Uniform Delay, d1	27.0	10.2			20.1		15.9	16.1				
Progression Factor	0.47	0.23			1.00		0.41	0.24				
Incremental Delay, d2	10.0	0.5			0.3		0.6	0.5				
Delay (s)	22.6	2.8			20.3		7.1	4.4				
Level of Service	C	A			C		A	A				
Approach Delay (s)		11.9			20.3			5.4			0.0	
Approach LOS		B			C			A			A	

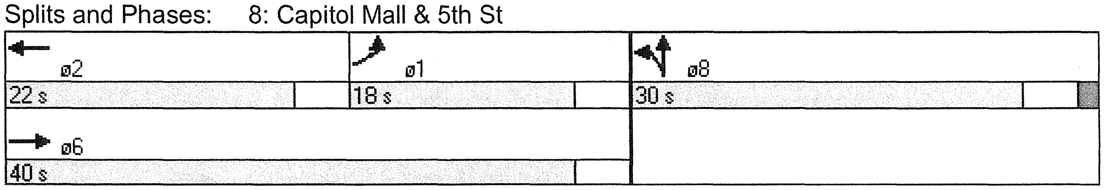
Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	55

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱	↰	↑			↑↱	
Ideal Flow (vphpl)	1900	1900	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				0.91	0.91	1.00	1.00	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.99	
Flt Protected				0.95	0.99	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1610	3358	1583	1770	1863			3515	
Flt Permitted				0.95	0.99	1.00	0.13	1.00			1.00	
Satd. Flow (perm)				1610	3358	1583	248	1863			3515	
Volume (vph)	0	0	0	498	600	180	29	30	0	0	1052	50
Peak-hour factor, PHF	1.00	1.00	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	498	600	180	29	30	0	0	1052	50
RTOR Reduction (vph)	0	0	0	0	0	98	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	0	354	744	82	29	30	0	0	1097	0
Turn Type				custom		custom	custom					
Protected Phases											4	
Permitted Phases				2	2	2	8	8				
Actuated Green, G (s)				32.5	32.5	32.5	30.5	30.5			30.5	
Effective Green, g (s)				32.0	32.0	32.0	30.0	30.0			30.0	
Actuated g/C Ratio				0.46	0.46	0.46	0.43	0.43			0.43	
Clearance Time (s)				3.5	3.5	3.5	3.5	3.5			3.5	
Lane Grp Cap (vph)				736	1535	724	106	798			1506	
v/s Ratio Prot											c0.31	
v/s Ratio Perm				0.22	c0.22	0.05	0.12	0.02				
v/c Ratio				0.48	0.48	0.11	0.27	0.04			0.73	
Uniform Delay, d1				13.2	13.3	10.9	12.9	11.6			16.6	
Progression Factor				0.83	0.83	0.40	0.38	0.07			1.00	
Incremental Delay, d2				2.2	1.1	0.3	6.0	0.1			3.1	
Delay (s)				13.2	12.1	4.7	11.0	0.9			19.7	
Level of Service				B	B	A	B	A			B	
Approach Delay (s)		0.0			11.3			5.8			19.7	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

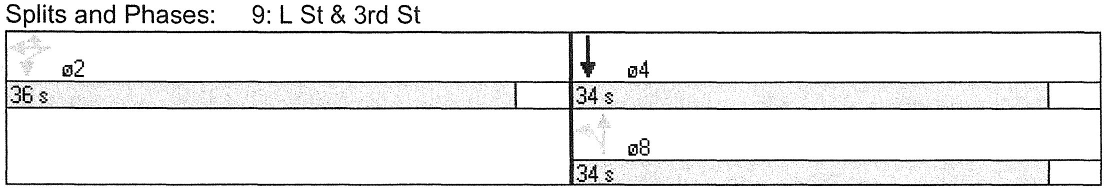
c Critical Lane Group

Phase Number	2	4	8
Movement	WBTL	SBT	NBTL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	Max	Max	Max
Maximum Split (s)	36	34	34
Maximum Split (%)	51.4%	48.6%	48.6%
Minimum Split (s)	7.5	7.5	34
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	0	0	0
Minimum Initial (s)	4	4	4
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			18.5
Flash Dont Walk (s)			12
Dual Entry	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	32.5	68.5	68.5
End Time (s)	68.5	32.5	32.5
Yield/Force Off (s)	65	29	29
Yield/Force Off 170(s)	65	29	17
Local Start Time (s)	3.5	39.5	39.5
Local Yield (s)	36	0	0
Local Yield 170(s)	36	0	58

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	60

Offset: 29 (41%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					0.99		1.00	1.00				0.95
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.97		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6177		1770	5085				2656
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6177		1770	5085				2656
Volume (vph)	0	0	0	0	1156	240	160	932	0	0	0	380
Peak-hour factor, PHF	1.00	1.00	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	1156	240	160	932	0	0	0	380
RTOR Reduction (vph)	0	0	0	0	53	0	8	0	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1343	0	152	932	0	0	0	372
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					25.0		35.5	35.5				35.5
Effective Green, g (s)					26.0		36.0	36.0				36.0
Actuated g/C Ratio					0.37		0.51	0.51				0.51
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					2294		910	2615				1366
v/s Ratio Prot					c0.22		0.09	c0.18				
v/s Ratio Perm												0.14
v/c Ratio					0.59		0.17	0.36				0.27
Uniform Delay, d1					17.7		9.0	10.1				9.6
Progression Factor					1.00		0.34	0.49				1.00
Incremental Delay, d2					1.1		0.3	0.3				0.5
Delay (s)					18.8		3.4	5.3				10.1
Level of Service					B		A	A				B
Approach Delay (s)		0.0			18.8			5.0			10.1	
Approach LOS		A			B			A			B	

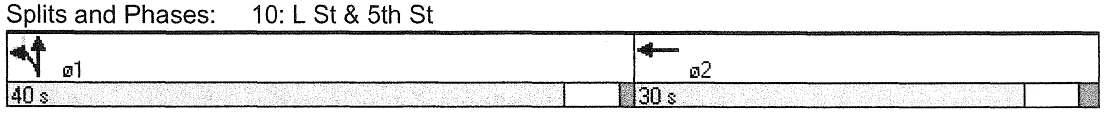
Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	40	30
Maximum Split (%)	57.1%	42.9%
Minimum Split (s)	40	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	26.5	16
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	7
End Time (s)	7	37
Yield/Force Off (s)	2.5	32
Yield/Force Off 170(s)	63.5	23
Local Start Time (s)	5	45
Local Yield (s)	40.5	0
Local Yield 170(s)	31.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		1.00	1.00	1.00	1.00		0.98	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00		1.00	
Frt		0.98		0.92	0.85	1.00	1.00		0.97	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4953		1620	1504	1610	3362		6157	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4953		1620	1504	1610	3362		6157	
Volume (vph)	100	2012	273	40	130	170	220	100	1901	587
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)	100	2012	273	40	130	170	220	100	1901	587
RTOR Reduction (vph)	0	16	0	2	2	0	0	0	0	0
Lane Group Flow (vph)	0	2369	0	90	76	126	264	0	2588	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		37.0		6.5	6.5	6.5	6.5		35.0	
Effective Green, g (s)		37.0		6.0	6.0	6.0	6.0		35.0	
Actuated g/C Ratio		0.37		0.06	0.06	0.06	0.06		0.35	
Clearance Time (s)		4.0		3.5	3.5	3.5	3.5		4.0	
Lane Grp Cap (vph)		1833		97	90	97	202		2155	
v/s Ratio Prot		c0.48		c0.06		0.08	c0.08		c0.42	
v/s Ratio Perm					0.05					
v/c Ratio		1.29		0.93	0.85	1.30	1.31		1.20	
Uniform Delay, d1		31.5		46.8	46.5	47.0	47.0		32.5	
Progression Factor		1.00		1.00	1.00	1.09	1.08		1.00	
Incremental Delay, d2		135.7		73.6	59.2	191.0	168.9		95.2	
Delay (s)		167.2		120.3	105.7	242.0	219.9		127.7	
Level of Service		F		F	F	F	F		F	
Approach Delay (s)		167.2		113.6			227.0		127.7	
Approach LOS		F		F			F		F	

Intersection Summary			
HCM Average Control Delay	151.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

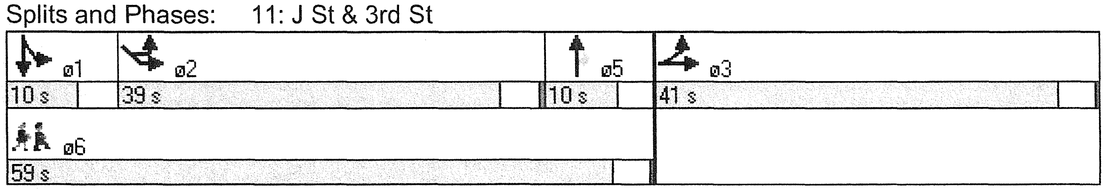
c Critical Lane Group

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	39	41	10	59
Maximum Split (%)	10.0%	39.0%	41.0%	10.0%	59.0%
Minimum Split (s)	7.5	39	41	7.5	59
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		24	26		44
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	35	45	94	84	35
End Time (s)	45	84	35	94	94
Yield/Force Off (s)	41.5	80	31	90.5	90
Yield/Force Off 170(s)	41.5	69	20	90.5	79
Local Start Time (s)	55	65	14	4	55
Local Yield (s)	61.5	0	51	10.5	10
Local Yield 170(s)	61.5	89	40	10.5	99

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	140

Offset: 80 (80%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↑↑↑	↱					↑↱	↱			
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.96					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6030	1514					3254	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6030	1514					3254	1441			
Volume (vph)	780	3110	380	0	0	0	0	602	570	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	780	3110	380	0	0	0	0	602	570	0	0	0
RTOR Reduction (vph)	53	2	167	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	668	3167	213	0	0	0	0	822	350	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	56.0	56.0	56.0					36.0	36.0			
Effective Green, g (s)	56.0	56.0	56.0					36.0	36.0			
Actuated g/C Ratio	0.56	0.56	0.56					0.36	0.36			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	722	3377	848					1171	519			
v/s Ratio Prot	0.52	c0.53						c0.25				
v/s Ratio Perm			0.14						0.24			
v/c Ratio	0.93	0.94	0.25					0.70	0.67			
Uniform Delay, d1	20.1	20.4	11.3					27.4	27.0			
Progression Factor	0.73	0.75	1.49					1.00	1.00			
Incremental Delay, d2	2.6	0.7	0.1					3.5	6.9			
Delay (s)	17.3	16.0	16.8					30.9	33.9			
Level of Service	B	B	B					C	C			
Approach Delay (s)		16.3			0.0			31.8			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	60	40
Maximum Split (%)	60.0%	40.0%
Minimum Split (s)	60	40
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	44	20
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	43	3
End Time (s)	3	43
Yield/Force Off (s)	99	39
Yield/Force Off 170(s)	87	23
Local Start Time (s)	44	4
Local Yield (s)	0	40
Local Yield 170(s)	88	24

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 99 (99%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St

ø1	ø2
60 s	40 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6136		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6136		3433	3362				
Volume (vph)	0	0	0	0	1210	110	170	1162	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	1210	110	170	1162	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	5	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1291	0	165	1162	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					16.5		26.5	26.5				
Effective Green, g (s)					16.0		26.0	26.0				
Actuated g/C Ratio					0.32		0.52	0.52				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					1964		1785	1748				
v/s Ratio Prot					c0.21		0.05	c0.35				
v/s Ratio Perm												
v/c Ratio					0.66		0.09	0.66				
Uniform Delay, d1					14.6		6.1	8.8				
Progression Factor					1.00		1.34	1.40				
Incremental Delay, d2					1.7		0.1	1.1				
Delay (s)					16.4		8.2	13.4				
Level of Service					B		A	B				
Approach Delay (s)		0.0			16.4			12.7			0.0	
Approach LOS		A			B			B			A	

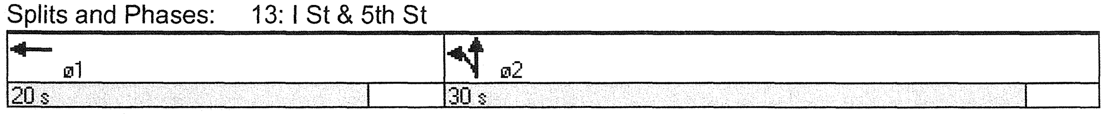
Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	117.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	20	30
Maximum Split (%)	40.0%	60.0%
Minimum Split (s)	20	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	5.5	14.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	15.5	35.5
End Time (s)	35.5	15.5
Yield/Force Off (s)	32	12
Yield/Force Off 170(s)	21	0
Local Start Time (s)	33.5	3.5
Local Yield (s)	0	30
Local Yield 170(s)	39	18

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 32 (64%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4867		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4867		1522	4806				
Volume (vph)	0	0	0	0	815	210	400	1420	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	815	210	400	1420	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	48	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1019	0	352	1420	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2044		639	2019				
v/s Ratio Prot					c0.21		0.23	c0.30				
v/s Ratio Perm												
v/c Ratio					0.50		0.55	0.70				
Uniform Delay, d1					10.6		10.9	11.9				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.9		3.4	2.1				
Delay (s)					11.5		14.3	14.0				
Level of Service					B		B	B				
Approach Delay (s)		0.0			11.5			14.1			0.0	
Approach LOS		A			B			B			A	

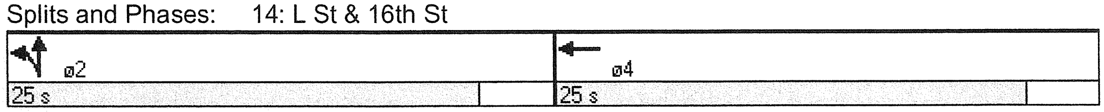
Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		6100									5013	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		6100									5013	
Volume (vph)	0	1148	380	0	0	0	0	0	0	244	600	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1148	380	0	0	0	0	0	0	244	600	0
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	45	0
Lane Group Flow (vph)	0	1493	0	0	0	0	0	0	0	0	799	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		27.5									15.5	
Effective Green, g (s)		27.0									15.0	
Actuated g/C Ratio		0.54									0.30	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3294									1504	
v/s Ratio Prot		c0.24									c0.16	
v/s Ratio Perm												
v/c Ratio		0.45									0.53	
Uniform Delay, d1		7.0									14.6	
Progression Factor		1.00									1.17	
Incremental Delay, d2		0.5									0.1	
Delay (s)		7.5									17.2	
Level of Service		A									B	
Approach Delay (s)		7.5			0.0			0.0			17.2	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	10.9	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	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

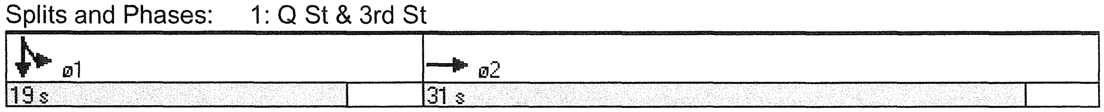
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	22.5	41.5
End Time (s)	41.5	22.5
Yield/Force Off (s)	38	19
Yield/Force Off 170(s)	30	11
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 19 (38%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↰↑↑						↑↱	↱
Ideal 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
Frpb, ped/bikes					1.00						0.97	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.93	0.85
Flt Protected					1.00						1.00	1.00
Satd. Flow (prot)					4901						2900	1205
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					4901						2900	1205
Volume (vph)	0	0	0	170	2710	0	0	0	0	0	674	1155
Peak-hour factor, PHF	1.00	1.00	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	170	2710	0	0	0	0	0	674	1155
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	0	0	0	2866	0	0	0	0	0	1250	577
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2647						870	362
v/s Ratio Prot					c0.58						0.43	
v/s Ratio Perm												c0.48
v/c Ratio					1.08						1.53dr	1.59
Uniform Delay, d1					11.5						17.5	17.5
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					44.7						203.3	280.4
Delay (s)					56.2						220.8	297.9
Level of Service					E						F	F
Approach Delay (s)		0.0			56.2			0.0			245.1	
Approach LOS		A			E			A			F	

