

Sacramento Valley Station

Area Plan

Technical Appendix D

Technical - Circulation

- i Fire access sign-off e-mail from King Tunson
- ii Concept of operations report

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City of SACRAMENTO Perkins&Will

i. Fire access sign-off e-mail from King Tunson

Gregory Taylor

From: King Tunson <ktunson@sfd.cityofsacramento.org>
Sent: Wednesday, February 5, 2020 4:20 PM
To: Gregory Taylor
Subject: RE: SVS Fire Access

Yes. Thanks for providing the additional info.

King Tunson
Entitlement Plan Review Supervisor
Sacramento Fire Department
5770 Freeport Blvd, Ste 200
Sacramento, CA 95822
Office (916) 808-1358
Fax (916) 808-1677
ktunson@sfd.cityofsacramento.org

From: Gregory Taylor <GTaylor@cityofsacramento.org>
Sent: Wednesday, February 05, 2020 4:19 PM
To: King Tunson <ktunson@sfd.cityofsacramento.org>
Subject: RE: SVS Fire Access

King,
Then all good with what I sent today?

Best,
Greg

Gregory Taylor, AIA, LEED AP
Supervising Architect
Project Manager Sacramento Valley Station

**Department of Public Works
City of Sacramento**

915 I Street, 2nd Floor
Sacramento, CA 95814
916. 808.5268

gtaylor@cityofsacramento.org

www.sacramentovalleystation.org

From: King Tunson <ktunson@sfd.cityofsacramento.org>

Sent: Wednesday, February 5, 2020 4:18 PM

To: Gregory Taylor <GTaylor@cityofsacramento.org>

Subject: RE: SVS Fire Access

Perfect! Thanks

King Tunson
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From: Gregory Taylor <GTaylor@cityofsacramento.org>
Sent: Wednesday, February 05, 2020 9:12 AM
To: King Tunson <ktunson@sfd.cityofsacramento.org>
Subject: RE: SVS Fire Access

King,

We have a note in the lower left corner regarding the off-street services. Does that suffice?

I'm also [LINKing](#) a packet that I just put together for you, and I should have done this when I first sent the single access diagram.

These are just conceptual, but want to be sure you understand the full picture. We have also submitted for a construction funding grant for the bus-mobility center and those rendered images are in the same pdf. I'm at my desk all day if you have questions from this.

Thanks,
Greg

Gregory Taylor, AIA, LEED AP
Supervising Architect
Project Manager Sacramento Valley Station

Department of Public Works
City of Sacramento

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From: King Tunson <ktunson@sfd.cityofsacramento.org>
Sent: Wednesday, February 5, 2020 8:58 AM
To: Gregory Taylor <GTaylor@cityofsacramento.org>
Subject: RE: SVS Fire Access

Hi Greg,

Access looks good. Will all of the non-street access be provided with an all-weather surface?

King Tunson

2

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From: Gregory Taylor <GTaylor@cityofsacramento.org>
Sent: Monday, February 03, 2020 4:59 PM
To: King Tunson <ktunson@sfd.cityofsacramento.org>
Subject: SVS Fire Access

King,

Hope this finds you well. Wanted to run by you our latest Fire access diagram for your review. Be happy to discuss on the phone if that helps.

Greg

Gregory Taylor, AIA, LEED AP
Supervising Architect
Project Manager Sacramento Valley Station

**Department of Public Works
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ii. Concept of operations report

SACRAMENTO VALLEY STATION (SVS) SITE ACCESS CONCEPT OF OPERATIONS FEASIBILITY

DATE: July 29, 2020

TO: Dennis Dornan | Perkins + Will
Greg Taylor | City of Sacramento

FROM: Sean Carney | DKS Associates
Randy Johnson | DKS Associates
Meron Shiferaw | DKS Associates

SUBJECT: Transportation Assessment of Site Access to the Sacramento Valley Station and Concept of Operations Feasibility Project #18056-000

INTRODUCTION

This memorandum discusses the traffic operational feasibility analysis of the site access modifications made to the Sacramento Valley Station (SVS) Master Plan. The proposed modifications include the following:

- Extension of 3rd Street north from I Street into the site, this will serve as the primary access to the hotel, parking garage, bus depot, and on-site servicing. 3rd Street will also be used for limited pick-up and drop-off activities;
- Directional reversal of H Street between 5th Street and 6th Street from one-way eastbound to one-way westbound. This reversal provides direct site access from H Street. The access point at 5th Street and H Street will primarily be used for pick-up and drop-off activity;
- Intersection control modifications needed at 5th Street and H Street, and 6th Street and H Street required to accommodate the directional reversal of H Street between 5th Street and 6th Street, and operational feasibility of these changes;
- Addition of two-way cycle track along the south side of H Street between 5th Street and 10th Street. This study focuses on the operational feasibility of the H Street intersections at 5th Street and 6th. Further study is required to analyze the operational impacts of the full length of the cycle track.

KEY TAKEAWAYS

- Connection of H Street through the site is not recommended as it creates a cut through route from 5th Street to the I-5 Southbound on-ramp. The pedestrian

- plaza in the center of the site should be kept clear of obstructions to provide a secondary emergency route for both sides of the site;
- Proper guidance should be provided on site for pedestrian and cyclists to minimize conflicts;
- The extension of 3rd Street into the site will require a realignment of the I-5 Southbound on ramp to create a 5-leg intersection at 3rd Street and I Street. Further study and coordination with Caltrans is required for this redesign;
- Streetcar rail operations along 3rd Street would not require rail preemption at the intersection of 3rd Street and I Street, however, transit signal priority treatments are recommended to provide a transit preferential treatment. Light rail operations along 3rd Street would require preemption sequencing which would significantly limit the capacity along the I-5 ramps causing queuing issues. Further quantitative capacity analysis to determine preemption impacts would be required;
- The conversion of H Street from one-way eastbound to one-way westbound is feasible with the double tracking of the light rail line;
- It is not likely feasible to assign bicycle phases for the two-way cycle track at the 5th Street and H Street intersection due to capacity constraints. This will require further quantitative analysis. To mitigate these capacity constraints, it is recommended that cyclists dismount and use the pedestrian signals to cross the intersection;
- It may be feasible to assign bicycle phases for the two-way cycle track at the 6th Street and H Street intersection due to the lower number of vehicle phases and lower anticipated north/south vehicle demand. This will require further quantitative analysis.

CONCEPT OF OPERATIONS FEASIBILITY

INTERSECTION OF 3RD STREET AND I STREET

Intersection modifications at 3rd Street and I Street include the addition of a fourth leg extending 3rd Street from I Street to H Street to provide access to the site parking and developments on the western side of the site. This access point will also serve transit access for buses and is currently planned as an access point for streetcar into the site.

The parking garage on the north side of the site will have 114 parking spaces, which would be a determining factor on traffic entering and exiting the site from the 3rd Street and I Street intersection. City-wide parking structure data was used to estimate the number of trips expected to be generated by the parking garage. The parking garage trip generation table is provided in Appendix A. Based on historical data, the parking garage is expected to generate approximately 400 daily trips, with 45 trips during a

normal peak hour. Pick-up and drop-off activity related to the transit facilities is expected to be the major driver of vehicle trip generation into and out of the site. It is recommended that a comprehensive trip generation analysis be completed when bus, light-rail and streetcar frequencies into the site are known, which would dictate the final design of the intersection.

The extension of 3rd Street as shown in Figure 1 creates two signalized intersections within close proximity which will cause significant queueing along the approaches and interrupt efficient traffic flow. A realignment of the I-5 Southbound On-Ramp will be required creating a 5-leg intersection at 3rd Street and I Street which will require further operational analysis, feasibility assessment of the geometric design, Caltrans approval (including detailed evaluation) and environmental documentation for the project.

