SACRAMENTO AVENUE

COMPLETE STREET PLAN

FINAL PLAN APPENDIX
SEPTEMBER 2024

Appendix A: LOS Methodology and Synchro Worksheets

Technical Analysis Parameters & Methodologies

The following section outlines the analysis parameters and methodologies used in Plan to quantify vehicular operations for the analysis scenarios studied.

Study Facilities and Time Periods

Study Intersection Locations

Traffic operations were measured by Level of Service (LOS) at key intersections selected for vehicle operations analysis, including:

1. Sacramento Ave/Reed Ave/Harbor Boulevard
2. Sacramento Avenue/Solano Street
3. Sacramento Avenue/Bryte Avenue
4. Sacramento Avenue/Todhunter Avenue
5. Sacramento Avenue/Kegle Drive
6. Sacramento Avenue/Douglas Street
7. Sacramento Avenue/Reuter Drive
8. Sacramento Avenue/C Street/6th Street
9. C Street/5th Street
10. C Street/3rd Street

Study Periods

Weekday AM and PM peak hours were analyzed for the study intersections.

Analysis Scenarios

The study intersections were analyzed for the following analysis periods:

- Existing Year 2020
- Forecast No Build (20 percent growth without project improvements)
- Forecast Build (20 percent growth with project improvements)

Level of Service Methodologies

Traffic operations are quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection, representing progressively worsening traffic operations as determined by vehicle delay or congestion. LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. These LOS letters correspond to numerical ranges of delay. Levels of Service were calculated for all study intersection control types using the methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Sixth Edition* (HCM 6).

Intersection Operations

The Synchro 11 (Trafficware) software program was used to implement the HCM 6 analysis methodologies to evaluate AM and PM peak hour conditions. Synchro 11 has the capability to produce results based on HCM 2000, HCM 2010, HCM 6, or Synchro methodologies, and takes into account intersection signal timing and queuing constraints when calculating delay, the corresponding delay, and queue lengths.

Intersection Level of Service (LOS) will be calculated for all control types using the methods documented in HCM 6.

For signalized intersections and roundabouts, a LOS determination is based on the calculated averaged delay for all approaches and movements. For two-way or side-street stop-controlled (TWSC) intersections, a LOS determination is based upon the calculated average delay for all movements of the worst performing approach. The vehicular-based LOS criteria for different types of intersection controls are presented in Table 1.

Roundabout intersection operations analysis was conducted using SIDRA software. The model that will be used in the analysis is the Akcelik M3 roundabout analysis model.

AGENCY LOS GUIDELINES AND POLICIES

The City's General Plan Mobility Element includes the following policies pertaining to LOS.

M-3.2 Vehicular Level of Service

For planning purposes, the City shall endeavor to maintain a vehicular Level of Service "C" on all streets within the City, except at intersections and on roadway segments within one-quarter mile of a freeway interchange or bridge crossing of the Deep Water Ship Channel, barge canal, or Sacramento River, where a Level of Service "D" shall be deemed acceptable, and within pedestrian oriented, high-density, mixed-use areas, such as the Pioneer Bluff and Stone Lock Reuse Master Plan area, Bridge District Specific Plan area, Washington District Specific Plan area, and Sacramento Avenue and West Capitol Avenue corridors east of Harbor Boulevard, where a vehicular Level of Service "E" shall be deemed acceptable. (RDR)

M-3.3 Level of Service Flexibility

The City shall, on a case-by-case basis, allow for lower vehicle level of service if other transportation goals (i.e., creation of complete streets) will be met; other modes (i.e., walking, bicycling, and public transit) would be negatively impacted by improvements required to maintain the vehicular LOS; or the land use context warrants deviation. Exceptions to the vehicular level of service operating goals shall require the approval of the City Council. (RDR)

Per policy M-3.2, all study intersections use LOS E as the threshold for acceptable conditions as Sacramento Avenue and the Washington District Specific Area are pedestrian oriented, high-density, mixed-use area. Policy M-3.3 does allow flexibility in determining the LOS threshold within the context of meeting other transportation goals, such as complete streets, which is a goal of this plan; however, exceptions to the LOS thresholds stated in Policy M-3.2 require approval from City Council.

For the purposes of this analysis, a Target of LOS E was used to determine acceptable traffic conditions.

Table 1 Intersection level of Service Criteria

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay/Vehicle (seconds)	
				Signalized/ Roundabout	Side-Street/All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	<10.0	<10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and <20.0	>10.0 and <15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and <35.0	>15.0 and <25.0
D	Approaching Unstable Flow	The Influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and <55.0	>25.0 and <35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and <80.0	>35.0 and <50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	>80.0	>50.0