Intersection Summary			
HCM Average Control Delay	129.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		

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

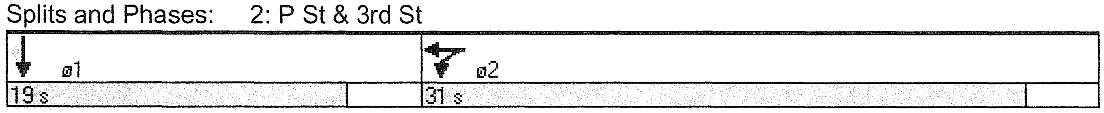
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	100

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.91	
Flt Protected	1.00			0.99	0.98	
Satd. Flow (prot)	1780			5053	3234	
Flt Permitted	1.00			0.99	0.98	
Satd. Flow (perm)	1780			5053	3234	
Volume (vph)	90	20	196	1349	320	430
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	20	196	1349	320	430
RTOR Reduction (vph)	12	0	0	27	0	0
Lane Group Flow (vph)	98	0	0	1518	750	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			32.5	14.5	
Effective Green, g (s)	12.0			32.0	14.0	
Actuated g/C Ratio	0.17			0.46	0.20	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2310	647	
v/s Ratio Prot	c0.06			c0.30	c0.23	
v/s Ratio Perm						
v/c Ratio	0.32			0.66	1.34dr	
Uniform Delay, d1	25.4			14.7	28.0	
Progression Factor	1.00			0.93	1.00	
Incremental Delay, d2	2.8			0.1	88.1	
Delay (s)	28.2			13.9	116.1	
Level of Service	C			B	F	
Approach Delay (s)	28.2			13.9	116.1	
Approach LOS	C			B	F	

Intersection Summary			
HCM Average Control Delay	46.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

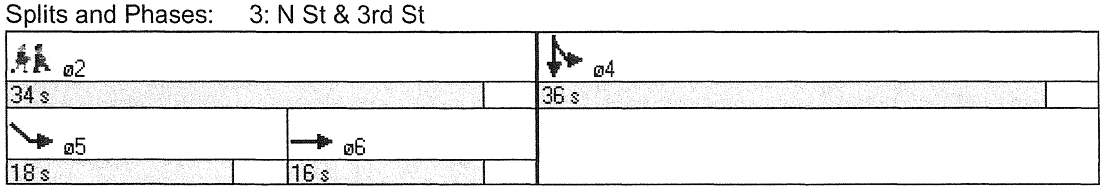
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	36	18	16
Maximum Split (%)	48.6%	51.4%	25.7%	22.9%
Minimum Split (s)	34	36	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	19.5	23.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12.5	46.5	12.5	30.5
End Time (s)	46.5	12.5	30.5	46.5
Yield/Force Off (s)	43	9	27	43
Yield/Force Off 170(s)	32	0	27	35
Local Start Time (s)	3.5	37.5	3.5	21.5
Local Yield (s)	34	0	18	34
Local Yield 170(s)	23	61	18	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	75

Offset: 9 (13%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
2025+Project PM

Intersection #4: N St./4th St.

Signal=Stop/Rights=Include
Initial Vol: 0 150 120
Lanes: 0 0 0 1 0

Signal=Uncontrol Rights=Include (westside) — Initial Vol: / Lanes:
100 0
1
476 1
1
60 0

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.000
Avg Crit Del (sec/veh): 14.3
Avg Delay (sec/veh): 14.3
LOS: E

Signal=Uncontrol Rights=Include — Lanes: / Initial Vol:
0 0
0
0 0
0
0 0

Lanes: 0 0 0 1 0
Initial Vol: 0 80 50
Signal=Stop/Rights=Include

Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	80	50	120	150	0	100	476	60	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	80	50	120	150	0	100	476	60	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	80	50	120	150	0	100	476	60	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	80	50	120	150	0	100	476	60	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	80	50	120	150	0	100	476	60	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	721	189	414	751	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	356	858	552	342	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	327	858	396	314	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.24	0.06	0.30	0.48	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	429	346	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	1.3	6.4	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	17.0	44.0	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	E	*	*	A	*	*	*	*	*
ApproachDel:		17.0			44.0			xxxxxx			xxxxxx	
ApproachLOS:		C			E			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5050						4902				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5050						4902				
Volume (vph)	90	556	0	0	0	0	0	1143	250	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	556	0	0	0	0	0	1143	250	0	0	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	50	0	0	0	0
Lane Group Flow (vph)	0	628	0	0	0	0	0	1343	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2236						2171				
v/s Ratio Prot		c0.12						c0.27				
v/s Ratio Perm												
v/c Ratio		0.28						0.62				
Uniform Delay, d1		12.4						15.0				
Progression Factor		1.40						1.00				
Incremental Delay, d2		0.2						1.3				
Delay (s)		17.6						16.3				
Level of Service		B						B				
Approach Delay (s)		17.6			0.0			16.3			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↑↱		↰	↑↑↱					↰	↑↑↱	
Ideal Flow (vphpl)	1900	1900	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		1.00	0.95					1.00	0.95	
Frpb, ped/bikes	1.00	0.99		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	0.99		1.00	0.99					1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	5015		1770	3521					1593	3274	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	5015		1770	3521					1593	3274	
Volume (vph)	123	713	40	367	745	27	0	0	0	184	1148	1145
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	123	713	40	367	745	27	0	0	0	184	1148	1145
RTOR Reduction (vph)	0	9	0	0	4	0	0	0	0	0	177	0
Lane Group Flow (vph)	123	744	0	367	768	0	0	0	0	184	2116	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type	Prot			Prot						Split		
Protected Phases	1	6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)	6.5	12.5		12.5	18.5					33.0	33.0	
Effective Green, g (s)	6.0	12.0		12.0	18.0					34.0	34.0	
Actuated g/C Ratio	0.09	0.17		0.17	0.26					0.49	0.49	
Clearance Time (s)	3.5	3.5		3.5	3.5					5.0	5.0	
Lane Grp Cap (vph)	152	860		303	905					774	1590	
v/s Ratio Prot	0.07	0.15		c0.21	c0.22					0.12	c0.65	
v/s Ratio Perm												
v/c Ratio	0.81	0.86		1.21	0.85					0.24	1.33	
Uniform Delay, d1	31.4	28.2		29.0	24.7					10.5	18.0	
Progression Factor	1.00	1.00		0.83	0.75					0.89	0.95	
Incremental Delay, d2	35.5	11.3		119.8	9.0					0.1	149.2	
Delay (s)	67.0	39.5		143.8	27.6					9.4	166.3	
Level of Service	E	D		F	C					A	F	
Approach Delay (s)		43.4			65.1			0.0			154.7	
Approach LOS		D			E			A			F	

Intersection Summary			
HCM Average Control Delay	110.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	113.8%	ICU Level of Service	H
Analysis Period (min)	15		

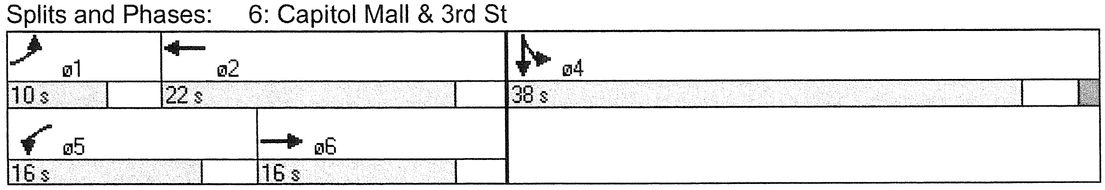
c Critical Lane Group

Phase Number	1	2	4	5	6
Movement	EBL	WBT	SBTL	WBL	EBT
Lead/Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	22	38	16	16
Maximum Split (%)	14.3%	31.4%	54.3%	22.9%	22.9%
Minimum Split (s)	8	22	38	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	1.5	0	0
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		6.5	15		0.5
Flash Dont Walk (s)		12	18		12
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	10.5	20.5	42.5	10.5	26.5
End Time (s)	20.5	42.5	10.5	26.5	42.5
Yield/Force Off (s)	17	39	5.5	23	39
Yield/Force Off 170(s)	17	27	57.5	23	27
Local Start Time (s)	57.5	67.5	19.5	57.5	3.5
Local Yield (s)	64	16	52.5	0	16
Local Yield 170(s)	64	4	34.5	0	4

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	100

Offset: 23 (33%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.87		0.99			0.99			0.97	
Flpb, ped/bikes	0.98	1.00	1.00		1.00			0.99			0.99	
Frt	1.00	1.00	0.85		0.99			0.98			0.96	
Flt Protected	0.95	1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)	1729	3539	1380		4991			1584			1524	
Flt Permitted	0.23	1.00	1.00		0.93			0.82			0.90	
Satd. Flow (perm)	416	3539	1380		4662			1318			1381	
Volume (vph)	137	719	40	10	967	67	70	130	30	69	150	102
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	719	40	10	967	67	70	130	30	69	150	102
RTOR Reduction (vph)	0	0	19	0	11	0	0	8	0	0	24	0
Lane Group Flow (vph)	137	719	21	0	1033	0	0	222	0	0	297	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)	38.0	38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)	37.5	37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio	0.54	0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)	3.5	3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)	223	1896	739		2498			461			483	
v/s Ratio Prot		0.20										
v/s Ratio Perm	c0.33		0.02		0.22			0.17			c0.21	
v/c Ratio	0.61	0.38	0.03		0.41			0.48			0.61	
Uniform Delay, d1	11.2	9.5	7.7		9.7			17.8			18.8	
Progression Factor	2.11	2.24	4.30		0.21			0.80			1.00	
Incremental Delay, d2	8.1	0.4	0.0		0.5			3.4			5.5	
Delay (s)	31.8	21.6	33.0		2.5			17.6			24.4	
Level of Service	C	C	C		A			B			C	
Approach Delay (s)		23.7			2.5			17.6			24.4	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	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

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St

ø2	ø4
41.5 s	28.5 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑↑↱		↰↰	↑↑↑↱				
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.98				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4971		3433	4943				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4971		3433	4943				
Volume (vph)	343	476	0	0	660	70	383	840	100	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	343	476	0	0	660	70	383	840	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	21	0	0	0	0
Lane Group Flow (vph)	343	476	0	0	711	0	383	919	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1278		1275	1836				
v/s Ratio Prot	c0.10	0.13			c0.14		0.11	c0.19				
v/s Ratio Perm												
v/c Ratio	0.50	0.26			0.56		0.30	0.50				
Uniform Delay, d1	24.9	9.5			22.5		15.6	17.0				
Progression Factor	0.84	0.25			1.00		0.44	0.40				
Incremental Delay, d2	2.4	0.3			1.8		0.5	0.8				
Delay (s)	23.2	2.7			24.3		7.4	7.6				
Level of Service	C	A			C		A	A				
Approach Delay (s)		11.3			24.3			7.5			0.0	
Approach LOS		B			C			A			A	

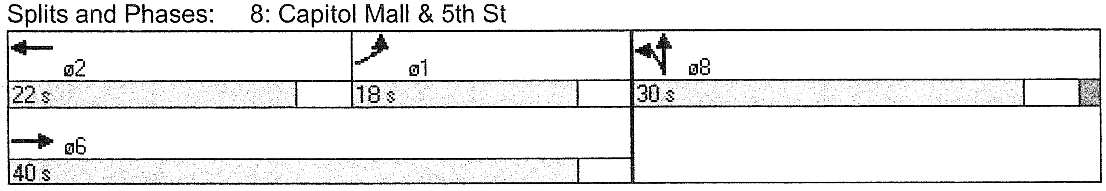
Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱	↰	↑			↑↱	
Ideal Flow (vphpl)	1900	1900	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				0.91	0.91	1.00	1.00	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.99	
Flt Protected				0.95	0.99	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1610	3362	1583	1770	1863			3509	
Flt Permitted				0.95	0.99	1.00	0.15	1.00			1.00	
Satd. Flow (perm)				1610	3362	1583	276	1863			3509	
Volume (vph)	0	0	0	1123	1447	390	37	70	0	0	1329	80
Peak-hour factor, PHF	1.00	1.00	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	1123	1447	390	37	70	0	0	1329	80
RTOR Reduction (vph)	0	0	0	0	0	195	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	828	1742	195	37	70	0	0	1403	0
Turn Type				custom		custom	custom					
Protected Phases											4	
Permitted Phases				2	2	2	8	8				
Actuated Green, G (s)				35.5	35.5	35.5	27.5	27.5			27.5	
Effective Green, g (s)				35.0	35.0	35.0	27.0	27.0			27.0	
Actuated g/C Ratio				0.50	0.50	0.50	0.39	0.39			0.39	
Clearance Time (s)				3.5	3.5	3.5	3.5	3.5			3.5	
Lane Grp Cap (vph)				805	1681	792	106	719			1353	
v/s Ratio Prot											c0.40	
v/s Ratio Perm				0.51	c0.52	0.12	0.13	0.04				
v/c Ratio				1.03	1.04	0.25	0.35	0.10			1.04	
Uniform Delay, d1				17.5	17.5	10.0	15.3	13.7			21.5	
Progression Factor				0.80	0.80	0.83	0.77	0.57			1.00	
Incremental Delay, d2				38.4	31.4	0.7	4.9	0.1			34.5	
Delay (s)				52.4	45.4	9.0	16.7	7.9			56.0	
Level of Service				D	D	A	B	A			E	
Approach Delay (s)		0.0			42.5			11.0			56.0	
Approach LOS		A			D			B			E	

Intersection Summary			
HCM Average Control Delay	46.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

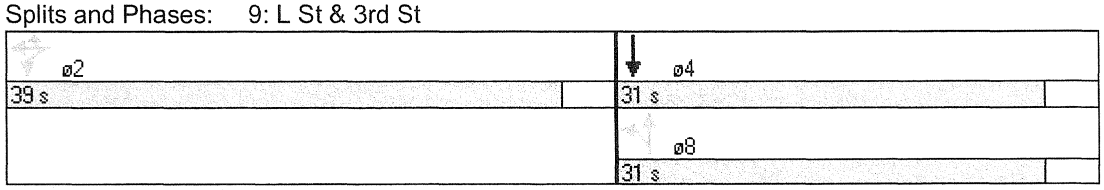
c Critical Lane Group

Phase Number	2	4	8
Movement	WBTL	SBT	NBTL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	Max	Max	Max
Maximum Split (s)	39	31	31
Maximum Split (%)	55.7%	44.3%	44.3%
Minimum Split (s)	7.5	7.5	31
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	0	0	0
Minimum Initial (s)	4	4	4
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			15.5
Flash Dont Walk (s)			12
Dual Entry	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	62.5	31.5	31.5
End Time (s)	31.5	62.5	62.5
Yield/Force Off (s)	28	59	59
Yield/Force Off 170(s)	28	59	47
Local Start Time (s)	3.5	42.5	42.5
Local Yield (s)	39	0	0
Local Yield 170(s)	39	0	58