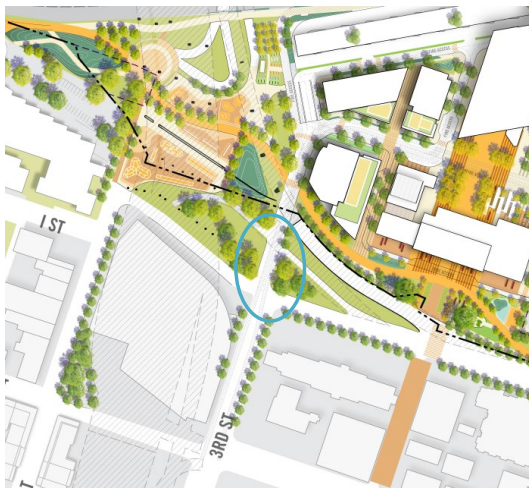


FIGURE 1: 3RD STREET AT I STREET INTERSECTION

Streetcar service is currently proposed to operate along 3rd Street through the intersection with I Street. Streetcar rail operations will be in mixed flow operations concurrent with vehicles, similar to bus service. With shared lane operation there is no need for rail preemption at this intersection, however, transit signal priority treatments are recommended to provide a transit preferential treatment, such as early green or green extension. Further traffic analysis is recommended to understand full range of transit signal priority benefits and impacts at this location. Light rail operations along 3rd

Street would require preemption sequencing which would significantly limit the capacity along the I-5 ramps causing queuing issues. Further quantitative capacity analysis to determine preemption impacts would be required

H STREET AT 5TH STREET

It is proposed to convert the segment of H Street between 5th Street and 6th Street from a one-way eastbound to a one-way westbound. Additionally, a two-way cycle track is proposed along the south side of H-street, originating from the 10th Street and entering into the site.

Under existing traffic conditions, the westbound vehicular traffic along H Street is only allowed for buses and taxis west of 5th Street. In the revised master plan, H Street will only provide pick-up and drop-off access to the station and will not be connected through the site. This disconnect serves two purposes: it reduces demand on H Street at 5th Street, and it eliminates the potential for local traffic to use H Street as a cut through to the I-5 Southbound on ramp. This does pose a challenge for emergency vehicle access as there are not two emergency access points to all portions of the site. For this reason, and based on the City consulting with the Sacramento Fire Department, it is recommended that the pedestrian plaza in the center of the site be kept clear of all permanent obstructions so it may be used as connection between the east and west sides of the site in the event of an emergency.

Bicyclists and pedestrians accessing the site from 5th Street will have access to the Transit Plaza from H Street. Adequate guidance will need to be provided within the site to guide bicycle traffic and minimize conflicts between pedestrians and bicyclists.

Currently, the Gold Line operates on a 30-minute headway per direction through the intersection 5th Street and H Street. This results in four signal preemptions per hour. Double tracking will allow for the headway to be reduced to 15 minutes. The Green Line extension project will also reroute trains to this station on a separate 15-minute headway per direction. This means that at peak time, light rail preemption will occur on average every 3.75 minutes at the intersection. This will significantly impact the intersection capacity to the point where dedicated bicycle phasing may not be feasible. Further detailed capacity analysis will be required for the two-way cycle track to determine if it can be operated through the intersection of 5th Street and H Street without significantly impacting traffic flow on the City grid system. Alternatively, cyclists would dismount and use pedestrian signals to walk across the intersection as detailed in the sections below.

TRAFFIC AND LANE CONFIGURATIONS

- The eastbound approach originating from the station drop-off area would have a right-turn lane and a left-turn lane;
- The existing southbound left-turn lane would be removed. The southbound approach would be restriped to have a right-turn lane, a through lane and a flush median island formed by two sets of double yellow center line markings that would align with the 5th Street markings north of G Street. The eliminated southbound left-turn lane provides an opportunity to install either a buffered southbound 5th Street Class II bike lane or a Class IV bike lane with swapping the position of the bike lane and parking lane;
- The westbound approach would have a shared through/right-turn lane, left-turn lane;
- The northbound approach would have a dedicated left-turn lane and a through lane.

PEDESTRIAN AND SEPARATED BIKEWAY CROSSING CONFIGURATION

Signalized crosswalks would continue to be provided on all four legs of the intersection. The separated bikeway runs along the south side of H Street as shown in Figure 2. Cyclists would dismount and use crosswalks to walk across the intersection. R9-5 "Use Ped Signal" signs would be installed near the edge of the sidewalk as shown in Figure 2. If bicycle signals are provided, dedicated bicycle phasing would need to be provided. However, further detailed capacity analysis will be required to determine the impact this would have to traffic operations.