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	5	30	373	301	254	404	5	117	97	188	20	99
Future Volume (veh/h)	5	30	373	301	254	404	5	117	97	188	20	99
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		32	393	61	267	425	4	123	102	58	21	104
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		124	688	306	587	1060	10	513	458	388	88	468
Arrive On Green		0.07	0.19	0.19	0.17	0.29	0.29	0.15	0.24	0.24	0.05	0.15
Sat Flow, veh/h		1781	3554	1578	3456	3606	34	3456	1870	1585	1781	3216
Grp Volume(v), veh/h		32	393	61	267	209	220	123	102	58	21	57
Grp Sat Flow(s),veh/h/ln		1781	1777	1578	1728	1777	1863	1728	1870	1585	1781	1777
Q Serve(g_s), s		1.0	5.8	1.9	4.0	5.5	5.5	1.8	2.5	1.7	0.7	1.6
Cycle Q Clear(g_c), s		1.0	5.8	1.9	4.0	5.5	5.5	1.8	2.5	1.7	0.7	1.6
Prop In Lane		1.00		1.00	1.00		0.02	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		124	688	306	587	522	548	513	458	388	88	259
V/C Ratio(X)		0.26	0.57	0.20	0.46	0.40	0.40	0.24	0.22	0.15	0.24	0.22
Avail Cap(c_a), veh/h		766	2202	977	1189	1560	1635	1189	1448	1228	766	1437
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		25.6	21.2	19.7	21.7	16.4	16.4	21.8	17.5	17.2	26.6	21.9
Incr Delay (d2), s/veh		0.8	0.3	0.1	0.4	0.2	0.2	0.1	0.3	0.2	0.5	0.5
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.4	2.2	0.6	1.5	1.9	2.0	0.7	1.0	0.6	0.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		26.4	21.5	19.8	22.1	16.6	16.6	21.9	17.8	17.4	27.1	22.4
LnGrp LOS		C	C	B	C	B	B	C	B	B	C	C
Approach Vol, veh/h			486			696			283			137
Approach Delay, s/veh			21.6			18.7			19.5			23.1
Approach LOS			C			B			B			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	14.8	8.5	21.7	7.4	20.5	14.4	15.9
Change Period (Y+Rc), s	4.5	6.3	4.5	4.6	4.5	6.3	4.5	4.6
Max Green Setting (Gmax), s	20.0	47.0	25.0	51.0	25.0	45.0	20.0	36.0
Max Q Clear Time (g_c+I1), s	3.8	3.7	3.0	7.5	2.7	4.5	6.0	7.8
Green Ext Time (p_c), s	0.2	0.8	0.0	1.5	0.0	0.9	0.6	1.7

Intersection Summary	
HCM 6th Ctrl Delay	20.1
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	39
Future Volume (veh/h)	39
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	12
Peak Hour Factor	0.95
Percent Heavy Veh, %	2
Cap, veh/h	53
Arrive On Green	0.15
Sat Flow, veh/h	365
Grp Volume(v), veh/h	59
Grp Sat Flow(s),veh/h/ln	1805
Q Serve(g_s), s	1.7
Cycle Q Clear(g_c), s	1.7
Prop In Lane	0.20
Lane Grp Cap(c), veh/h	263
V/C Ratio(X)	0.23
Avail Cap(c_a), veh/h	1460
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	21.9
Incr Delay (d2), s/veh	0.5
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.7
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	22.4
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