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	90

Offset: 59 (84%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					1.00		1.00	1.00				0.93
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6289		1770	5085				2585
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6289		1770	5085				2585
Volume (vph)	0	0	0	0	2066	220	440	813	0	0	0	240
Peak-hour factor, PHF	1.00	1.00	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	2066	220	440	813	0	0	0	240
RTOR Reduction (vph)	0	0	0	0	12	0	6	0	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	2274	0	434	813	0	0	0	232
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					40.0		20.5	20.5				20.5
Effective Green, g (s)					41.0		21.0	21.0				21.0
Actuated g/C Ratio					0.59		0.30	0.30				0.30
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					3684		531	1526				776
v/s Ratio Prot					c0.36		c0.25	0.16				
v/s Ratio Perm												0.09
v/c Ratio					0.62		0.82	0.53				0.30
Uniform Delay, d1					9.4		22.7	20.4				18.8
Progression Factor					1.00		0.82	0.85				1.00
Incremental Delay, d2					0.8		11.7	1.2				1.0
Delay (s)					10.2		30.4	18.4				19.8
Level of Service					B		C	B				B
Approach Delay (s)		0.0			10.2			22.6			19.8	
Approach LOS		A			B			C			B	

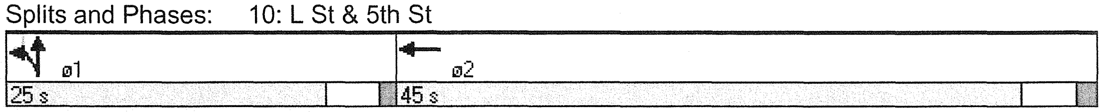
Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	45
Maximum Split (%)	35.7%	64.3%
Minimum Split (s)	25	45
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	11.5	31
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	62
End Time (s)	62	37
Yield/Force Off (s)	57.5	32
Yield/Force Off 170(s)	48.5	23
Local Start Time (s)	5	30
Local Yield (s)	25.5	0
Local Yield 170(s)	16.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.95	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4920		1678	1504	1610	3365		6087	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4920		1678	1504	1610	3365		6087	
Volume (vph)	70	824	126	120	220	380	520	80	1686	653
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)	70	824	126	120	220	380	520	80	1686	653
RTOR Reduction (vph)	0	18	0	12	12	0	0	0	0	0
Lane Group Flow (vph)	0	1002	0	171	145	290	610	0	2419	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		23.0		12.0	12.0	17.5	17.5		32.0	
Effective Green, g (s)		23.0		12.0	12.0	17.0	17.0		32.0	
Actuated g/C Ratio		0.23		0.12	0.12	0.17	0.17		0.32	
Clearance Time (s)		4.0		4.0	4.0	3.5	3.5		4.0	
Lane Grp Cap (vph)		1132		201	180	274	572		1948	
v/s Ratio Prot		c0.20		c0.10		0.18	c0.18		c0.40	
v/s Ratio Perm					0.10					
v/c Ratio		0.88		0.85	0.80	1.06	1.07		1.36dr	
Uniform Delay, d1		37.2		43.1	42.9	41.5	41.5		34.0	
Progression Factor		1.00		1.00	1.00	0.95	0.95		1.00	
Incremental Delay, d2		10.2		33.7	30.5	70.1	56.3		113.4	
Delay (s)		47.4		76.8	73.3	109.4	95.6		147.4	
Level of Service		D		E	E	F	F		F	
Approach Delay (s)		47.4		75.2			100.0		147.4	
Approach LOS		D		E			F		F	

Intersection Summary			
HCM Average Control Delay	111.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

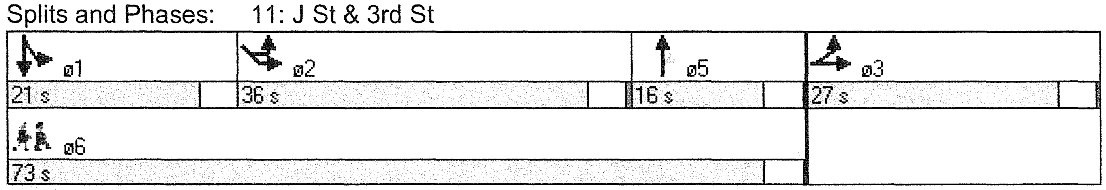
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	21	36	27	16	73
Maximum Split (%)	21.0%	36.0%	27.0%	16.0%	73.0%
Minimum Split (s)	7.5	36	27	8	73
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		21	12		58
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	85	6	58	42	85
End Time (s)	6	42	85	58	58
Yield/Force Off (s)	2.5	38	81	54	54
Yield/Force Off 170(s)	2.5	27	70	54	43
Local Start Time (s)	47	68	20	4	47
Local Yield (s)	64.5	0	43	16	16
Local Yield 170(s)	64.5	89	32	16	5

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	130

Offset: 38 (38%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.95					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1498					3241	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1498					3241	1441			
Volume (vph)	550	2330	240	0	0	0	0	513	520	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	550	2330	240	0	0	0	0	513	520	0	0	0
RTOR Reduction (vph)	128	0	139	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	422	2330	101	0	0	0	0	725	308	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	21.0	21.0	21.0					21.0	21.0			
Effective Green, g (s)	21.0	21.0	21.0					21.0	21.0			
Actuated g/C Ratio	0.42	0.42	0.42					0.42	0.42			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	542	2535	629					1361	605			
v/s Ratio Prot	0.33	c0.39						c0.22				
v/s Ratio Perm			0.07						0.21			
v/c Ratio	0.78	0.92	0.16					0.53	0.51			
Uniform Delay, d1	12.5	13.7	9.0					10.8	10.7			
Progression Factor	0.73	0.80	0.58					1.00	1.00			
Incremental Delay, d2	1.0	0.7	0.0					1.5	3.0			
Delay (s)	10.2	11.6	5.3					12.3	13.7			
Level of Service	B	B	A					B	B			
Approach Delay (s)		10.9			0.0			12.8			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	25	25
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	28	3
End Time (s)	3	28
Yield/Force Off (s)	49	24
Yield/Force Off 170(s)	37	8
Local Start Time (s)	29	4
Local Yield (s)	0	25
Local Yield 170(s)	38	9

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	60

Offset: 49 (98%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St

ø1	ø2
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6224		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6224		3433	3362				
Volume (vph)	0	0	0	0	2940	60	500	563	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	2940	60	500	563	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	7	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2997	0	493	563	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					75.5		17.5	17.5				
Effective Green, g (s)					75.0		17.0	17.0				
Actuated g/C Ratio					0.75		0.17	0.17				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					4668		584	572				
v/s Ratio Prot					c0.48		0.14	c0.17				
v/s Ratio Perm												
v/c Ratio					0.64		0.84	0.98				
Uniform Delay, d1					6.0		40.2	41.4				
Progression Factor					1.00		1.05	1.05				
Incremental Delay, d2					0.7		10.4	28.4				
Delay (s)					6.7		52.5	71.6				
Level of Service					A		D	E				
Approach Delay (s)		0.0			6.7			62.6			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM Average Control Delay	21.3	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	128.7%	ICU Level of Service	H
Analysis Period (min)	15		

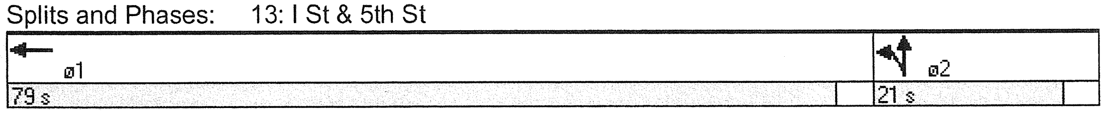
c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	79	21
Maximum Split (%)	79.0%	21.0%
Minimum Split (s)	79	21
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	64.5	5.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	44.5	23.5
End Time (s)	23.5	44.5
Yield/Force Off (s)	20	41
Yield/Force Off 170(s)	9	29
Local Start Time (s)	24.5	3.5
Local Yield (s)	0	21
Local Yield 170(s)	89	9

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 20 (20%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4860		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4860		1522	4806				
Volume (vph)	0	0	0	0	894	240	330	1730	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	894	240	330	1730	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	37	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1132	0	293	1730	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2041		639	2019				
v/s Ratio Prot					c0.23		0.19	c0.36				
v/s Ratio Perm												
v/c Ratio					0.55		0.46	0.86				
Uniform Delay, d1					11.0		10.4	13.1				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					1.1		2.4	5.0				
Delay (s)					12.1		12.8	18.1				
Level of Service					B		B	B				
Approach Delay (s)		0.0			12.1			17.2			0.0	
Approach LOS		A			B			B			A	

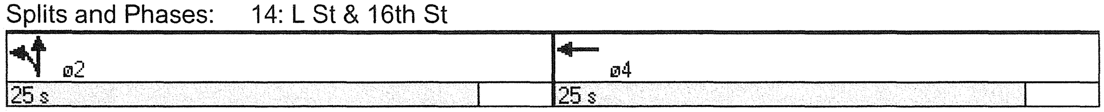
Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.97									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		6147									5005	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		6147									5005	
Volume (vph)	0	705	188	0	0	0	0	0	0	210	444	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	705	188	0	0	0	0	0	0	210	444	0
RTOR Reduction (vph)	0	72	0	0	0	0	0	0	0	0	139	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	0	0	0	515	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		27.5									15.5	
Effective Green, g (s)		27.0									15.0	
Actuated g/C Ratio		0.54									0.30	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3319									1502	
v/s Ratio Prot		c0.13									c0.10	
v/s Ratio Perm												
v/c Ratio		0.25									0.34	
Uniform Delay, d1		6.1									13.7	
Progression Factor		1.00									0.10	
Incremental Delay, d2		0.2									0.5	
Delay (s)		6.3									1.8	
Level of Service		A									A	
Approach Delay (s)		6.3			0.0			0.0			1.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

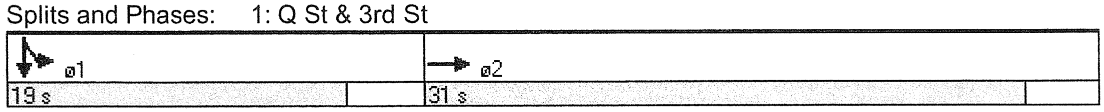
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	22.5	41.5
End Time (s)	41.5	22.5
Yield/Force Off (s)	38	19
Yield/Force Off 170(s)	30	11
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 19 (38%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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	0.88
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					1.00						1.00	1.00
Satd. Flow (prot)					4903						3362	2595
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					4903						3362	2595
Volume (vph)	0	0	0	137	2521	0	0	0	0	0	517	848
Peak-hour factor, PHF	1.00	1.00	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	137	2521	0	0	0	0	0	517	848
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	0	2646	0	0	0	0	0	517	846
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2648						1009	779
v/s Ratio Prot					c0.54						0.15	
v/s Ratio Perm												c0.33
v/c Ratio					1.00						0.51	1.09
Uniform Delay, d1					11.5						14.5	17.5
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					17.3						1.9	58.1
Delay (s)					28.8						16.3	75.6
Level of Service					C						B	E
Approach Delay (s)		0.0			28.8			0.0			53.1	
Approach LOS		A			C			A			D	

Intersection Summary			
HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	19	31
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7.5	19.5
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	13.5	32.5
End Time (s)	32.5	13.5
Yield/Force Off (s)	29	10
Yield/Force Off 170(s)	21	2
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	65

Offset: 10 (20%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St

ø1	ø2
19 s	31 s

Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.97			1.00	0.91	
Flt Protected	1.00			0.99	0.98	
Satd. Flow (prot)	1777			5055	3224	
Flt Permitted	1.00			0.99	0.98	
Satd. Flow (perm)	1777			5055	3224	
Volume (vph)	81	19	154	1138	154	232
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	19	154	1138	154	232
RTOR Reduction (vph)	12	0	0	25	0	0
Lane Group Flow (vph)	88	0	0	1267	386	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			32.5	14.5	
Effective Green, g (s)	12.0			32.0	14.0	
Actuated g/C Ratio	0.17			0.46	0.20	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2311	645	
v/s Ratio Prot	c0.05			c0.25	c0.12	
v/s Ratio Perm						
v/c Ratio	0.29			0.55	0.60	
Uniform Delay, d1	25.3			13.8	25.4	
Progression Factor	1.00			0.89	1.00	
Incremental Delay, d2	2.4			0.2	4.1	
Delay (s)	27.6			12.5	29.5	
Level of Service	C			B	C	
Approach Delay (s)	27.6			12.5	29.5	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

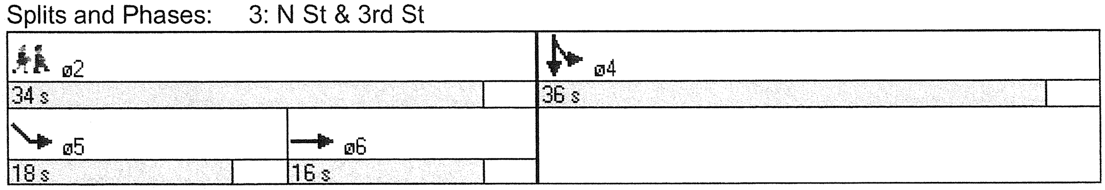
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	36	18	16
Maximum Split (%)	48.6%	51.4%	25.7%	22.9%
Minimum Split (s)	34	36	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	19.5	23.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12.5	46.5	12.5	30.5
End Time (s)	46.5	12.5	30.5	46.5
Yield/Force Off (s)	43	9	27	43
Yield/Force Off 170(s)	32	0	27	35
Local Start Time (s)	3.5	37.5	3.5	21.5
Local Yield (s)	34	0	18	34
Local Yield 170(s)	23	61	18	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 9 (13%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Near Term+Project PM

Intersection #4: N St./4th St.

Signal=Stop/Rights=Include
Initial Vol: 0 139 109
Lanes: 0 0 0 1 0

Signal=Uncontrol
Rights=Include

Initial Vol:	Lanes:
72	0
	1
364	1
	1
51	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	0
Critical V/C:	0.000
Avg Crit Del (sec/veh):	9.1
Avg Delay (sec/veh):	9.1
LOS:	C

Signal=Uncontrol
Rights=Include

Lanes:	Initial Vol:
0	0
0	
0	0
0	
0	0

Lanes: 0 0 0 1 0
Initial Vol: 0 69 40
Signal=Stop/Rights=Include

Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	69	40	109	139	0	72	364	51	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	40	109	139	0	72	364	51	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	69	40	109	139	0	72	364	51	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	69	40	109	139	0	72	364	51	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	69	40	109	139	0	72	364	51	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	549	147	315	574	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	446	905	642	432	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	420	905	510	406	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.16	0.04	0.21	0.34	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	522	446	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.8	3.3	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	13.7	22.7	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	B	C	*	*	A	*	*	*	*	*
ApproachDel:		13.7			22.7			xxxxxx			xxxxxx	
ApproachLOS:		B			C			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5050						4960				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5050						4960				
Volume (vph)	72	443	0	0	0	0	0	896	125	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	443	0	0	0	0	0	896	125	0	0	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	26	0	0	0	0
Lane Group Flow (vph)	0	483	0	0	0	0	0	995	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2236						2197				
v/s Ratio Prot		c0.10						c0.20				
v/s Ratio Perm												
v/c Ratio		0.22						0.45				
Uniform Delay, d1		12.0						13.6				
Progression Factor		1.22						1.00				
Incremental Delay, d2		0.2						0.7				
Delay (s)		14.9						14.3				
Level of Service		B						B				
Approach Delay (s)		14.9			0.0			14.3			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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		1.00	0.95					1.00	0.95	
Frpb, ped/bikes	1.00	0.99		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	0.99		1.00	0.99					1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	5018		1770	3519					1593	3302	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	5018		1770	3519					1593	3302	
Volume (vph)	123	577	31	311	677	27	0	0	0	173	972	788
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	123	577	31	311	677	27	0	0	0	173	972	788
RTOR Reduction (vph)	0	8	0	0	4	0	0	0	0	0	181	0
Lane Group Flow (vph)	123	600	0	311	700	0	0	0	0	173	1579	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		
Turn Type	Prot			Prot						Split		
Protected Phases	1	6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)	6.5	12.5		12.5	18.5					33.0	33.0	
Effective Green, g (s)	6.0	12.0		12.0	18.0					34.0	34.0	
Actuated g/C Ratio	0.09	0.17		0.17	0.26					0.49	0.49	
Clearance Time (s)	3.5	3.5		3.5	3.5					5.0	5.0	
Lane Grp Cap (vph)	152	860		303	905					774	1604	
v/s Ratio Prot	0.07	0.12		c0.18	c0.20					0.11	c0.48	
v/s Ratio Perm												
v/c Ratio	0.81	0.70		1.03	0.77					0.22	0.98	
Uniform Delay, d1	31.4	27.3		29.0	24.1					10.4	17.7	
Progression Factor	1.00	1.00		0.78	0.76					0.74	0.82	
Incremental Delay, d2	35.5	4.7		57.3	6.1					0.6	17.5	
Delay (s)	67.0	32.0		79.9	24.5					8.3	32.1	
Level of Service	E	C		E	C					A	C	
Approach Delay (s)		37.8			41.5			0.0			29.9	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