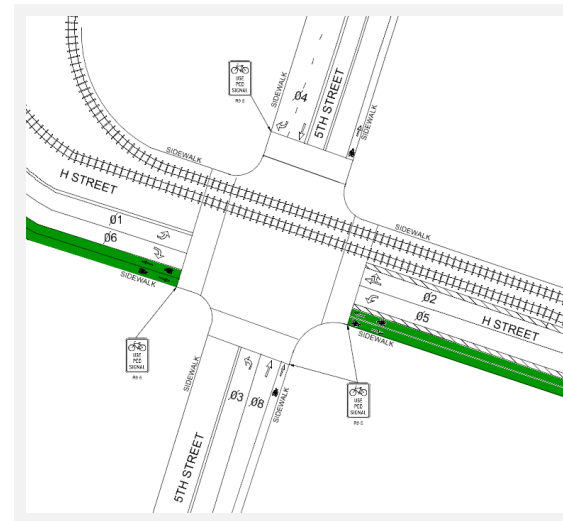


FIGURE 2: H STREET AT 5TH STREET INTERSECTION LAYOUT

TRAFFIC SIGNAL PHASING

- The right-turn movement of the eastbound approach would operate on Phase 6 (with pedestrian phase 6P) and would run concurrently with the right-turn movement of the westbound approach which would operate on Phase 2 (with pedestrian phase 2P). Lead Pedestrian Intervals (LPI) would be provided for pedestrian phases 2P and 6P to give pedestrians time to enter the intersection before turning vehicles receive the green indication;
- The eastbound left-turn would be a protected only left and would operate on Phase 1;
- The westbound left-turn would be a protected only left and would operate on Phase 5;
- The through movement of the northbound approach would operate on Phase 8 (with pedestrian phase 8P) and the southbound approach would operate on Phase 4 (with pedestrian phase 4P).
- The northbound left-turn would be a protected only left and would operate on Phase 3;

- Right-turn on red would be restricted for the southbound and westbound approaches.

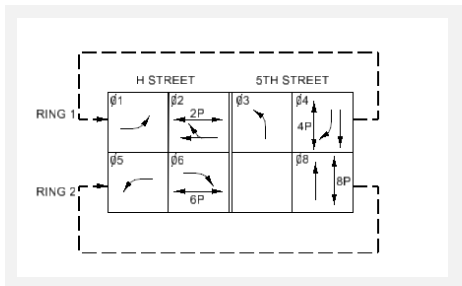


FIGURE 3: PROPOSED H STREET AT 5TH STREET TRAFFIC SIGNAL PHASING

LIGHT RAIL PREEMPTION SYSTEM

The dwell phases and movement that would be allowed to operate during train preemption will depend upon traffic demand and operational characteristics. For an example the preemption sequence can allow the northbound left-turn movement (phase 3) and the north and south leg pedestrian crosswalks (phases 2P and 6P) to be served during preemption.

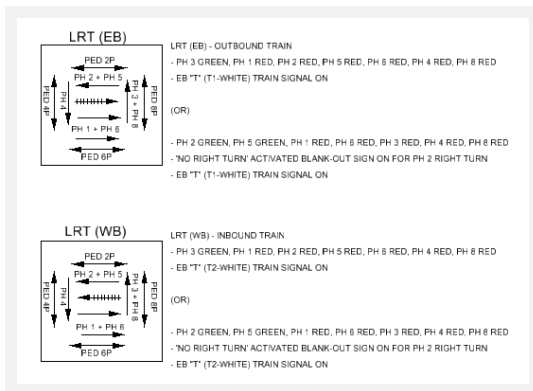


FIGURE 4: H STREET AT 5TH STREET LIGHT RAIL PREEMPTION SEQUENCING

H STREET AT 6TH STREET

The east leg of the intersection will continue to be one-way eastbound, and the west leg of the intersection will be converted to one-way westbound.