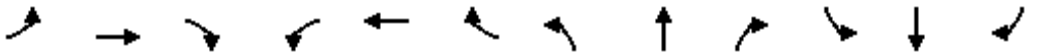
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	584	1	0	614	9	2	0	1	14	0	23
Future Vol, veh/h	18	584	1	0	614	9	2	0	1	14	0	23
Conflicting Peds, #/hr	2	0	3	3	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	608	1	0	640	9	2	0	1	15	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	651	0	0	612	0	0	971	1301	308	989	-	328
Stage 1	-	-	-	-	-	-	650	650	-	647	-	-
Stage 2	-	-	-	-	-	-	321	651	-	342	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	931	-	-	963	-	-	207	160	688	201	0	668
Stage 1	-	-	-	-	-	-	424	463	-	426	0	-
Stage 2	-	-	-	-	-	-	665	463	-	646	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	929	-	-	960	-	-	196	156	686	197	-	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	196	156	-	197	-	-
Stage 1	-	-	-	-	-	-	414	452	-	417	-	-
Stage 2	-	-	-	-	-	-	640	462	-	632	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	19.2	16.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	257	929	-	-	960	-	-	350
HCM Lane V/C Ratio	0.012	0.02	-	-	-	-	-	0.11
HCM Control Delay (s)	19.2	9	-	-	0	-	-	16.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	474	0	0	499	92	0	0	0	80	0	117
Future Volume (veh/h)	108	474	0	0	499	92	0	0	0	80	0	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	0.99		0.99
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	504	0	0	531	83	0	0	0	85	0	57
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	2039	0	4	984	153	0	398	0	286	30	129
Arrive On Green	0.17	0.57	0.00	0.00	0.32	0.32	0.00	0.00	0.00	0.21	0.00	0.21
Sat Flow, veh/h	1781	3647	0	1781	3067	477	0	1870	0	763	140	605
Grp Volume(v), veh/h	115	504	0	0	307	307	0	0	0	142	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1777	1768	0	1870	0	1508	0	0
Q Serve(g_s), s	2.7	3.3	0.0	0.0	6.6	6.6	0.0	0.0	0.0	2.3	0.0	0.0
Cycle Q Clear(g_c), s	2.7	3.3	0.0	0.0	6.6	6.6	0.0	0.0	0.0	3.6	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.27	0.00		0.00	0.60		0.40
Lane Grp Cap(c), veh/h	297	2039	0	4	570	567	0	398	0	445	0	0
V/C Ratio(X)	0.39	0.25	0.00	0.00	0.54	0.54	0.00	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	768	4599	0	576	2300	2288	0	1521	0	1348	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.2	4.9	0.0	0.0	12.9	12.9	0.0	0.0	0.0	15.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.6	0.0	0.0	2.1	2.2	0.0	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.5	5.0	0.0	0.0	13.9	13.9	0.0	0.0	0.0	15.9	0.0	0.0
LnGrp LOS	B	A	A	A	B	B	A	A	A	B	A	A
Approach Vol, veh/h		619			614			0			142	
Approach Delay, s/veh		7.3			13.9			0.0			15.9	
Approach LOS		A			B						B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	31.9		14.5	11.7	20.2		14.5				
Change Period (Y+Rc), s	4.0	5.3		4.6	4.0	5.3		* 4.6				
Max Green Setting (Gmax), s	15.0	60.0		37.7	20.0	60.0		* 38				
Max Q Clear Time (g_c+I1), s	0.0	5.3		0.0	4.7	8.6		5.6				
Green Ext Time (p_c), s	0.0	4.3		0.0	0.1	4.9		0.6				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	455	7	10	445	105	19	21	38	147	13	129
Future Volume (veh/h)	82	455	7	10	445	105	19	21	38	147	13	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	511	7	11	500	98	21	24	10	165	15	110
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	1500	21	35	988	192	245	258	89	337	52	166
Arrive On Green	0.10	0.42	0.42	0.02	0.33	0.33	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1781	3588	49	1781	2950	575	482	881	303	747	178	565
Grp Volume(v), veh/h	92	253	265	11	300	298	55	0	0	290	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1860	1781	1777	1748	1666	0	0	1491	0	0
Q Serve(g_s), s	2.3	4.6	4.6	0.3	6.5	6.6	0.0	0.0	0.0	6.6	0.0	0.0
Cycle Q Clear(g_c), s	2.3	4.6	4.6	0.3	6.5	6.6	1.1	0.0	0.0	8.0	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.33	0.38		0.18	0.57		0.38
Lane Grp Cap(c), veh/h	184	743	778	35	595	585	592	0	0	554	0	0
V/C Ratio(X)	0.50	0.34	0.34	0.31	0.50	0.51	0.09	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	669	1223	1281	669	1223	1204	1168	0	0	1438	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.3	9.5	9.5	23.2	12.8	12.8	12.4	0.0	0.0	14.7	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.6	0.6	4.9	1.4	1.5	0.1	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.4	1.5	0.2	2.2	2.2	0.4	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.4	10.0	10.0	28.0	14.2	14.2	12.4	0.0	0.0	15.5	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h		610			609			55			290	
Approach Delay, s/veh		11.9			14.5			12.4			15.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.0	24.9		18.0	8.9	20.9		18.0
Change Period (Y+Rc), s	4.0	4.9		4.0	4.0	4.9		4.0
Max Green Setting (Gmax), s	18.0	33.0		43.0	18.0	33.0		32.0
Max Q Clear Time (g_c+I1), s	12.3	6.6		10.0	4.3	8.6		3.1
Green Ext Time (p_c), s	0.0	5.8		2.1	0.2	6.8		0.3

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	177	420	92	151	15	293	211	116	11	292	110
Future Volume (veh/h)	61	177	420	92	151	15	293	211	116	11	292	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	69	199	0	103	170	2	329	237	60	12	328	113
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	269		169	294	242	376	928	767	42	408	141
Arrive On Green	0.08	0.14	0.00	0.09	0.16	0.16	0.21	0.50	0.50	0.02	0.31	0.31
Sat Flow, veh/h	1781	1870	1585	1781	1870	1540	1781	1870	1546	1781	1324	456
Grp Volume(v), veh/h	69	199	0	103	170	2	329	237	60	12	0	441
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1540	1781	1870	1546	1781	0	1780
Q Serve(g_s), s	2.8	7.6	0.0	4.1	6.3	0.1	13.3	5.4	1.5	0.5	0.0	17.0
Cycle Q Clear(g_c), s	2.8	7.6	0.0	4.1	6.3	0.1	13.3	5.4	1.5	0.5	0.0	17.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	145	269		169	294	242	376	928	767	42	0	549
V/C Ratio(X)	0.47	0.74		0.61	0.58	0.01	0.87	0.26	0.08	0.29	0.00	0.80
Avail Cap(c_a), veh/h	478	728		359	854	703	478	1105	913	837	0	1051
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.7	30.5	0.0	32.4	29.1	26.5	28.4	10.8	9.8	35.7	0.0	23.7
Incr Delay (d2), s/veh	0.9	4.0	0.0	1.3	2.2	0.0	13.7	0.2	0.1	3.6	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.5	0.0	1.8	2.9	0.0	6.7	2.0	0.5	0.2	0.0	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	34.5	0.0	33.7	31.3	26.5	42.1	11.0	9.9	39.4	0.0	27.0
LnGrp LOS	C	C		C	C	C	D	B	A	D	A	C
Approach Vol, veh/h		268			275			626			453	
Approach Delay, s/veh		34.3			32.2			27.3			27.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	28.0	10.1	16.7	5.8	42.0	11.1	15.7
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	20.0	44.0	20.0	34.0	35.0	44.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	15.3	19.0	4.8	8.3	2.5	7.4	6.1	9.6
Green Ext Time (p_c), s	0.4	3.4	0.0	1.1	0.0	1.9	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	98	195	3	1	167	22	1	0	2	60	0	76
Future Vol, veh/h	98	195	3	1	167	22	1	0	2	60	0	76
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	78	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	121	241	4	1	206	27	1	0	2	74	0	94