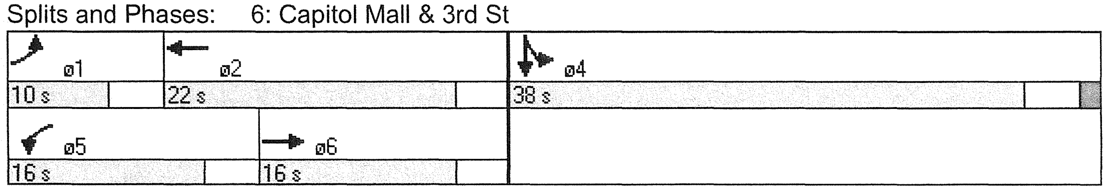
c Critical Lane Group

Phase Number	1	2	4	5	6
Movement	EBL	WBT	SBTL	WBL	EBT
Lead/Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	22	38	16	16
Maximum Split (%)	14.3%	31.4%	54.3%	22.9%	22.9%
Minimum Split (s)	8	22	38	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	1.5	0	0
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		6.5	15		0.5
Flash Dont Walk (s)		12	18		12
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	10.5	20.5	42.5	10.5	26.5
End Time (s)	20.5	42.5	10.5	26.5	42.5
Yield/Force Off (s)	17	39	5.5	23	39
Yield/Force Off 170(s)	17	27	57.5	23	27
Local Start Time (s)	57.5	67.5	19.5	57.5	3.5
Local Yield (s)	64	16	52.5	0	16
Local Yield 170(s)	64	4	34.5	0	4

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	80

Offset: 23 (33%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.87		0.99			0.99			0.97	
Flpb, ped/bikes	0.97	1.00	1.00		1.00			0.99			0.99	
Frt	1.00	1.00	0.85		0.99			0.98			0.96	
Flt Protected	0.95	1.00	1.00		1.00			0.98			0.99	
Satd. Flow (prot)	1720	3539	1380		5000			1581			1519	
Flt Permitted	0.27	1.00	1.00		1.00			0.84			0.90	
Satd. Flow (perm)	493	3539	1380		5000			1355			1379	
Volume (vph)	127	597	25	0	859	55	63	110	25	60	130	93
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	597	25	0	859	55	63	110	25	60	130	93
RTOR Reduction (vph)	0	0	12	0	10	0	0	7	0	0	25	0
Lane Group Flow (vph)	127	597	13	0	904	0	0	191	0	0	258	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)	38.0	38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)	37.5	37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio	0.54	0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)	3.5	3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)	264	1896	739		2679			474			483	
v/s Ratio Prot		0.17			0.18							
v/s Ratio Perm	c0.26		0.01					0.14			c0.19	
v/c Ratio	0.48	0.31	0.02		0.34			0.40			0.53	
Uniform Delay, d1	10.2	9.1	7.6		9.2			17.2			18.2	
Progression Factor	2.18	2.22	3.69		0.24			0.91			0.98	
Incremental Delay, d2	5.0	0.4	0.0		0.3			2.5			4.0	
Delay (s)	27.2	20.5	28.2		2.6			18.1			21.9	
Level of Service	C	C	C		A			B			C	
Approach Delay (s)		21.9			2.6			18.1			21.9	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c　Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow

Splits and Phases: 7: Capitol Mall & 4th St

ø2	ø4
41.5 s	28.5 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.98				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4983		3433	4922				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4983		3433	4922				
Volume (vph)	274	409	0	0	582	55	331	675	94	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	274	409	0	0	582	55	331	675	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	26	0	0	0	0
Lane Group Flow (vph)	274	409	0	0	621	0	331	743	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1281		1275	1828				
v/s Ratio Prot	c0.08	0.12			c0.12		0.10	c0.15				
v/s Ratio Perm												
v/c Ratio	0.40	0.22			0.49		0.26	0.41				
Uniform Delay, d1	24.3	9.3			22.1		15.3	16.3				
Progression Factor	0.87	0.27			1.00		0.47	0.42				
Incremental Delay, d2	1.7	0.3			1.3		0.5	0.6				
Delay (s)	22.8	2.8			23.4		7.6	7.5				
Level of Service	C	A			C		A	A				
Approach Delay (s)		10.8			23.4			7.5			0.0	
Approach LOS		B			C			A			A	

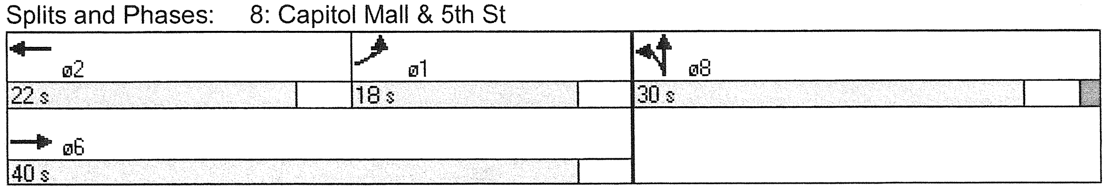
Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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				0.91	0.91	1.00	1.00	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1610	3390	1583	1770	1863			3515	
Flt Permitted				0.95	1.00	1.00	0.15	1.00			1.00	
Satd. Flow (perm)				1610	3390	1583	276	1863			3515	
Volume (vph)	0	0	0	517	1260	193	37	70	0	0	953	46
Peak-hour factor, PHF	1.00	1.00	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	517	1260	193	37	70	0	0	953	46
RTOR Reduction (vph)	0	0	0	0	0	97	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	0	517	1260	97	37	70	0	0	994	0
Turn Type				custom		custom	custom					
Protected Phases											4	
Permitted Phases				2	2	2	8	8				
Actuated Green, G (s)				35.5	35.5	35.5	27.5	27.5			27.5	
Effective Green, g (s)				35.0	35.0	35.0	27.0	27.0			27.0	
Actuated g/C Ratio				0.50	0.50	0.50	0.39	0.39			0.39	
Clearance Time (s)				3.5	3.5	3.5	3.5	3.5			3.5	
Lane Grp Cap (vph)				805	1695	792	106	719			1356	
v/s Ratio Prot											c0.28	
v/s Ratio Perm				0.32	c0.37	0.06	0.13	0.04				
v/c Ratio				0.64	0.74	0.12	0.35	0.10			0.73	
Uniform Delay, d1				12.9	13.9	9.3	15.3	13.7			18.4	
Progression Factor				0.71	0.70	0.47	0.77	0.57			1.00	
Incremental Delay, d2				3.6	2.7	0.3	5.1	0.2			3.5	
Delay (s)				12.8	12.5	4.6	16.9	8.0			22.0	
Level of Service				B	B	A	B	A			C	
Approach Delay (s)		0.0			11.8			11.0			22.0	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

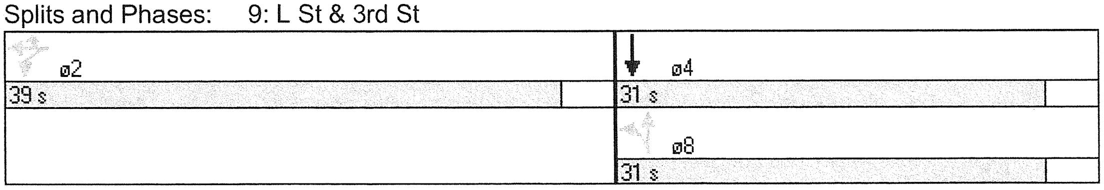
c Critical Lane Group

Phase Number	2	4	8
Movement	WBTL	SBT	NBTL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	Max	Max	Max
Maximum Split (s)	39	31	31
Maximum Split (%)	55.7%	44.3%	44.3%
Minimum Split (s)	7.5	7.5	31
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	0	0	0
Minimum Initial (s)	4	4	4
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			15.5
Flash Dont Walk (s)			12
Dual Entry	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	62.5	31.5	31.5
End Time (s)	31.5	62.5	62.5
Yield/Force Off (s)	28	59	59
Yield/Force Off 170(s)	28	59	47
Local Start Time (s)	3.5	42.5	42.5
Local Yield (s)	39	0	0
Local Yield 170(s)	39	0	58

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	60

Offset: 59 (84%), Referenced to phase 4:SBT, Start of Yellow

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					1.00		1.00	1.00				0.93
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6311		1770	5085				2585
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6311		1770	5085				2585
Volume (vph)	0	0	0	0	1812	155	320	683	0	0	0	188
Peak-hour factor, PHF	1.00	1.00	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	1812	155	320	683	0	0	0	188
RTOR Reduction (vph)	0	0	0	0	19	0	11	0	0	0	0	15
Lane Group Flow (vph)	0	0	0	0	1948	0	309	683	0	0	0	173
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					40.0		20.5	20.5				20.5
Effective Green, g (s)					41.0		21.0	21.0				21.0
Actuated g/C Ratio					0.59		0.30	0.30				0.30
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					3696		531	1526				776
v/s Ratio Prot					c0.31		c0.17	0.13				
v/s Ratio Perm												0.07
v/c Ratio					0.53		0.58	0.45				0.22
Uniform Delay, d1					8.7		20.8	19.8				18.4
Progression Factor					1.00		0.68	0.70				1.00
Incremental Delay, d2					0.5		4.3	0.9				0.7
Delay (s)					9.2		18.4	14.7				19.0
Level of Service					A		B	B				B
Approach Delay (s)		0.0			9.2			15.9			19.0	
Approach LOS		A			A			B			B	

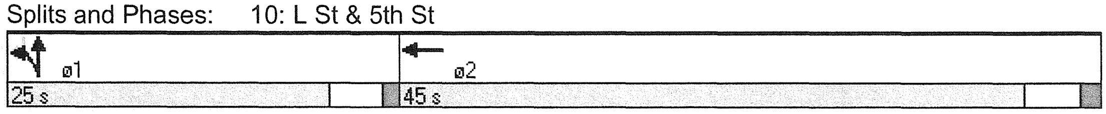
Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	45
Maximum Split (%)	35.7%	64.3%
Minimum Split (s)	25	45
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	11.5	31
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	62
End Time (s)	62	37
Yield/Force Off (s)	57.5	32
Yield/Force Off 170(s)	48.5	23
Local Start Time (s)	5	30
Local Yield (s)	25.5	0
Local Yield 170(s)	16.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.94	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4952		1660	1504	1610	3372		6090	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4952		1660	1504	1610	3372		6090	
Volume (vph)	1	687	85	70	161	229	350	7	1235	454
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)	1	687	85	70	161	229	350	7	1235	454
RTOR Reduction (vph)	0	15	0	26	43	0	0	0	0	0
Lane Group Flow (vph)	0	758	0	93	69	187	392	0	1696	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		23.0		12.0	12.0	17.5	17.5		32.0	
Effective Green, g (s)		23.0		12.0	12.0	17.0	17.0		32.0	
Actuated g/C Ratio		0.23		0.12	0.12	0.17	0.17		0.32	
Clearance Time (s)		4.0		4.0	4.0	3.5	3.5		4.0	
Lane Grp Cap (vph)		1139		199	180	274	573		1949	
v/s Ratio Prot		c0.15		c0.06		0.12	c0.12		c0.28	
v/s Ratio Perm					0.05					
v/c Ratio		0.67		0.47	0.38	0.68	0.68		0.94dr	
Uniform Delay, d1		35.0		41.0	40.6	39.0	39.0		32.0	
Progression Factor		1.00		1.00	1.00	0.92	0.92		1.00	
Incremental Delay, d2		3.1		7.8	6.1	12.5	6.3		5.6	
Delay (s)		38.1		48.8	46.6	48.4	42.2		37.7	
Level of Service		D		D	D	D	D		D	
Approach Delay (s)		38.1		47.8			44.2		37.7	
Approach LOS		D		D			D		D	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

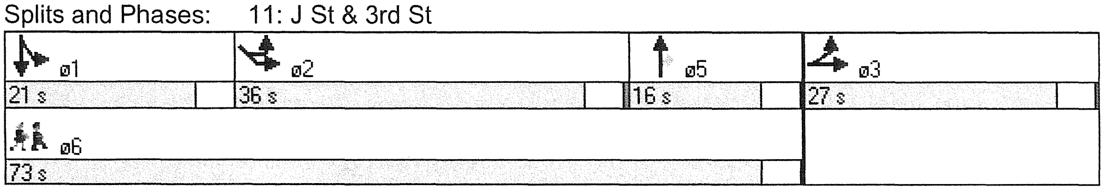
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	21	36	27	16	73
Maximum Split (%)	21.0%	36.0%	27.0%	16.0%	73.0%
Minimum Split (s)	7.5	36	27	8	73
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		21	12		58
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	85	6	58	42	85
End Time (s)	6	42	85	58	58
Yield/Force Off (s)	2.5	38	81	54	54
Yield/Force Off 170(s)	2.5	27	70	54	43
Local Start Time (s)	47	68	20	4	47
Local Yield (s)	64.5	0	43	16	16
Local Yield 170(s)	64.5	89	32	16	5

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 38 (38%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.95					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1498					3254	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1498					3254	1441			
Volume (vph)	324	1583	188	0	0	0	0	431	408	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	324	1583	188	0	0	0	0	431	408	0	0	0
RTOR Reduction (vph)	167	0	109	0	0	0	0	2	2	0	0	0
Lane Group Flow (vph)	157	1583	79	0	0	0	0	586	249	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	21.0	21.0	21.0					21.0	21.0			
Effective Green, g (s)	21.0	21.0	21.0					21.0	21.0			
Actuated g/C Ratio	0.42	0.42	0.42					0.42	0.42			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	542	2535	629					1367	605			
v/s Ratio Prot	0.12	c0.26						c0.18				
v/s Ratio Perm			0.05						0.17			
v/c Ratio	0.29	0.62	0.13					0.43	0.41			
Uniform Delay, d1	9.6	11.4	8.9					10.3	10.2			
Progression Factor	0.36	0.56	0.42					1.00	1.00			
Incremental Delay, d2	0.8	0.7	0.3					1.0	2.1			
Delay (s)	4.3	7.1	4.0					11.2	12.2			
Level of Service	A	A	A					B	B			
Approach Delay (s)		6.4			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	25	25
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	28	3
End Time (s)	3	28
Yield/Force Off (s)	49	24
Yield/Force Off 170(s)	37	8
Local Start Time (s)	29	4
Local Yield (s)	0	25
Local Yield 170(s)	38	9

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 49 (98%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St