TRAFFIC AND LANE CONFIGURATIONS

- The southbound approach would have a left-turn lane and a shared through/right-turn lane
- The northbound approach would be restriped to have a left-turn lane and a shared through/right-turn lane

PEDESTRIAN AND SEPARATED BIKEWAY CROSSING CONFIGURATION

Signalized crosswalks would continue to be provided on all four legs of the intersection. The separated bikeway runs along the south side of H Street as shown in Figure 5.

- Bicycle signals would be provided for the east/west bicycle movements across the south leg of the intersection;
- A two-stage turn queue box would be provided on the west leg as shown in Figure 5 to provide a safe refuge for southbound bicyclists making a left-turn to access the separated bikeway. This could also optionally be provided on the east leg of the intersection.

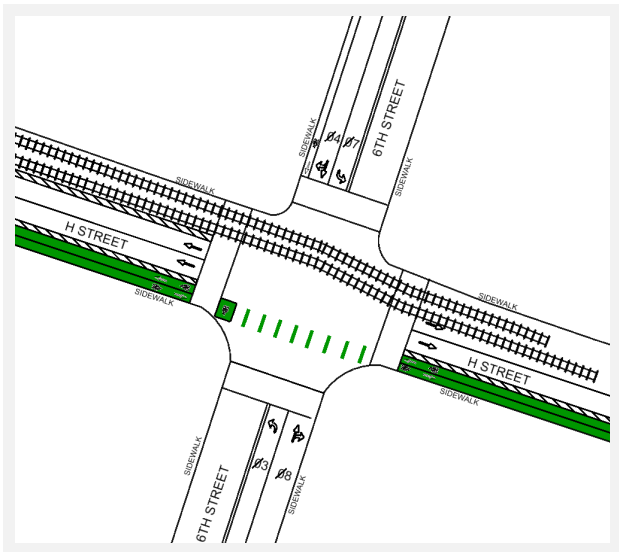


FIGURE 5: H STREET AT 6TH STREET INTERSECTION LAYOUT

TRAFFIC SIGNAL PHASING

- The separated bikeway along H Street would operate on Phase 1 with pedestrian Phase 1P;
- The through/right-turn movement of the northbound approach would operate on Phase 8 (with pedestrian phase 8P) and the through/right-turn movement of the southbound approach would operate on Phase 4 (with pedestrian phase 4P);
- The northbound and southbound left-turn would be protected only lefts and would operate on Phases 3 and 7, respectively.
- Right-turn on red would be restricted for the southbound and northbound approaches.

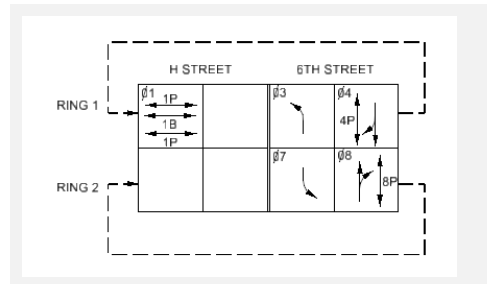


FIGURE 6: PROPOSED H STREET AT 6TH STREET TRAFFIC SIGNAL PHASING

LIGHT RAIL PREEMPTION SYSTEM

The dwell phases and movement that would be allowed to operate during train preemption will depend upon traffic demand and operational characteristics. For an example, the preemption sequence can allow the northbound left-turn movement (phase 3) and the north and south leg pedestrian crosswalks (phase 1P) to be served during preemption.