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	234	0	0	245	0	0	754	721	243	709	-	221
Stage 1	-	-	-	-	-	-	485	485	-	223	-	-
Stage 2	-	-	-	-	-	-	269	236	-	486	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1333	-	-	1321	-	-	326	353	796	349	0	819
Stage 1	-	-	-	-	-	-	563	552	-	780	0	-
Stage 2	-	-	-	-	-	-	737	710	-	563	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1332	-	-	1321	-	-	268	320	796	323	-	818
Mov Cap-2 Maneuver	-	-	-	-	-	-	268	320	-	323	-	-
Stage 1	-	-	-	-	-	-	512	502	-	708	-	-
Stage 2	-	-	-	-	-	-	652	709	-	510	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0	12.6	16.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	480	1332	-	-	1321	-	-	488
HCM Lane V/C Ratio	0.008	0.091	-	-	0.001	-	-	0.344
HCM Control Delay (s)	12.6	8	-	-	7.7	0	-	16.2
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	1.5

Intersection	
Int Delay, s/veh	0.8

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	1	8	248	176	6	19	13
Future Vol, veh/h	1	8	248	176	6	19	13
Conflicting Peds, #/hr	0	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0	-
Veh in Median Storage, #	-	-	0	0	-	0	-
Grade, %	-	-	0	0	-	0	-
Peak Hour Factor	92	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1	9	279	198	7	21	15

Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	-	207	0	-	0	501	204
Stage 1	-	-	-	-	-	204	-
Stage 2	-	-	-	-	-	297	-
Critical Hdwy	-	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	-	5.42	-
Follow-up Hdwy	-	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	1364	-	-	-	530	837
Stage 1	-	-	-	-	-	830	-
Stage 2	-	-	-	-	-	754	-
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	~ -9	~ -9	-	-	-	528	835
Mov Cap-2 Maneuver	-	-	-	-	-	528	-
Stage 1	-	-	-	-	-	828	-
Stage 2	-	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Control Delay, s		0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	+	-	-	-	621
HCM Lane V/C Ratio	-	-	-	-	0.058
HCM Control Delay (s)	-	-	-	-	11.2
HCM Lane LOS	-	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	-	0.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

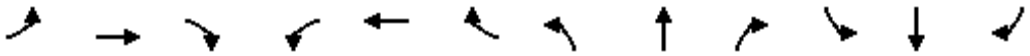
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	257	160	26	47	19
Future Vol, veh/h	11	257	160	26	47	19
Conflicting Peds, #/hr	1	0	0	1	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	306	190	31	56	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	222	0	-	0	543	112
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	336	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1346	-	-	-	485	920
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1345	-	-	-	478	919
Mov Cap-2 Maneuver	-	-	-	-	478	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	722	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1345	-	-	-	555
HCM Lane V/C Ratio	0.01	-	-	-	0.142
HCM Control Delay (s)	7.7	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	197	105	108	118	55	59	109	106	122	218	9
Future Volume (veh/h)	5	197	105	108	118	55	59	109	106	122	218	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	229	122	126	137	64	69	127	123	142	253	10
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	504	258	257	792	352	257	339	296	257	665	26
Arrive On Green	0.14	0.22	0.22	0.14	0.22	0.22	0.14	0.19	0.19	0.14	0.19	0.19
Sat Flow, veh/h	1781	2261	1157	1781	3554	1581	1781	1777	1548	1781	3482	137
Grp Volume(v), veh/h	6	178	173	126	137	64	69	127	123	142	129	134
Grp Sat Flow(s),veh/h/ln	1781	1777	1640	1781	1777	1581	1781	1777	1548	1781	1777	1842
Q Serve(g_s), s	0.2	4.8	5.1	3.6	1.7	1.8	1.9	3.5	3.9	4.1	3.5	3.5
Cycle Q Clear(g_c), s	0.2	4.8	5.1	3.6	1.7	1.8	1.9	3.5	3.9	4.1	3.5	3.5
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	257	396	366	257	792	352	257	339	296	257	339	352
V/C Ratio(X)	0.02	0.45	0.47	0.49	0.17	0.18	0.27	0.37	0.42	0.55	0.38	0.38
Avail Cap(c_a), veh/h	514	977	902	514	1955	870	514	993	866	514	993	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	18.6	18.7	21.8	17.4	17.4	21.1	19.5	19.7	22.1	19.6	19.6
Incr Delay (d2), s/veh	0.0	2.4	2.9	1.0	0.3	0.8	0.4	2.0	2.7	1.3	2.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.1	2.1	1.5	0.7	0.7	0.7	1.5	1.5	1.6	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	21.1	21.6	22.8	17.7	18.2	21.5	21.5	22.4	23.3	21.6	21.5
LnGrp LOS	C	C	C	C	B	B	C	C	C	C	C	C
Approach Vol, veh/h		357			327			319			405	
Approach Delay, s/veh		21.3			19.8			21.9			22.2	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	14.6	12.0	16.9	12.0	14.6	12.0	16.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.5
Max Green Setting (Gmax), s	16.0	31.0	16.0	30.5	16.0	31.0	16.0	30.5
Max Q Clear Time (g_c+I1), s	6.1	5.9	5.6	7.1	3.9	5.5	2.2	3.8
Green Ext Time (p_c), s	0.2	3.1	0.1	4.8	0.1	3.2	0.0	2.5