ø1	ø2
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6224		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6224		3433	3362				
Volume (vph)	0	0	0	0	2640	55	349	399	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	2640	55	349	399	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	14	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2692	0	335	399	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					75.5		17.5	17.5				
Effective Green, g (s)					75.0		17.0	17.0				
Actuated g/C Ratio					0.75		0.17	0.17				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					4668		584	572				
v/s Ratio Prot					c0.43		0.10	c0.12				
v/s Ratio Perm												
v/c Ratio					0.58		0.57	0.70				
Uniform Delay, d1					5.5		38.2	39.1				
Progression Factor					1.00		1.02	1.02				
Incremental Delay, d2					0.5		3.7	6.3				
Delay (s)					6.0		42.8	46.3				
Level of Service					A		D	D				
Approach Delay (s)		0.0			6.0			44.7			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

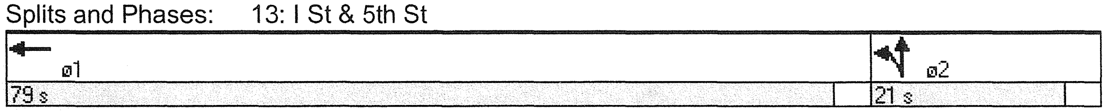
c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	79	21
Maximum Split (%)	79.0%	21.0%
Minimum Split (s)	79	21
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	64.5	5.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	44.5	23.5
End Time (s)	23.5	44.5
Yield/Force Off (s)	20	41
Yield/Force Off 170(s)	9	29
Local Start Time (s)	24.5	3.5
Local Yield (s)	0	21
Local Yield 170(s)	89	9

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 20 (20%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4846		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4846		1522	4806				
Volume (vph)	0	0	0	0	682	198	260	1538	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	682	198	260	1538	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	74	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	876	0	186	1538	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2035		639	2019				
v/s Ratio Prot					c0.18		0.12	c0.32				
v/s Ratio Perm												
v/c Ratio					0.43		0.29	0.76				
Uniform Delay, d1					10.3		9.6	12.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.7		1.2	2.8				
Delay (s)					10.9		10.7	15.1				
Level of Service					B		B	B				
Approach Delay (s)		0.0			10.9			14.5			0.0	
Approach LOS		A			B			B			A	

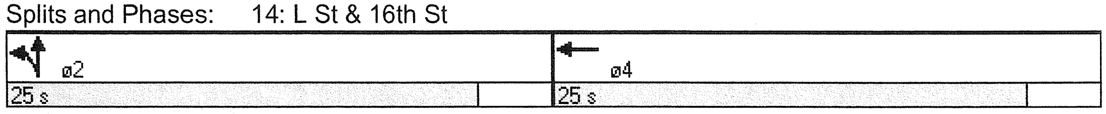
Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↱									↰↑↑	
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		0.86									0.91	
Frpb, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		5973									4984	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		5973									4984	
Volume (vph)	0	2410	1050	0	0	0	0	0	0	234	340	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2410	1050	0	0	0	0	0	0	234	340	0
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	3423	0	0	0	0	0	0	0	0	566	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		71.5									21.5	
Effective Green, g (s)		71.0									21.0	
Actuated g/C Ratio		0.71									0.21	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		4241									1047	
v/s Ratio Prot		c0.57									c0.11	
v/s Ratio Perm												
v/c Ratio		0.96dr									0.54	
Uniform Delay, d1		9.8									35.2	
Progression Factor		1.00									0.82	
Incremental Delay, d2		1.7									1.8	
Delay (s)		11.6									30.7	
Level of Service		B									C	
Approach Delay (s)		11.6			0.0			0.0			30.7	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

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

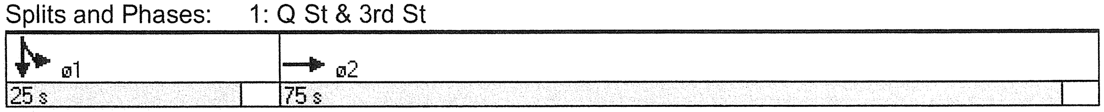
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	75
Maximum Split (%)	25.0%	75.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	90.5	15.5
End Time (s)	15.5	90.5
Yield/Force Off (s)	12	87
Yield/Force Off 170(s)	4	79
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	92

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	60

Offset: 87 (87%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↰↑↑						↑↑↱	↱
Ideal 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
Frpb, ped/bikes					1.00						0.98	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						0.97	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					4863						3071	1205
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					4863						3071	1205
Volume (vph)	0	0	0	170	620	0	0	0	0	0	404	379
Peak-hour factor, PHF	1.00	1.00	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	170	620	0	0	0	0	0	404	379
RTOR Reduction (vph)	0	0	0	0	78	0	0	0	0	0	46	171
Lane Group Flow (vph)	0	0	0	0	712	0	0	0	0	0	468	99
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	0
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2626						921	362
v/s Ratio Prot					c0.15						c0.15	
v/s Ratio Perm												0.08
v/c Ratio					0.27						0.51	0.27
Uniform Delay, d1					6.2						14.5	13.3
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.3						2.0	1.9
Delay (s)					6.5						16.4	15.2
Level of Service					A						B	B
Approach Delay (s)		0.0			6.5			0.0			16.0	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

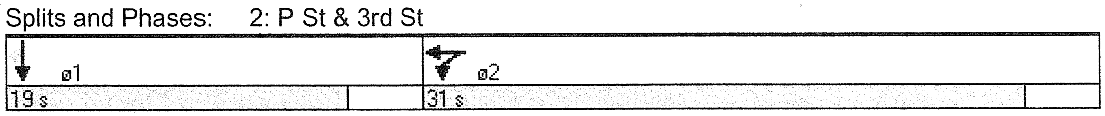
c Critical Lane Group

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	40.5	9.5
End Time (s)	9.5	40.5
Yield/Force Off (s)	6	37
Yield/Force Off 170(s)	48	29
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 37 (74%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.96	
Flt Protected	1.00			0.98	0.96	
Satd. Flow (prot)	1780			4980	3347	
Flt Permitted	1.00			0.98	0.96	
Satd. Flow (perm)	1780			4980	3347	
Volume (vph)	90	20	405	552	470	170
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	20	405	552	470	170
RTOR Reduction (vph)	12	0	0	164	0	0
Lane Group Flow (vph)	98	0	0	793	640	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			29.5	17.5	
Effective Green, g (s)	12.0			29.0	17.0	
Actuated g/C Ratio	0.17			0.41	0.24	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2063	813	
v/s Ratio Prot	c0.06			c0.16	c0.19	
v/s Ratio Perm						
v/c Ratio	0.32			0.38	0.79	
Uniform Delay, d1	25.4			14.3	24.8	
Progression Factor	1.00			1.37	1.00	
Incremental Delay, d2	2.8			0.4	7.6	
Delay (s)	28.2			20.1	32.4	
Level of Service	C			C	C	
Approach Delay (s)	28.2			20.1	32.4	
Approach LOS	C			C	C	

Intersection Summary			
HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

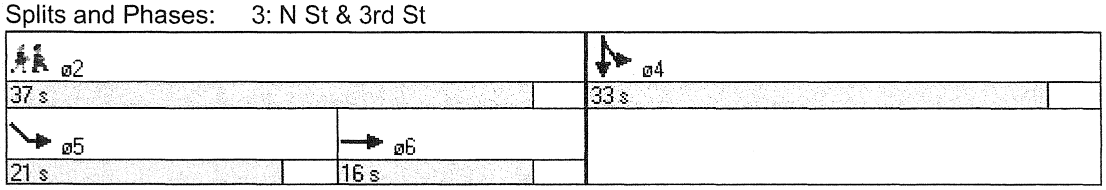
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	37	33	21	16
Maximum Split (%)	52.9%	47.1%	30.0%	22.9%
Minimum Split (s)	37	33	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	22.5	20.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	57.5	20.5	41.5
End Time (s)	57.5	20.5	41.5	57.5
Yield/Force Off (s)	54	17	38	54
Yield/Force Off 170(s)	43	8	38	46
Local Start Time (s)	3.5	40.5	3.5	24.5
Local Yield (s)	37	0	21	37
Local Yield 170(s)	26	61	21	29

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

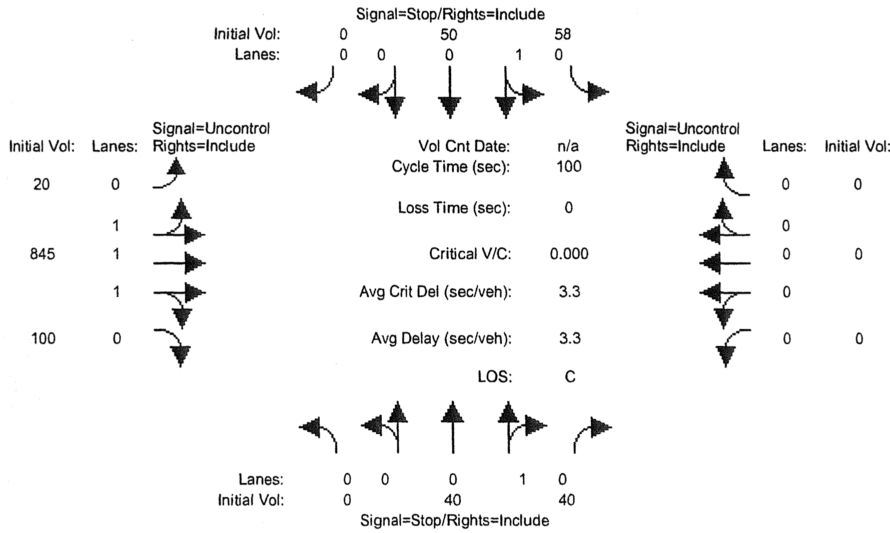
Offset: 17 (24%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
2025+Project AM

Intersection #4: N St./4th St.



Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	40	40	58	50	0	20	845	100	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	40	40	58	50	0	20	845	100	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	40	40	58	50	0	20	845	100	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	40	40	58	50	0	20	845	100	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	40	40	58	50	0	20	845	100	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	950	332	357	1000	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	262	715	602	245	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	255	715	489	239	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.16	0.06	0.12	0.21	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	376	329	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.8	1.4	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	17.1	21.2	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	C	*	*	A	*	*	*	*	*
ApproachDel:		17.1			21.2			xxxxxx			xxxxxx	
ApproachLOS:		C			C			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		5066						4866				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		5066						4866				
Volume (vph)	70	873	0	0	0	0	0	1059	290	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	873	0	0	0	0	0	1059	290	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	44	0	0	0	0
Lane Group Flow (vph)	0	930	0	0	0	0	0	1305	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2244						2155				
v/s Ratio Prot		c0.18						c0.27				
v/s Ratio Perm												
v/c Ratio		0.41						0.61				
Uniform Delay, d1		13.3						14.8				
Progression Factor		0.99						1.00				
Incremental Delay, d2		0.5						1.3				
Delay (s)		13.6						16.1				
Level of Service		B						B				
Approach Delay (s)		13.6			0.0			16.1			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St

ø1	ø2
35 s	35 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						0.96	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		5044		1770	3539						6073	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		5044		1770	3539						6073	
Volume (vph)	0	1068	40	120	485	0	0	0	0	401	777	435
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1068	40	120	485	0	0	0	0	401	777	435
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	95	0
Lane Group Flow (vph)	0	1102	0	120	485	0	0	0	0	0	1518	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		20.0		12.5	36.0						25.5	
Effective Green, g (s)		19.5		12.0	35.5						26.5	
Actuated g/C Ratio		0.28		0.17	0.51						0.38	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		1405		303	1795						2299	
v/s Ratio Prot		c0.22		c0.07	0.14						c0.25	
v/s Ratio Perm												
v/c Ratio		0.78		0.40	0.27						0.66	
Uniform Delay, d1		23.3		25.8	9.9						18.0	
Progression Factor		1.00		0.88	1.77						0.84	
Incremental Delay, d2		4.5		3.7	0.4						1.3	
Delay (s)		27.8		26.5	17.8						16.5	
Level of Service		C		C	B						B	
Approach Delay (s)		27.8			19.6			0.0			16.5	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

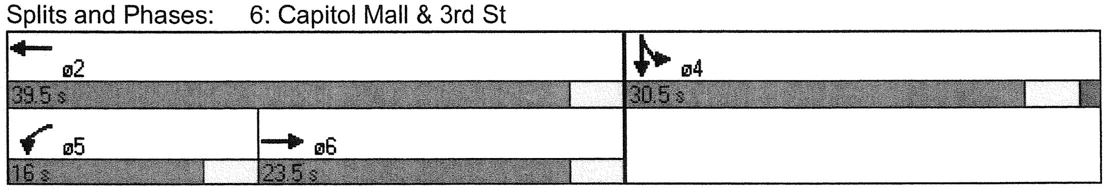
c Critical Lane Group

Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	39.5	30.5	16	23.5
Maximum Split (%)	56.4%	43.6%	22.9%	33.6%
Minimum Split (s)	39.5	30.5	7.5	23.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	26	20.5		10
Flash Dont Walk (s)	10	5		10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	22.5	62	22.5	38.5
End Time (s)	62	22.5	38.5	62
Yield/Force Off (s)	58.5	17.5	35	58.5
Yield/Force Off 170(s)	48.5	12.5	35	48.5
Local Start Time (s)	57.5	27	57.5	3.5
Local Yield (s)	23.5	52.5	0	23.5
Local Yield 170(s)	13.5	47.5	0	13.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 35 (50%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.87		0.98			0.96			0.97	
Flpb, ped/bikes	0.95	1.00	1.00		1.00			0.99			0.98	
Frt	1.00	1.00	0.85		0.98			0.95			0.96	
Flt Protected	0.95	1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)	1687	3539	1380		4900			1498			1535	
Flt Permitted	0.40	1.00	1.00		0.92			0.93			0.94	
Satd. Flow (perm)	718	3539	1380		4517			1413			1452	
Volume (vph)	84	1185	200	10	520	78	10	20	20	55	148	75
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	1185	200	10	520	78	10	20	20	55	148	75
RTOR Reduction (vph)	0	0	93	0	28	0	0	13	0	0	19	0
Lane Group Flow (vph)	84	1185	107	0	580	0	0	37	0	0	259	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)	38.0	38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)	37.5	37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio	0.54	0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)	3.5	3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)	385	1896	739		2420			495			508	
v/s Ratio Prot		c0.33										
v/s Ratio Perm	0.12		0.08		0.13			0.03			c0.18	
v/c Ratio	0.22	0.62	0.14		0.24			0.07			0.51	
Uniform Delay, d1	8.5	11.3	8.2		8.7			15.2			18.0	
Progression Factor	0.62	0.86	2.30		0.52			0.81			0.83	
Incremental Delay, d2	0.8	1.0	0.3		0.2			0.3			3.5	
Delay (s)	6.2	10.8	19.1		4.7			12.6			18.4	
Level of Service	A	B	B		A			B			B	
Approach Delay (s)		11.6			4.7			12.6			18.4	
Approach LOS		B			A			B			B	

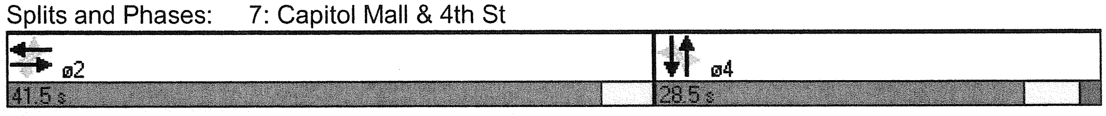
Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	45
Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow	

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.98		1.00	0.95				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.94				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4817		3433	4567				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4817		3433	4567				
Volume (vph)	582	678	0	0	170	50	439	460	300	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	582	678	0	0	170	50	439	460	300	0	0	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	122	0	0	0	0
Lane Group Flow (vph)	582	678	0	0	183	0	439	638	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1239		1275	1696				
v/s Ratio Prot	c0.17	c0.19			0.04		0.13	c0.14				
v/s Ratio Perm												
v/c Ratio	0.85	0.37			0.15		0.34	0.38				
Uniform Delay, d1	27.0	10.2			20.1		15.9	16.1				
Progression Factor	0.47	0.20			1.00		0.41	0.24				
Incremental Delay, d2	10.0	0.5			0.3		0.6	0.5				
Delay (s)	22.6	2.5			20.3		7.1	4.4				
Level of Service	C	A			C		A	A				
Approach Delay (s)		11.8			20.3			5.4			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