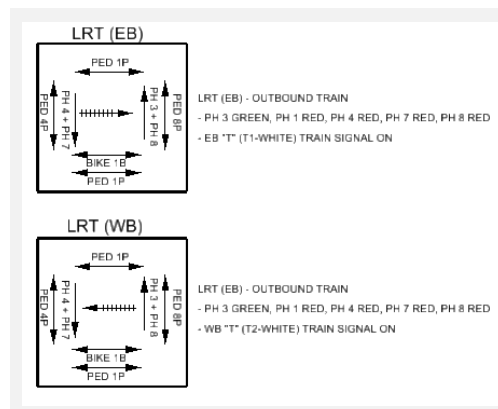


FIGURE 7: H STREET AT 5TH STREET LIGHT RAIL PREEMPTION SEQUENCING

APPENDIX A. PARKING GARAGE TRIP GENERATION

Parking Garage Trip Generation

Hour Beginning	Raw Data		Balanced		Spaces Occupied at Start	Rate (percentage of peak occupancy)			Split		Spaces		Total
	Entry	Exit	Entry	Exit		Enter	Exit	Total	Enter	Exit	Enter	Exit	
12:00 AM	600	3,659	691	3,659	5,949	0.39%	2.08%	2.47%	15.89%	84.11%	0	2	2
1:00 AM	448	2,595	516	2,595	2,981	0.29%	1.47%	1.77%	16.59%	83.41%	0	2	2
2:00 AM	341	1,295	393	1,295	902	0.22%	0.74%	0.96%	23.27%	76.73%	0	1	1
3:00 AM	736	621	848	621	0	0.48%	0.35%	0.83%	57.72%	42.28%	1	0	1
4:00 AM	1,294	575	1,491	575	227	0.85%	0.33%	1.17%	72.16%	27.84%	1	0	1
5:00 AM	3,588	1,042	4,133	1,042	1,143	2.35%	0.59%	2.94%	79.87%	20.13%	3	1	4
6:00 AM	16,227	2,092	18,694	2,092	4,234	10.62%	1.19%	11.81%	89.94%	10.06%	12	1	13
7:00 AM	42,584	3,577	49,057	3,577	20,836	27.87%	2.03%	29.90%	93.20%	6.80%	32	2	34
8:00 AM	55,960	3,676	64,466	3,676	66,316	36.62%	2.09%	38.71%	94.61%	5.39%	42	2	44
9:00 AM	31,082	4,573	35,807	4,573	127,106	20.34%	2.60%	22.94%	88.67%	11.33%	23	3	26
10:00 AM	14,711	6,362	16,947	6,362	158,339	9.63%	3.61%	13.24%	72.71%	27.29%	11	4	15
11:00 AM	11,603	10,182	13,367	10,182	168,924	7.59%	5.78%	13.38%	56.76%	43.24%	9	7	16
12:00 PM	12,635	12,131	14,556	12,131	172,109	8.27%	6.89%	15.16%	54.54%	45.46%	9	8	17
1:00 PM	13,017	13,486	14,996	13,486	174,534	8.52%	7.66%	16.18%	52.65%	47.35%	10	9	19
2:00 PM	11,390	17,613	13,121	17,613	176,043	7.45%	10.00%	17.46%	42.69%	57.31%	8	11	19
3:00 PM	9,639	27,170	11,104	27,170	171,552	6.31%	15.43%	21.74%	29.01%	70.99%	7	18	25
4:00 PM	8,804	53,917	10,142	53,917	155,486	5.76%	30.63%	36.39%	15.83%	84.17%	7	35	42
5:00 PM	9,535	54,986	10,984	54,986	111,711	6.24%	31.23%	37.47%	16.65%	83.35%	7	36	43
6:00 PM	11,429	24,214	13,166	24,214	67,709	7.48%	13.75%	21.23%	35.22%	64.78%	9	16	25
7:00 PM	4,974	13,108	5,730	13,108	56,662	3.25%	7.45%	10.70%	30.42%	69.58%	4	8	12
8:00 PM	2,562	12,227	2,951	12,227	49,284	1.68%	6.95%	8.62%	19.44%	80.56%	2	8	10
9:00 PM	2,192	18,511	2,525	18,511	40,008	1.43%	10.52%	11.95%	12.00%	88.00%	2	12	14
10:00 PM	1,947	13,822	2,243	13,822	24,022	1.27%	7.85%	9.13%	13.96%	86.04%	1	9	10
11:00 PM	1,091	7,751	1,257	7,751	12,443	0.71%	4.40%	5.12%	13.95%	86.05%	1	5	6
	268,389	309,185	309,185	309,185	5,949	175.63%	175.63%	351.26%			201	200	401