Intersection Summary	
HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	419	12	81	262	3	3	1	25	10	4	6
Future Volume (veh/h)	0	419	12	81	262	3	3	1	25	10	4	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		1.00	0.98		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	505	6	98	316	4	4	1	0	12	5	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	5	905	750	154	1258	16	241	16	91	268	98	0
Arrive On Green	0.00	0.48	0.48	0.09	0.68	0.68	0.06	0.06	0.00	0.06	0.06	0.00
Sat Flow, veh/h	1781	1870	1549	1781	1842	23	1104	276	1585	1353	1795	0
Grp Volume(v), veh/h	0	505	6	98	0	320	5	0	0	13	4	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1549	1781	0	1866	1380	0	1585	1446	1617	0
Q Serve(g_s), s	0.0	7.0	0.1	1.9	0.0	2.4	0.1	0.0	0.0	0.1	0.1	0.0
Cycle Q Clear(g_c), s	0.0	7.0	0.1	1.9	0.0	2.4	0.2	0.0	0.0	0.3	0.1	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.80		1.00	0.94		0.00
Lane Grp Cap(c), veh/h	5	905	750	154	0	1274	257	0	91	274	93	0
V/C Ratio(X)	0.00	0.56	0.01	0.64	0.00	0.25	0.02	0.00	0.00	0.05	0.05	0.00
Avail Cap(c_a), veh/h	585	1792	1484	975	0	1788	1279	0	1215	904	814	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.7	4.9	16.1	0.0	2.2	16.4	0.0	0.0	16.3	16.3	0.0
Incr Delay (d2), s/veh	0.0	2.0	0.0	1.6	0.0	0.4	0.0	0.0	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.3	0.0	0.8	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.6	4.9	17.8	0.0	2.6	16.4	0.0	0.0	16.4	16.6	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	A	B	B	A
Approach Vol, veh/h		511			418			5			17	
Approach Delay, s/veh		8.6			6.2			16.4			16.5	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	22.7		6.6	0.0	29.9		6.6
Change Period (Y+Rc), s	4.1	5.0		4.5	4.1	5.0		* 4.5
Max Green Setting (Gmax), s	20.0	35.0		28.0	12.0	35.0		* 18
Max Q Clear Time (g_c+I1), s	3.9	9.0		2.2	0.0	4.4		2.3
Green Ext Time (p_c), s	0.1	8.5		0.0	0.0	5.2		0.0

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	3	52	592	263	256	415	6	230	162	382	57	207
Future Volume (veh/h)	3	52	592	263	256	415	6	230	162	382	57	207
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.98	1.00		0.97	1.00		1.00	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		56	637	107	275	446	5	247	174	87	61	223
Peak Hour Factor		0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		172	927	405	511	1124	13	509	363	308	180	396
Arrive On Green		0.10	0.26	0.26	0.15	0.31	0.31	0.15	0.19	0.19	0.10	0.15
Sat Flow, veh/h		1781	3554	1552	3456	3598	40	3456	1870	1585	1781	2672
Grp Volume(v), veh/h		56	637	107	275	220	231	247	174	87	61	146
Grp Sat Flow(s),veh/h/ln		1781	1777	1552	1728	1777	1862	1728	1870	1585	1781	1777
Q Serve(g_s), s		2.0	10.9	3.7	5.0	6.5	6.5	4.4	5.6	3.1	2.1	5.1
Cycle Q Clear(g_c), s		2.0	10.9	3.7	5.0	6.5	6.5	4.4	5.6	3.1	2.1	5.1
Prop In Lane		1.00		1.00	1.00		0.02	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		172	927	405	511	555	581	509	363	308	180	263
V/C Ratio(X)		0.33	0.69	0.26	0.54	0.40	0.40	0.49	0.48	0.28	0.34	0.56
Avail Cap(c_a), veh/h		662	1903	831	1028	1348	1412	1028	1252	1061	662	1242
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		28.3	22.4	19.7	26.5	18.2	18.2	26.3	24.1	23.1	28.1	26.6
Incr Delay (d2), s/veh		0.8	0.3	0.1	0.7	0.2	0.2	0.3	1.2	0.6	0.4	2.2
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.8	4.1	1.2	1.9	2.4	2.5	1.7	2.4	1.1	0.9	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		29.1	22.7	19.9	27.2	18.3	18.3	26.6	25.3	23.7	28.5	28.8
LnGrp LOS		C	C	B	C	B	B	C	C	C	C	C
Approach Vol, veh/h			800			726			508			354
Approach Delay, s/veh			22.8			21.7			25.6			28.9
Approach LOS			C			C			C			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	16.3	11.0	25.6	11.3	19.4	14.4	22.1
Change Period (Y+Rc), s	4.5	6.3	4.5	4.6	4.5	6.3	4.5	4.6
Max Green Setting (Gmax), s	20.0	47.0	25.0	51.0	25.0	45.0	20.0	36.0
Max Q Clear Time (g_c+I1), s	6.4	7.4	4.0	8.5	4.1	7.6	7.0	12.9
Green Ext Time (p_c), s	0.4	2.3	0.1	1.6	0.1	1.6	0.6	2.8