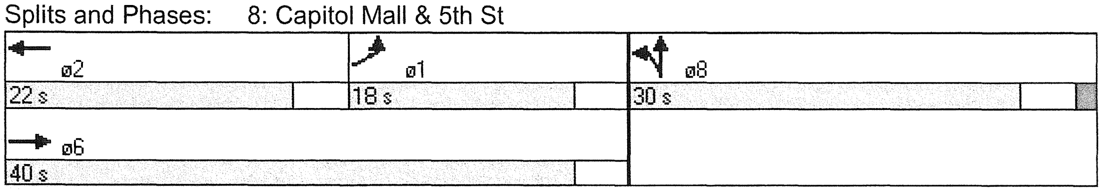
c Critical Lane Group

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	55

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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	0.91	1.00					0.91	
Frt				1.00	1.00	0.85					0.99	
Flt Protected				0.95	0.99	1.00					1.00	
Satd. Flow (prot)				1610	3359	1583					5051	
Flt Permitted				0.95	0.99	1.00					1.00	
Satd. Flow (perm)				1610	3359	1583					5051	
Volume (vph)	0	0	0	498	610	180	0	0	0	0	1052	50
Peak-hour factor, PHF	1.00	1.00	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	498	610	180	0	0	0	0	1052	50
RTOR Reduction (vph)	0	0	0	22	22	98	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	339	725	82	0	0	0	0	1095	0
Turn Type				custom		custom						
Protected Phases											4	
Permitted Phases				2	2	2						
Actuated Green, G (s)				32.5	32.5	32.5					30.5	
Effective Green, g (s)				32.0	32.0	32.0					30.0	
Actuated g/C Ratio				0.46	0.46	0.46					0.43	
Clearance Time (s)				3.5	3.5	3.5					3.5	
Lane Grp Cap (vph)				736	1536	724					2165	
v/s Ratio Prot											c0.22	
v/s Ratio Perm				0.21	c0.22	0.05						
v/c Ratio				0.46	0.47	0.11					0.51	
Uniform Delay, d1				13.1	13.2	10.9					14.6	
Progression Factor				1.05	1.04	1.44					1.00	
Incremental Delay, d2				2.1	1.0	0.3					0.8	
Delay (s)				15.7	14.7	16.0					15.4	
Level of Service				B	B	B					B	
Approach Delay (s)		0.0			15.1			0.0			15.4	
Approach LOS		A			B			A			B	

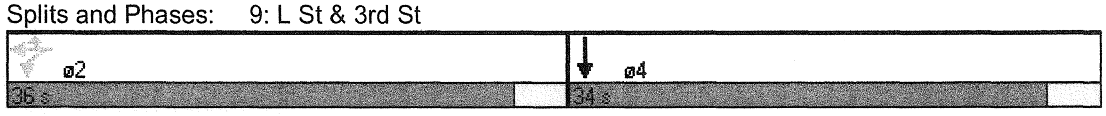
Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	36	34
Maximum Split (%)	51.4%	48.6%
Minimum Split (s)	7.5	34
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		22.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	2.5	38.5
End Time (s)	38.5	2.5
Yield/Force Off (s)	35	69
Yield/Force Off 170(s)	35	61
Local Start Time (s)	3.5	39.5
Local Yield (s)	36	0
Local Yield 170(s)	36	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	60
Offset: 69 (99%), Referenced to phase 4:SBT, Start of Yellow	

Splits and Phases: 9: L St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					0.99		1.00	1.00				0.95
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.97		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6177		1770	5085				2656
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6177		1770	5085				2656
Volume (vph)	0	0	0	0	1156	240	160	932	0	0	0	380
Peak-hour factor, PHF	1.00	1.00	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	1156	240	160	932	0	0	0	380
RTOR Reduction (vph)	0	0	0	0	53	0	8	0	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1343	0	152	932	0	0	0	372
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					25.0		35.5	35.5				35.5
Effective Green, g (s)					26.0		36.0	36.0				36.0
Actuated g/C Ratio					0.37		0.51	0.51				0.51
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					2294		910	2615				1366
v/s Ratio Prot					c0.22		0.09	c0.18				
v/s Ratio Perm												0.14
v/c Ratio					0.59		0.17	0.36				0.27
Uniform Delay, d1					17.7		9.0	10.1				9.6
Progression Factor					1.00		0.34	0.49				1.00
Incremental Delay, d2					1.1		0.3	0.3				0.5
Delay (s)					18.8		3.4	5.3				10.1
Level of Service					B		A	A				B
Approach Delay (s)		0.0			18.8			5.0			10.1	
Approach LOS		A			B			A			B	

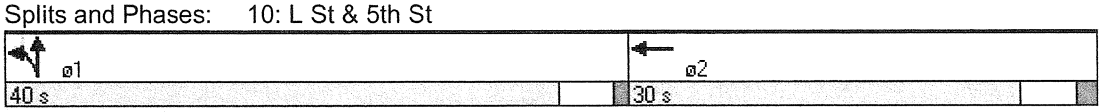
Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	40	30
Maximum Split (%)	57.1%	42.9%
Minimum Split (s)	40	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	26.5	16
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	7
End Time (s)	7	37
Yield/Force Off (s)	2.5	32
Yield/Force Off 170(s)	63.5	23
Local Start Time (s)	5	45
Local Yield (s)	40.5	0
Local Yield 170(s)	31.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		1.00	1.00	1.00	1.00		0.98	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00		1.00	
Frt		0.98		0.92	0.85	1.00	1.00		0.97	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4953		1620	1504	1610	3362		6161	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4953		1620	1504	1610	3362		6161	
Volume (vph)	100	2012	273	40	130	170	220	100	1901	587
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)	100	2012	273	40	130	170	220	100	1901	587
RTOR Reduction (vph)	0	17	0	2	2	0	0	0	0	0
Lane Group Flow (vph)	0	2368	0	90	76	126	264	0	2588	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		36.0		6.5	6.5	6.5	6.5		36.0	
Effective Green, g (s)		36.0		6.0	6.0	6.0	6.0		36.0	
Actuated g/C Ratio		0.36		0.06	0.06	0.06	0.06		0.36	
Clearance Time (s)		4.0		3.5	3.5	3.5	3.5		4.0	
Lane Grp Cap (vph)		1783		97	90	97	202		2218	
v/s Ratio Prot		c0.48		c0.06		0.08	c0.08		c0.42	
v/s Ratio Perm					0.05					
v/c Ratio		1.33		0.93	0.85	1.30	1.31		1.17	
Uniform Delay, d1		32.0		46.8	46.5	47.0	47.0		32.0	
Progression Factor		1.00		1.00	1.00	1.07	1.07		1.00	
Incremental Delay, d2		151.7		73.6	59.2	191.0	168.9		80.4	
Delay (s)		183.7		120.3	105.7	241.5	219.4		112.4	
Level of Service		F		F	F	F	F		F	
Approach Delay (s)		183.7		113.6			226.5		112.4	
Approach LOS		F		F			F		F	

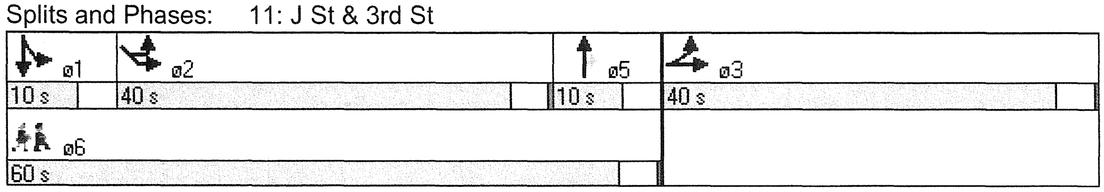
Intersection Summary			
HCM Average Control Delay	151.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	10	40	40	10	60
Maximum Split (%)	10.0%	40.0%	40.0%	10.0%	60.0%
Minimum Split (s)	7.5	40	40	7.5	60
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		25	25		45
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	84	94	44	34	84
End Time (s)	94	34	84	44	44
Yield/Force Off (s)	90.5	30	80	40.5	40
Yield/Force Off 170(s)	90.5	19	69	40.5	29
Local Start Time (s)	54	64	14	4	54
Local Yield (s)	60.5	0	50	10.5	10
Local Yield 170(s)	60.5	89	39	10.5	99

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	140

Offset: 30 (30%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.96					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6030	1514					3254	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6030	1514					3254	1441			
Volume (vph)	780	3110	380	0	0	0	0	602	570	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	780	3110	380	0	0	0	0	602	570	0	0	0
RTOR Reduction (vph)	53	2	167	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	668	3167	213	0	0	0	0	822	350	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	56.0	56.0	56.0					36.0	36.0			
Effective Green, g (s)	56.0	56.0	56.0					36.0	36.0			
Actuated g/C Ratio	0.56	0.56	0.56					0.36	0.36			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	722	3377	848					1171	519			
v/s Ratio Prot	0.52	c0.53						c0.25				
v/s Ratio Perm			0.14						0.24			
v/c Ratio	0.93	0.94	0.25					0.70	0.67			
Uniform Delay, d1	20.1	20.4	11.3					27.4	27.0			
Progression Factor	0.74	0.76	1.41					1.00	1.00			
Incremental Delay, d2	2.6	0.7	0.1					3.5	6.9			
Delay (s)	17.5	16.1	15.9					30.9	33.9			
Level of Service	B	B	B					C	C			
Approach Delay (s)		16.3			0.0			31.8			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

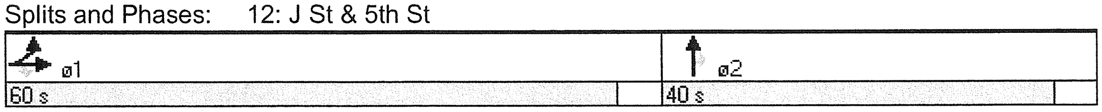
c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	60	40
Maximum Split (%)	60.0%	40.0%
Minimum Split (s)	60	40
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	44	20
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	43	3
End Time (s)	3	43
Yield/Force Off (s)	99	39
Yield/Force Off 170(s)	87	23
Local Start Time (s)	44	4
Local Yield (s)	0	40
Local Yield 170(s)	88	24

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 99 (99%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6136		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6136		3433	3362				
Volume (vph)	0	0	0	0	1210	110	170	1162	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	1210	110	170	1162	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	5	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1291	0	165	1162	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					16.5		26.5	26.5				
Effective Green, g (s)					16.0		26.0	26.0				
Actuated g/C Ratio					0.32		0.52	0.52				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					1964		1785	1748				
v/s Ratio Prot					c0.21		0.05	c0.35				
v/s Ratio Perm												
v/c Ratio					0.66		0.09	0.66				
Uniform Delay, d1					14.6		6.1	8.8				
Progression Factor					1.00		1.34	1.40				
Incremental Delay, d2					1.7		0.1	1.1				
Delay (s)					16.4		8.2	13.4				
Level of Service					B		A	B				
Approach Delay (s)		0.0			16.4			12.7			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	117.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	20	30
Maximum Split (%)	40.0%	60.0%
Minimum Split (s)	20	30
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	5.5	14.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	15.5	35.5
End Time (s)	35.5	15.5
Yield/Force Off (s)	32	12
Yield/Force Off 170(s)	21	0
Local Start Time (s)	33.5	3.5
Local Yield (s)	0	30
Local Yield 170(s)	39	18

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 32 (64%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St

ø1	ø2
20 s	30 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↱		↰	↰↑↑				
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4867		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4867		1522	4806				
Volume (vph)	0	0	0	0	815	210	400	1420	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	815	210	400	1420	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	48	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1019	0	352	1420	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2044		639	2019				
v/s Ratio Prot					c0.21		0.23	c0.30				
v/s Ratio Perm												
v/c Ratio					0.50		0.55	0.70				
Uniform Delay, d1					10.6		10.9	11.9				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.9		3.4	2.1				
Delay (s)					11.5		14.3	14.0				
Level of Service					B		B	B				
Approach Delay (s)		0.0			11.5			14.1			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	45

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St

ø2	ø4
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.86									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		6100									5013	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		6100									5013	
Volume (vph)	0	1148	380	0	0	0	0	0	0	244	600	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1148	380	0	0	0	0	0	0	244	600	0
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	45	0
Lane Group Flow (vph)	0	1493	0	0	0	0	0	0	0	0	799	0
Confl. Peds. (#/hr)			60							60		
Parking (#/hr)										0		0
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		27.5									15.5	
Effective Green, g (s)		27.0									15.0	
Actuated g/C Ratio		0.54									0.30	
Clearance Time (s)		3.5									3.5	
Lane Grp Cap (vph)		3294									1504	
v/s Ratio Prot		c0.24									c0.16	
v/s Ratio Perm												
v/c Ratio		0.45									0.53	
Uniform Delay, d1		7.0									14.6	
Progression Factor		1.00									0.23	
Incremental Delay, d2		0.5									0.9	
Delay (s)		7.5									4.2	
Level of Service		A									A	
Approach Delay (s)		7.5			0.0			0.0			4.2	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	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	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

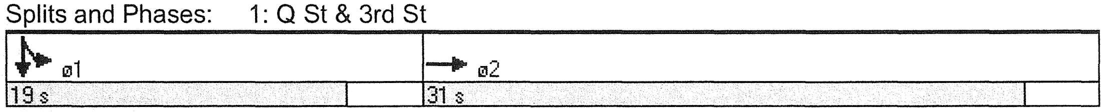
c Critical Lane Group

Phase Number	1	2
Movement	SBTL	EBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	22.5	41.5
End Time (s)	41.5	22.5
Yield/Force Off (s)	38	19
Yield/Force Off 170(s)	30	11
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 19 (38%), Referenced to phase 2:EBT, Start of Yellow

Splits and Phases: 1: Q St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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	0.88
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					1.00						1.00	1.00
Satd. Flow (prot)					4901						3362	2589
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					4901						3362	2589
Volume (vph)	0	0	0	170	2710	0	0	0	0	0	674	1155
Peak-hour factor, PHF	1.00	1.00	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	170	2710	0	0	0	0	0	674	1155
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	0	0	2866	0	0	0	0	0	674	1154
Confl. Peds. (#/hr)				60								60
Parking (#/hr)				0	0						0	
Turn Type				Split								Perm
Protected Phases				2	2						1	
Permitted Phases												1
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)					2647						1009	777
v/s Ratio Prot					c0.58						0.20	
v/s Ratio Perm												c0.45
v/c Ratio					1.08						0.67	1.48
Uniform Delay, d1					11.5						15.3	17.5
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					44.7						3.5	225.0
Delay (s)					56.2						18.8	242.5
Level of Service					E						B	F
Approach Delay (s)		0.0			56.2			0.0			160.1	
Approach LOS		A			E			A			F	

Intersection Summary			
HCM Average Control Delay	96.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
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

Phase Number	1	2
Movement	SBT	WBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	19	31
Maximum Split (%)	38.0%	62.0%
Minimum Split (s)	18.5	30.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	7	19
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	12.5	31.5
End Time (s)	31.5	12.5
Yield/Force Off (s)	28	9
Yield/Force Off 170(s)	20	1
Local Start Time (s)	3.5	22.5
Local Yield (s)	19	0
Local Yield 170(s)	11	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	75