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	160
Future Volume (veh/h)	160
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.99
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	70
Peak Hour Factor	0.93
Percent Heavy Veh, %	2
Cap, veh/h	121
Arrive On Green	0.15
Sat Flow, veh/h	815
Grp Volume(v), veh/h	147
Grp Sat Flow(s),veh/h/ln	1710
Q Serve(g_s), s	5.4
Cycle Q Clear(g_c), s	5.4
Prop In Lane	0.48
Lane Grp Cap(c), veh/h	253
V/C Ratio(X)	0.58
Avail Cap(c_a), veh/h	1196
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	26.7
Incr Delay (d2), s/veh	2.5
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	2.3
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	29.2
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

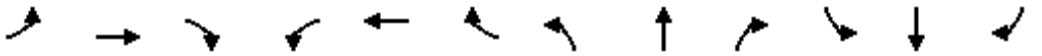
Intersection	
Int Delay, s/veh	0.9

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	44	1033	1	1	696	27	0	0	0	19	0	21
Future Vol, veh/h	1	44	1033	1	1	696	27	0	0	0	19	0	21
Conflicting Peds, #/hr	0	0	0	9	9	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	70	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	46	1087	1	1	733	28	0	0	0	20	0	22

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	761	761	0	0	1097	0	0	1560	1954	553	1387	1940	381
Stage 1	-	-	-	-	-	-	-	1191	1191	-	749	749	-
Stage 2	-	-	-	-	-	-	-	369	763	-	638	1191	-
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	472	847	-	-	632	-	-	76	63	477	102	65	617
Stage 1	-	-	-	-	-	-	-	199	259	-	370	417	-
Stage 2	-	-	-	-	-	-	-	623	411	-	431	259	-
Platoon blocked, %			-	-		-	-						
Mov Cap-1 Maneuver	831	831	-	-	627	-	-	69	59	473	97	61	617
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	69	59	-	97	61	-
Stage 1	-	-	-	-	-	-	-	186	242	-	349	416	-
Stage 2	-	-	-	-	-	-	-	599	410	-	407	242	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	32.2
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	831	-	-	627	-	-	174
HCM Lane V/C Ratio	-	0.057	-	-	0.002	-	-	0.242
HCM Control Delay (s)	0	9.6	-	-	10.8	0	-	32.2
HCM Lane LOS	A	A	-	-	B	A	-	D
HCM 95th %tile Q(veh)	-	0.2	-	-	0	-	-	0.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	929	1	1	634	55	1	1	0	60	0	99
Future Volume (veh/h)	109	929	1	1	634	55	1	1	0	60	0	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.99		1.00	0.99		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	1010	1	1	689	55	1	1	0	65	0	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	1949	2	5	1253	100	226	189	0	268	25	100
Arrive On Green	0.16	0.54	0.54	0.00	0.38	0.38	0.18	0.18	0.00	0.18	0.00	0.18
Sat Flow, veh/h	1781	3643	4	1781	3323	265	637	1025	0	816	135	541
Grp Volume(v), veh/h	118	493	518	1	368	376	2	0	0	102	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1781	1777	1812	1662	0	0	1492	0	0
Q Serve(g_s), s	3.0	8.9	8.9	0.0	8.2	8.2	0.0	0.0	0.0	1.7	0.0	0.0
Cycle Q Clear(g_c), s	3.0	8.9	8.9	0.0	8.2	8.2	0.0	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.15	0.50		0.00	0.64		0.36
Lane Grp Cap(c), veh/h	287	951	1001	5	670	683	415	0	0	393	0	0
V/C Ratio(X)	0.41	0.52	0.52	0.20	0.55	0.55	0.00	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	710	2126	2237	533	2126	2167	1309	0	0	1237	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.9	7.5	7.5	24.9	12.3	12.3	16.7	0.0	0.0	17.8	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.5	0.5	7.4	0.9	0.8	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.3	2.4	0.0	2.6	2.7	0.0	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	8.0	8.0	32.3	13.1	13.1	16.7	0.0	0.0	17.9	0.0	0.0
LnGrp LOS	B	A	A	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h		1129			745			2			102	
Approach Delay, s/veh		9.2			13.1			16.7			17.9	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	32.1		13.9	12.1	24.2		13.9				
Change Period (Y+Rc), s	4.0	5.3		4.6	4.0	5.3		* 4.6				
Max Green Setting (Gmax), s	15.0	60.0		37.7	20.0	60.0		* 38				
Max Q Clear Time (g_c+I1), s	2.0	10.9		2.0	5.0	10.2		4.8				
Green Ext Time (p_c), s	0.0	9.4		0.0	0.1	6.2		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	1	135	810	35	24	576	94	28	7	28	69	8	84
Future Volume (veh/h)	1	135	810	35	24	576	94	28	7	28	69	8	84
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.97	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, 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
Work Zone On Approach			No			No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		144	862	35	26	613	88	30	7	6	73	9	39
Peak Hour Factor		0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		235	1679	68	77	1225	175	312	71	39	265	51	88
Arrive On Green		0.13	0.48	0.48	0.04	0.39	0.39	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h		1781	3476	141	1781	3108	445	962	396	220	745	287	491
Grp Volume(v), veh/h		144	441	456	26	350	351	43	0	0	121	0	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1840	1781	1777	1776	1578	0	0	1522	0	0
Q Serve(g_s), s		3.3	7.5	7.5	0.6	6.5	6.5	0.0	0.0	0.0	1.7	0.0	0.0
Cycle Q Clear(g_c), s		3.3	7.5	7.5	0.6	6.5	6.5	0.9	0.0	0.0	2.9	0.0	0.0
Prop In Lane		1.00		0.08	1.00		0.25	0.70		0.14	0.60		0.32
Lane Grp Cap(c), veh/h		235	858	889	77	700	700	422	0	0	404	0	0
V/C Ratio(X)		0.61	0.51	0.51	0.34	0.50	0.50	0.10	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h		732	1339	1387	732	1339	1339	1218	0	0	1589	0	0
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh		17.9	7.8	7.8	20.3	10.0	10.0	15.1	0.0	0.0	15.9	0.0	0.0
Incr Delay (d2), s/veh		2.6	1.0	1.0	2.5	1.2	1.2	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		1.3	2.0	2.0	0.3	2.0	2.0	0.3	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh		20.5	8.8	8.8	22.9	11.2	11.2	15.2	0.0	0.0	16.3	0.0	0.0
LnGrp LOS		C	A	A	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h			1041			727			43			121	
Approach Delay, s/veh			10.4			11.6			15.2			16.3	
Approach LOS			B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	26.0		11.8	9.8	22.2		11.8
Change Period (Y+Rc), s	4.0	4.9		4.0	4.0	4.9		4.0
Max Green Setting (Gmax), s	18.0	33.0		43.0	18.0	33.0		32.0
Max Q Clear Time (g_c+I1), s	12.6	9.5		4.9	5.3	8.5		2.9
Green Ext Time (p_c), s	0.0	10.5		0.8	0.3	8.1		0.2

Intersection Summary	
HCM 6th Ctrl Delay	11.3
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	322	423	161	270	17	345	260	164	18	188	93
Future Volume (veh/h)	157	322	423	161	270	17	345	260	164	18	188	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	325	0	163	273	4	348	263	69	18	190	80
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	406		200	410	335	390	768	628	59	278	117
Arrive On Green	0.11	0.22	0.00	0.11	0.22	0.22	0.22	0.41	0.41	0.03	0.22	0.22
Sat Flow, veh/h	1781	1870	1585	1781	1870	1530	1781	1870	1529	1781	1239	522
Grp Volume(v), veh/h	159	325	0	163	273	4	348	263	69	18	0	270
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1530	1781	1870	1529	1781	0	1761
Q Serve(g_s), s	6.9	13.0	0.0	7.1	10.6	0.2	15.0	7.6	2.2	0.8	0.0	11.1
Cycle Q Clear(g_c), s	6.9	13.0	0.0	7.1	10.6	0.2	15.0	7.6	2.2	0.8	0.0	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	196	406		200	410	335	390	768	628	59	0	395
V/C Ratio(X)	0.81	0.80		0.81	0.67	0.01	0.89	0.34	0.11	0.31	0.00	0.68
Avail Cap(c_a), veh/h	450	685		338	803	657	450	1040	850	788	0	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.4	29.4	0.0	34.3	28.3	24.2	30.0	16.0	14.4	37.4	0.0	28.1
Incr Delay (d2), s/veh	3.0	3.7	0.0	3.1	2.3	0.0	17.9	0.3	0.1	2.9	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	5.9	0.0	3.1	4.8	0.1	7.9	3.0	0.7	0.4	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	33.1	0.0	37.4	30.5	24.2	47.9	16.3	14.5	40.3	0.0	30.6
LnGrp LOS	D	C		D	C	C	D	B	B	D	A	C
Approach Vol, veh/h		484			440			680			288	
Approach Delay, s/veh		34.5			33.0			32.3			31.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.3	22.8	12.7	22.3	6.6	37.5	12.9	22.2
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	20.0	44.0	20.0	34.0	35.0	44.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	17.0	13.1	8.9	12.6	2.8	9.6	9.1	15.0
Green Ext Time (p_c), s	0.3	2.2	0.1	1.8	0.0	2.1	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	32.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	122	370	0	0	322	22	0	0	0	23	0	104
Future Vol, veh/h	122	370	0	0	322	22	0	0	0	23	0	104
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	78	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	411	0	0	358	24	0	0	0	26	0	116