Offset: 9 (18%), Referenced to phase 2:WBTL, Start of Yellow

Splits and Phases: 2: P St & 3rd St

ø1	ø2
19 s	31 s

Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.97	
Frpb, ped/bikes	0.98			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.91	
Flt Protected	1.00			0.99	0.98	
Satd. Flow (prot)	1780			5053	3234	
Flt Permitted	1.00			0.99	0.98	
Satd. Flow (perm)	1780			5053	3234	
Volume (vph)	90	20	196	1349	320	430
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	20	196	1349	320	430
RTOR Reduction (vph)	12	0	0	27	0	0
Lane Group Flow (vph)	98	0	0	1518	750	0
Confl. Peds. (#/hr)		60	60			
Parking (#/hr)			0			
Turn Type			Split			
Protected Phases	6		4	4	5	
Permitted Phases						
Actuated Green, G (s)	12.5			32.5	14.5	
Effective Green, g (s)	12.0			32.0	14.0	
Actuated g/C Ratio	0.17			0.46	0.20	
Clearance Time (s)	3.5			3.5	3.5	
Lane Grp Cap (vph)	305			2310	647	
v/s Ratio Prot	c0.06			c0.30	c0.23	
v/s Ratio Perm						
v/c Ratio	0.32			0.66	1.34dr	
Uniform Delay, d1	25.4			14.7	28.0	
Progression Factor	1.00			0.32	1.00	
Incremental Delay, d2	2.8			0.8	88.1	
Delay (s)	28.2			5.6	116.1	
Level of Service	C			A	F	
Approach Delay (s)	28.2			5.6	116.1	
Approach LOS	C			A	F	

Intersection Summary			
HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

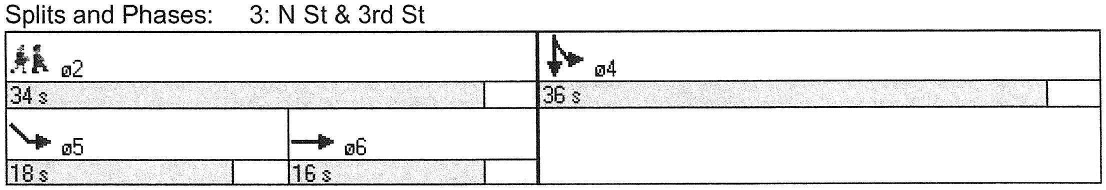
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	2	4	5	6
Movement	Ped	SBTL	SEL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	34	36	18	16
Maximum Split (%)	48.6%	51.4%	25.7%	22.9%
Minimum Split (s)	34	36	7.5	16
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	19.5	23.5		4.5
Flash Dont Walk (s)	11	9		8
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12.5	46.5	12.5	30.5
End Time (s)	46.5	12.5	30.5	46.5
Yield/Force Off (s)	43	9	27	43
Yield/Force Off 170(s)	32	0	27	35
Local Start Time (s)	3.5	37.5	3.5	21.5
Local Yield (s)	34	0	18	34
Local Yield 170(s)	23	61	18	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	75

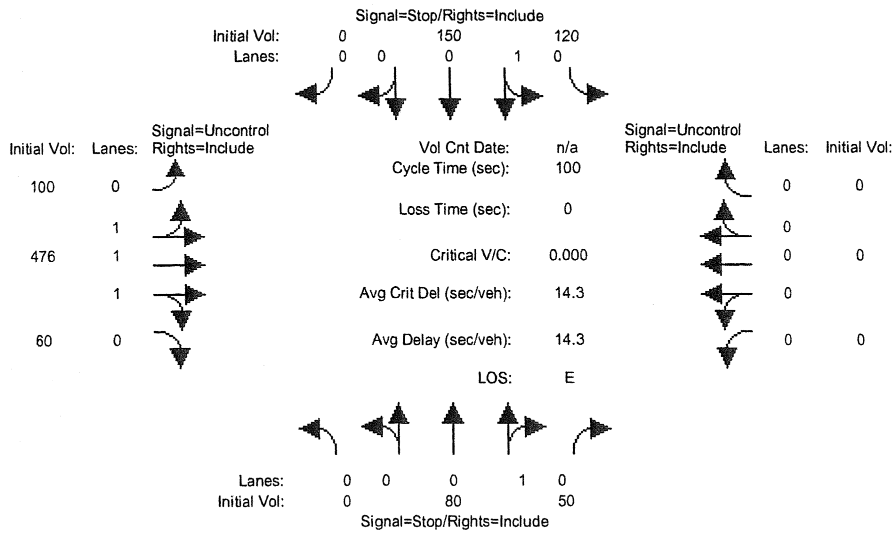
Offset: 9 (13%), Referenced to phase 4:SBTL, Start of Yellow

Splits and Phases: 3: N St & 3rd St



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
2025+Project PM

Intersection #4: N St./4th St.



Street Name:	4th St						N St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	80	50	120	150	0	100	476	60	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	80	50	120	150	0	100	476	60	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	80	50	120	150	0	100	476	60	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	80	50	120	150	0	100	476	60	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	80	50	120	150	0	100	476	60	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	721	189	414	751	xxxxx	15	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	356	858	552	342	xxxxx	1616	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	327	858	396	314	xxxxx	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	0.24	0.06	0.30	0.48	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	429	346	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	1.3	6.4	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	17.0	44.0	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	E	*	*	A	*	*	*	*	*
ApproachDel:		17.0			44.0			xxxxxx			xxxxxx	
ApproachLOS:		C			E			*			*	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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				
Frpb, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5050						4902				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5050						4902				
Volume (vph)	90	556	0	0	0	0	0	1143	250	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	556	0	0	0	0	0	1143	250	0	0	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	50	0	0	0	0
Lane Group Flow (vph)	0	628	0	0	0	0	0	1343	0	0	0	0
Confl. Peds. (#/hr)	60								60			
Parking (#/hr)	0		0						0			
Turn Type	Split											
Protected Phases	1	1						2				
Permitted Phases												
Actuated Green, G (s)		31.5						31.5				
Effective Green, g (s)		31.0						31.0				
Actuated g/C Ratio		0.44						0.44				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		2236						2171				
v/s Ratio Prot		c0.12						c0.27				
v/s Ratio Perm												
v/c Ratio		0.28						0.62				
Uniform Delay, d1		12.4						15.0				
Progression Factor		1.39						1.00				
Incremental Delay, d2		0.2						1.3				
Delay (s)		17.6						16.3				
Level of Service		B						B				
Approach Delay (s)		17.6			0.0			16.3			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

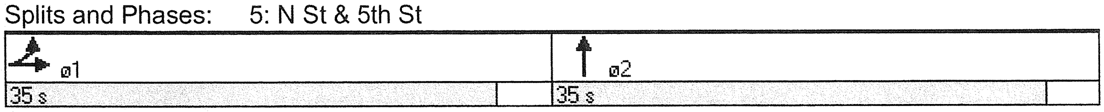
c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	35	35
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	34.5	34.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	22	22
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	65.5	30.5
End Time (s)	30.5	65.5
Yield/Force Off (s)	27	62
Yield/Force Off 170(s)	18	53
Local Start Time (s)	38.5	3.5
Local Yield (s)	0	35
Local Yield 170(s)	61	26

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 27 (39%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 5: N St & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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		1.00	0.95						0.86	
Frpb, ped/bikes		0.99		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.99		1.00	1.00						0.93	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		5022		1770	3539						5943	
Flt Permitted		1.00		0.95	1.00						1.00	
Satd. Flow (perm)		5022		1770	3539						5943	
Volume (vph)	0	766	40	367	745	0	0	0	0	211	1148	1145
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	766	40	367	745	0	0	0	0	211	1148	1145
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	80	0
Lane Group Flow (vph)	0	798	0	367	745	0	0	0	0	0	2424	0
Confl. Peds. (#/hr)			60									
Parking (#/hr)										0		
Turn Type				Prot						Split		
Protected Phases		6		5	2					4	4	
Permitted Phases												
Actuated Green, G (s)		13.5		16.5	33.5						28.0	
Effective Green, g (s)		13.0		16.0	33.0						29.0	
Actuated g/C Ratio		0.19		0.23	0.47						0.41	
Clearance Time (s)		3.5		3.5	3.5						5.0	
Lane Grp Cap (vph)		933		405	1668						2462	
v/s Ratio Prot		c0.16		c0.21	0.21						c0.41	
v/s Ratio Perm												
v/c Ratio		0.86		0.91	0.45						1.53dr	
Uniform Delay, d1		27.6		26.3	12.4						20.3	
Progression Factor		1.00		0.84	0.60						0.66	
Incremental Delay, d2		9.9		24.7	0.8						9.2	
Delay (s)		37.5		46.9	8.2						22.6	
Level of Service		D		D	A						C	
Approach Delay (s)		37.5			21.0			0.0			22.6	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	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

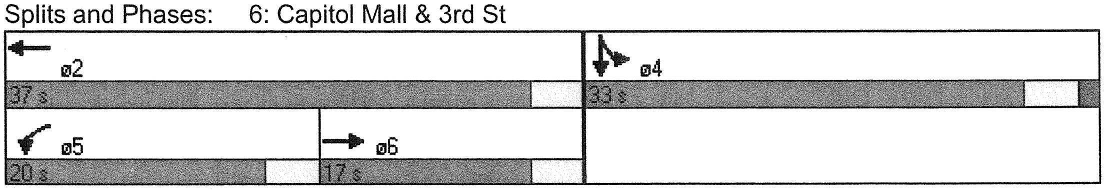
Timing Report, Sorted By Phase
301 Capitol Mall
6: Capitol Mall & 3rd St
2025 Plus Project Conditions - PM Peak No 2-Way Conversion L-Capitol - MITIGATED

Phase Number	2	4	5	6
Movement	WBT	SBTL	WBL	EBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	37	33	20	17
Maximum Split (%)	52.9%	47.1%	28.6%	24.3%
Minimum Split (s)	37	9	20	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	1.5	0	0
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	23.5		5.5	3.5
Flash Dont Walk (s)	10		11	10
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	6.5	43.5	6.5	26.5
End Time (s)	43.5	6.5	26.5	43.5
Yield/Force Off (s)	40	1.5	23	40
Yield/Force Off 170(s)	30	1.5	12	30
Local Start Time (s)	53.5	20.5	53.5	3.5
Local Yield (s)	17	48.5	0	17
Local Yield 170(s)	7	48.5	59	7

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	75

Offset: 23 (33%), Referenced to phase 2:WBT and 5:WBL, Start of Yellow

Splits and Phases: 6: Capitol Mall & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.87		0.99			0.99			0.97	
Flpb, ped/bikes	0.98	1.00	1.00		1.00			0.99			0.99	
Frt	1.00	1.00	0.85		0.99			0.98			0.96	
Flt Protected	0.95	1.00	1.00		1.00			0.99			0.99	
Satd. Flow (prot)	1729	3539	1380		4955			1584			1524	
Flt Permitted	0.23	1.00	1.00		0.93			0.82			0.90	
Satd. Flow (perm)	416	3539	1380		4628			1318			1381	
Volume (vph)	218	719	40	10	940	94	70	130	30	69	150	102
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	218	719	40	10	940	94	70	130	30	69	150	102
RTOR Reduction (vph)	0	0	19	0	17	0	0	8	0	0	24	0
Lane Group Flow (vph)	218	719	21	0	1027	0	0	222	0	0	297	0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Parking (#/hr)							0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)	38.0	38.0	38.0		38.0			23.5			23.5	
Effective Green, g (s)	37.5	37.5	37.5		37.5			24.5			24.5	
Actuated g/C Ratio	0.54	0.54	0.54		0.54			0.35			0.35	
Clearance Time (s)	3.5	3.5	3.5		3.5			5.0			5.0	
Lane Grp Cap (vph)	223	1896	739		2479			461			483	
v/s Ratio Prot		0.20										
v/s Ratio Perm	c0.52		0.02		0.22			0.17			c0.21	
v/c Ratio	0.98	0.38	0.03		0.41			0.48			0.61	
Uniform Delay, d1	15.8	9.5	7.7		9.7			17.8			18.8	
Progression Factor	1.95	2.08	3.94		0.21			0.79			1.00	
Incremental Delay, d2	34.9	0.3	0.0		0.5			3.4			5.5	
Delay (s)	65.7	19.9	30.2		2.5			17.5			24.4	
Level of Service	E	B	C		A			B			C	
Approach Delay (s)		30.6			2.5			17.5			24.4	
Approach LOS		C			A			B			C	

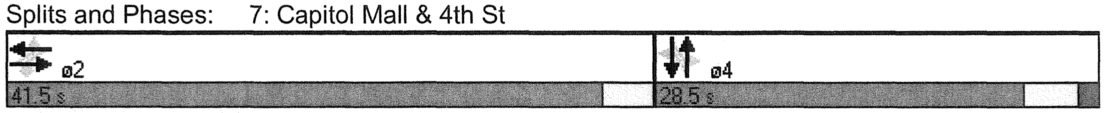
Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	EBWB	NBSB
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	41.5	28.5
Maximum Split (%)	59.3%	40.7%
Minimum Split (s)	22.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	10	10
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	59	30.5
End Time (s)	30.5	59
Yield/Force Off (s)	27	54
Yield/Force Off 170(s)	17	44
Local Start Time (s)	32	3.5
Local Yield (s)	0	27
Local Yield 170(s)	60	17

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	55
Offset: 27 (39%), Referenced to phase 2:EBWB, Start of Yellow	

Splits and Phases: 7: Capitol Mall & 4th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑↑↱		↰↰	↑↑↑↱				
Ideal Flow (vphpl)	1900	1900	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	0.97	0.95			0.91		0.97	0.91				
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.98				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			4971		3433	4943				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			4971		3433	4943				
Volume (vph)	343	476	0	0	660	70	383	840	100	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	343	476	0	0	660	70	383	840	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	21	0	0	0	0
Lane Group Flow (vph)	343	476	0	0	711	0	383	919	0	0	0	0
Confl. Peds. (#/hr)						60			60			
Turn Type	Prot						Split					
Protected Phases	1	6			2		8	8				
Permitted Phases												
Actuated Green, G (s)	14.5	36.5			18.5		25.0	25.0				
Effective Green, g (s)	14.0	36.0			18.0		26.0	26.0				
Actuated g/C Ratio	0.20	0.51			0.26		0.37	0.37				
Clearance Time (s)	3.5	3.5			3.5		5.0	5.0				
Lane Grp Cap (vph)	687	1820			1278		1275	1836				
v/s Ratio Prot	c0.10	0.13			c0.14		0.11	c0.19				
v/s Ratio Perm												
v/c Ratio	0.50	0.26			0.56		0.30	0.50				
Uniform Delay, d1	24.9	9.5			22.5		15.6	17.0				
Progression Factor	0.76	0.60			1.00		0.44	0.40				
Incremental Delay, d2	2.4	0.3			1.8		0.5	0.8				
Delay (s)	21.4	6.1			24.3		7.4	7.6				
Level of Service	C	A			C		A	A				
Approach Delay (s)		12.5			24.3			7.5			0.0	
Approach LOS		B			C			A			A	

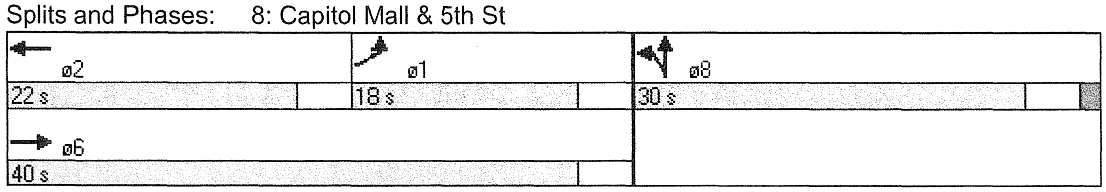
Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	6	8
Movement	EBL	WBT	EBT	NBTL
Lead/Lag	Lag	Lead		
Lead-Lag Optimize				
Recall Mode	Max	Max	Max	Max
Maximum Split (s)	18	22	40	30
Maximum Split (%)	25.7%	31.4%	57.1%	42.9%
Minimum Split (s)	7.5	20.5	20.5	17
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0	0	1.5
Minimum Initial (s)	4	4	4	4
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		10	10	5
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	20.5	68.5	68.5	38.5
End Time (s)	38.5	20.5	38.5	68.5
Yield/Force Off (s)	35	17	35	63.5
Yield/Force Off 170(s)	35	7	25	58.5
Local Start Time (s)	55.5	33.5	33.5	3.5
Local Yield (s)	0	52	0	28.5
Local Yield 170(s)	0	42	60	23.5

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	50

Offset: 35 (50%), Referenced to phase 1:EBL and 6:EBT, Start of Yellow

Splits and Phases: 8: Capitol Mall & 5th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	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	0.91	1.00					0.91	
Frt				1.00	1.00	0.85					0.99	
Flt Protected				0.95	0.99	1.00					1.00	
Satd. Flow (prot)				1610	3363	1583					5042	
Flt Permitted				0.95	0.99	1.00					1.00	
Satd. Flow (perm)				1610	3363	1583					5042	
Volume (vph)	0	0	0	1123	1474	390	0	0	0	0	1329	80
Peak-hour factor, PHF	1.00	1.00	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	1123	1474	390	0	0	0	0	1329	80
RTOR Reduction (vph)	0	0	0	1	1	167	0	0	0	0	10	0
Lane Group Flow (vph)	0	0	0	836	1759	223	0	0	0	0	1399	0
Turn Type				custom		custom						
Protected Phases											4	
Permitted Phases				2	2	2						
Actuated Green, G (s)				40.5	40.5	40.5					22.5	
Effective Green, g (s)				40.0	40.0	40.0					22.0	
Actuated g/C Ratio				0.57	0.57	0.57					0.31	
Clearance Time (s)				3.5	3.5	3.5					3.5	
Lane Grp Cap (vph)				920	1922	905					1585	
v/s Ratio Prot											c0.28	
v/s Ratio Perm				0.52	c0.52	0.14						
v/c Ratio				0.91	0.92	0.25					0.88	
Uniform Delay, d1				13.4	13.5	7.5					22.8	
Progression Factor				0.77	0.77	0.44					1.00	
Incremental Delay, d2				13.8	7.9	0.6					7.5	
Delay (s)				24.1	18.3	3.9					30.3	
Level of Service				C	B	A					C	
Approach Delay (s)		0.0			18.0			0.0			30.3	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4
Movement	WBTL	SBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	44	26
Maximum Split (%)	62.9%	37.1%
Minimum Split (s)	7.5	20
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)		8.5
Flash Dont Walk (s)		8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	66.5	40.5
End Time (s)	40.5	66.5
Yield/Force Off (s)	37	63
Yield/Force Off 170(s)	37	55
Local Start Time (s)	3.5	47.5
Local Yield (s)	44	0
Local Yield 170(s)	44	62

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	65
Offset: 63 (90%), Referenced to phase 4:SBT, Start of Yellow	

Splits and Phases: 9: L St & 3rd St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↱		↰	↑↑↑				↱↱
Ideal Flow (vphpl)	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		1.00	0.91				0.88
Frpb, ped/bikes					1.00		1.00	1.00				0.93
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					6289		1770	5085				2585
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					6289		1770	5085				2585
Volume (vph)	0	0	0	0	2066	220	440	813	0	0	0	240
Peak-hour factor, PHF	1.00	1.00	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	2066	220	440	813	0	0	0	240
RTOR Reduction (vph)	0	0	0	0	12	0	6	0	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	2274	0	434	813	0	0	0	232
Confl. Peds. (#/hr)						60	60					60
Turn Type							Split					custom
Protected Phases					2		1	1				
Permitted Phases												1
Actuated Green, G (s)					40.0		20.5	20.5				20.5
Effective Green, g (s)					41.0		21.0	21.0				21.0
Actuated g/C Ratio					0.59		0.30	0.30				0.30
Clearance Time (s)					5.0		4.5	4.5				4.5
Lane Grp Cap (vph)					3684		531	1526				776
v/s Ratio Prot					c0.36		c0.25	0.16				
v/s Ratio Perm												0.09
v/c Ratio					0.62		0.82	0.53				0.30
Uniform Delay, d1					9.4		22.7	20.4				18.8
Progression Factor					1.00		0.80	0.82				1.00
Incremental Delay, d2					0.8		11.7	1.2				1.0
Delay (s)					10.2		29.9	17.9				19.8
Level of Service					B		C	B				B
Approach Delay (s)		0.0			10.2			22.1			19.8	
Approach LOS		A			B			C			B	

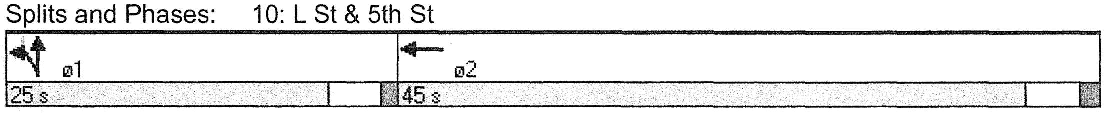
Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2
Movement	NBTL	WBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	45
Maximum Split (%)	35.7%	64.3%
Minimum Split (s)	25	45
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1	1.5
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	11.5	31
Flash Dont Walk (s)	9	9
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	37	62
End Time (s)	62	37
Yield/Force Off (s)	57.5	32
Yield/Force Off 170(s)	48.5	23
Local Start Time (s)	5	30
Local Yield (s)	25.5	0
Local Yield 170(s)	16.5	61

Intersection Summary	
Cycle Length	70
Control Type	Pretimed
Natural Cycle	70

Offset: 32 (46%), Referenced to phase 2:WBT, Start of Yellow

Splits and Phases: 10: L St & 5th St



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations										
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	4.0		4.0	
Lane Util. Factor		0.91		0.95	0.95	0.91	0.91		0.91	
Frpb, ped/bikes		0.99		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		0.98		0.95	0.85	1.00	1.00		0.96	
Flt Protected		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (prot)		4910		1678	1504	1610	3365		6112	
Flt Permitted		1.00		1.00	1.00	0.95	0.99		0.96	
Satd. Flow (perm)		4910		1678	1504	1610	3365		6112	
Volume (vph)	70	824	126	120	220	380	520	80	1686	653
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)	70	824	126	120	220	380	520	80	1686	653
RTOR Reduction (vph)	0	19	0	13	13	0	0	0	0	0
Lane Group Flow (vph)	0	1001	0	170	144	290	610	0	2419	0
Confl. Peds. (#/hr)			60							60
Turn Type	Split				Perm	Split		Split		
Protected Phases	3	3		5		1	1	2	2	
Permitted Phases					5					
Actuated Green, G (s)		19.0		10.0	10.0	17.5	17.5		38.0	
Effective Green, g (s)		19.0		10.0	10.0	17.0	17.0		38.0	
Actuated g/C Ratio		0.19		0.10	0.10	0.17	0.17		0.38	
Clearance Time (s)		4.0		4.0	4.0	3.5	3.5		4.0	
Lane Grp Cap (vph)		933		168	150	274	572		2323	
v/s Ratio Prot		c0.20		c0.10		0.18	c0.18		c0.40	
v/s Ratio Perm					0.10					
v/c Ratio		1.07		1.01	0.96	1.06	1.07		1.13dr	
Uniform Delay, d1		40.5		45.0	44.8	41.5	41.5		31.0	
Progression Factor		1.00		1.00	1.00	0.95	0.95		1.00	
Incremental Delay, d2		51.2		73.2	64.2	70.1	56.3		30.5	
Delay (s)		91.7		118.2	109.0	109.4	95.6		61.5	
Level of Service		F		F	F	F	F		E	
Approach Delay (s)		91.7		114.0			100.0		61.5	
Approach LOS		F		F			F		E	

Intersection Summary			
HCM Average Control Delay	79.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

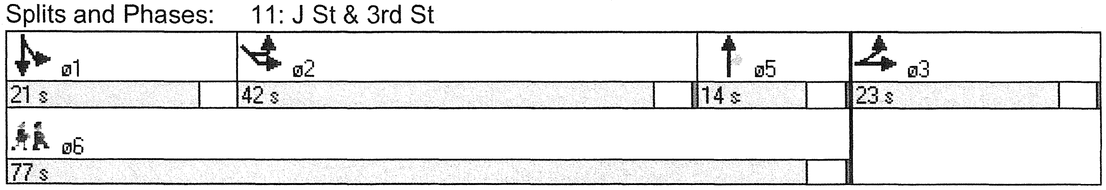
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Phase Number	1	2	3	5	6
Movement	SBTL	SEL	EBTL	NBT	Ped
Lead/Lag	Lead	Lag			
Lead-Lag Optimize					
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	21	42	23	14	77
Maximum Split (%)	21.0%	42.0%	23.0%	14.0%	77.0%
Minimum Split (s)	7.5	42	23	8	77
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		27	8		62
Flash Dont Walk (s)		11	11		11
Dual Entry	Yes	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	84	5	61	47	84
End Time (s)	5	47	84	61	61
Yield/Force Off (s)	1.5	43	80	57	57
Yield/Force Off 170(s)	1.5	32	69	57	46
Local Start Time (s)	41	62	18	4	41
Local Yield (s)	58.5	0	37	14	14
Local Yield 170(s)	58.5	89	26	14	3

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	110

Offset: 43 (43%), Referenced to phase 2:SEL, Start of Yellow

Splits and Phases: 11: J St & 3rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	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	0.81	0.81	1.00					0.91	0.91			
Frpb, ped/bikes	1.00	1.00	0.95					1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00			
Frt	1.00	1.00	0.85					0.96	0.85			
Flt Protected	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (prot)	1290	6035	1498					3241	1441			
Flt Permitted	0.95	1.00	1.00					1.00	1.00			
Satd. Flow (perm)	1290	6035	1498					3241	1441			
Volume (vph)	550	2330	240	0	0	0	0	513	520	0	0	0
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	550	2330	240	0	0	0	0	513	520	0	0	0
RTOR Reduction (vph)	128	0	139	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	422	2330	101	0	0	0	0	725	308	0	0	0
Confl. Peds. (#/hr)	60		60									
Parking (#/hr)	0											
Turn Type	Split		Perm						Perm			
Protected Phases	1	1						2				
Permitted Phases			1						2			
Actuated Green, G (s)	21.0	21.0	21.0					21.0	21.0			
Effective Green, g (s)	21.0	21.0	21.0					21.0	21.0			
Actuated g/C Ratio	0.42	0.42	0.42					0.42	0.42			
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0			
Lane Grp Cap (vph)	542	2535	629					1361	605			
v/s Ratio Prot	0.33	c0.39						c0.22				
v/s Ratio Perm			0.07						0.21			
v/c Ratio	0.78	0.92	0.16					0.53	0.51			
Uniform Delay, d1	12.5	13.7	9.0					10.8	10.7			
Progression Factor	0.69	0.77	0.83					1.00	1.00			
Incremental Delay, d2	1.0	0.7	0.0					1.5	3.0			
Delay (s)	9.7	11.3	7.6					12.3	13.7			
Level of Service	A	B	A					B	B			
Approach Delay (s)		10.7			0.0			12.8			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	EBTL	NBT
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	25	25
Yellow Time (s)	4	4
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	9	5
Flash Dont Walk (s)	12	16
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	28	3
End Time (s)	3	28
Yield/Force Off (s)	49	24
Yield/Force Off 170(s)	37	8
Local Start Time (s)	29	4
Local Yield (s)	0	25
Local Yield 170(s)	38	9

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	60

Offset: 49 (98%), Referenced to phase 1:EBTL, Start of Yellow

Splits and Phases: 12: J St & 5th St

ø1	ø2
25 s	25 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6224		3433	3362				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6224		3433	3362				
Volume (vph)	0	0	0	0	2940	60	500	563	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	2940	60	500	563	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	7	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2997	0	493	563	0	0	0	0
Confl. Peds. (#/hr)						60						
Parking (#/hr)					0			0				
Turn Type							Split					
Protected Phases					1		2	2				
Permitted Phases												
Actuated Green, G (s)					75.5		17.5	17.5				
Effective Green, g (s)					75.0		17.0	17.0				
Actuated g/C Ratio					0.75		0.17	0.17				
Clearance Time (s)					3.5		3.5	3.5				
Lane Grp Cap (vph)					4668		584	572				
v/s Ratio Prot					c0.48		0.14	c0.17				
v/s Ratio Perm												
v/c Ratio					0.64		0.84	0.98				
Uniform Delay, d1					6.0		40.2	41.4				
Progression Factor					1.00		1.03	1.03				
Incremental Delay, d2					0.7		10.4	28.4				
Delay (s)					6.7		51.8	70.8				
Level of Service					A		D	E				
Approach Delay (s)		0.0			6.7			61.9			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM Average Control Delay	21.1	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	128.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2
Movement	WBT	NBTL
Lead/Lag	Lead	Lag
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	79	21
Maximum Split (%)	79.0%	21.0%
Minimum Split (s)	79	21
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	64.5	5.5
Flash Dont Walk (s)	11	12
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	44.5	23.5
End Time (s)	23.5	44.5
Yield/Force Off (s)	20	41
Yield/Force Off 170(s)	9	29
Local Start Time (s)	24.5	3.5
Local Yield (s)	0	21
Local Yield 170(s)	89	9

Intersection Summary	
Cycle Length	100
Control Type	Pretimed
Natural Cycle	100

Offset: 20 (20%), Referenced to phase 1:WBT, Start of Yellow

Splits and Phases: 13: I St & 5th St

ø1	ø2
79 s	21 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal 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		0.86	0.86				
Frpb, 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					1.00		0.95	1.00				
Satd. Flow (prot)					4860		1522	4806				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4860		1522	4806				
Volume (vph)	0	0	0	0	894	240	330	1730	0	0	0	0
Peak-hour factor, PHF	1.00	1.00	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	894	240	330	1730	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	37	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1132	0	293	1730	0	0	0	0
Confl. Peds. (#/hr)						60						
Turn Type							Split					
Protected Phases					4		2	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)					2041		639	2019				
v/s Ratio Prot					c0.23		0.19	c0.36				
v/s Ratio Perm												
v/c Ratio					0.55		0.46	0.86				
Uniform Delay, d1					11.0		10.4	13.1				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					1.1		2.4	5.0				
Delay (s)					12.1		12.8	18.1				
Level of Service					B		B	B				
Approach Delay (s)		0.0			12.1			17.2			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	2	4
Movement	NBTL	WBT
Lead/Lag		
Lead-Lag Optimize		
Recall Mode	Max	Max
Maximum Split (s)	25	25
Maximum Split (%)	50.0%	50.0%
Minimum Split (s)	21.5	21.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0	0
Minimum Initial (s)	4	4
Vehicle Extension (s)	3	3
Minimum Gap (s)	3	3
Time Before Reduce (s)	0	0
Time To Reduce (s)	0	0
Walk Time (s)	10	10
Flash Dont Walk (s)	8	8
Dual Entry	Yes	Yes
Inhibit Max	Yes	Yes
Start Time (s)	48.5	23.5
End Time (s)	23.5	48.5
Yield/Force Off (s)	20	45
Yield/Force Off 170(s)	12	37
Local Start Time (s)	3.5	28.5
Local Yield (s)	25	0
Local Yield 170(s)	17	42

Intersection Summary	
Cycle Length	50
Control Type	Pretimed
Natural Cycle	50

Offset: 45 (90%), Referenced to phase 4:WBT, Start of Yellow

Splits and Phases: 14: L St & 16th St

ø2	ø4
25 s	25 s