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	384	0	0	411	0	0	1111	1067	411	1055	1055	372
Stage 1	-	-	-	-	-	-	683	683	-	372	372	-
Stage 2	-	-	-	-	-	-	428	384	-	683	683	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1174	-	-	1148	-	-	186	222	641	204	226	674
Stage 1	-	-	-	-	-	-	439	449	-	648	619	-
Stage 2	-	-	-	-	-	-	605	611	-	439	449	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1172	-	-	1148	-	-	140	196	641	185	199	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	196	-	185	199	-
Stage 1	-	-	-	-	-	-	388	397	-	572	618	-
Stage 2	-	-	-	-	-	-	501	610	-	388	397	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	0	16.4
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1172	-	-	1148	-	-	455
HCM Lane V/C Ratio	-	0.116	-	-	-	-	-	0.31
HCM Control Delay (s)	0	8.5	-	-	0	-	-	16.4
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.4	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	374	337	14	14	9
Future Vol, veh/h	16	374	337	14	14	9
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	411	370	15	15	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	387	0	-	0	827	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	447	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1171	-	-	-	341	667
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	644	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1169	-	-	-	335	666
Mov Cap-2 Maneuver	-	-	-	-	335	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	643	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1169	-	-	-	416
HCM Lane V/C Ratio	0.015	-	-	-	0.061
HCM Control Delay (s)	8.1	0	-	-	14.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

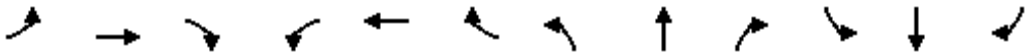
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	22	358	1	336	52	42	24
Future Vol, veh/h	22	358	1	336	52	42	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	0	-	0	-
Grade, %	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	24	385	1	361	56	45	26

Major/Minor	Major1		Major2			Minor2	
Conflicting Flow All	417	0	-	-	0	824	209
Stage 1	-	-	-	-	-	391	-
Stage 2	-	-	-	-	-	433	-
Critical Hdwy	4.13	-	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1140	-	-	-	-	327	798
Stage 1	-	-	-	-	-	653	-
Stage 2	-	-	-	-	-	653	-
Platoon blocked, %		-		-	-		
Mov Cap-1 Maneuver	1140	-	-	-	-	318	798
Mov Cap-2 Maneuver	-	-	-	-	-	318	-
Stage 1	-	-	-	-	-	635	-
Stage 2	-	-	-	-	-	653	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5		15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1140	-	-	-	407
HCM Lane V/C Ratio	0.021	-	-	-	0.174
HCM Control Delay (s)	8.2	0	-	-	15.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	303	79	175	249	109	122	169	148	67	123	18
Future Volume (veh/h)	20	303	79	175	249	109	122	169	148	67	123	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	326	85	188	268	117	131	182	159	72	132	19
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	660	169	244	877	383	226	436	354	226	742	105
Arrive On Green	0.13	0.24	0.24	0.14	0.25	0.25	0.13	0.24	0.24	0.13	0.24	0.24
Sat Flow, veh/h	1781	2788	715	1781	3554	1551	1781	1835	1490	1781	3120	441
Grp Volume(v), veh/h	22	206	205	188	268	117	131	176	165	72	74	77
Grp Sat Flow(s),veh/h/ln	1781	1777	1726	1781	1777	1551	1781	1777	1548	1781	1777	1784
Q Serve(g_s), s	0.7	6.3	6.5	6.4	3.9	3.9	4.4	5.3	5.7	2.3	2.1	2.2
Cycle Q Clear(g_c), s	0.7	6.3	6.5	6.4	3.9	3.9	4.4	5.3	5.7	2.3	2.1	2.2
Prop In Lane	1.00		0.41	1.00		1.00	1.00		0.96	1.00		0.25
Lane Grp Cap(c), veh/h	226	421	409	244	877	383	226	422	368	226	422	424
V/C Ratio(X)	0.10	0.49	0.50	0.77	0.31	0.31	0.58	0.42	0.45	0.32	0.18	0.18
Avail Cap(c_a), veh/h	452	859	835	452	1719	750	452	874	761	452	874	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.3	20.8	20.8	26.3	19.3	19.3	25.9	20.3	20.5	25.0	19.1	19.1
Incr Delay (d2), s/veh	0.1	2.7	2.9	3.5	0.6	1.4	1.6	1.9	2.5	0.5	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.8	2.8	2.9	1.6	1.5	1.8	2.2	2.1	0.9	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.5	23.5	23.8	29.8	19.9	20.7	27.5	22.2	23.0	25.6	19.7	19.7
LnGrp LOS	C	C	C	C	B	C	C	C	C	C	B	B
Approach Vol, veh/h		433			573			472			223	
Approach Delay, s/veh		23.7			23.3			24.0			21.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	19.0	12.6	19.4	12.0	19.0	12.0	20.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.5
Max Green Setting (Gmax), s	16.0	31.0	16.0	30.5	16.0	31.0	16.0	30.5
Max Q Clear Time (g_c+I1), s	4.3	7.7	8.4	8.5	6.4	4.2	2.7	5.9
Green Ext Time (p_c), s	0.1	4.3	0.2	5.5	0.1	1.7	0.0	5.0

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	458	45	45	505	17	13	2	92	5	3	4
Future Volume (veh/h)	7	458	45	45	505	17	13	2	92	5	3	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.95		0.96	0.97		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	487	24	48	537	17	14	2	10	5	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	876	722	93	921	29	323	35	197	341	224	0
Arrive On Green	0.01	0.47	0.47	0.05	0.51	0.51	0.13	0.13	0.13	0.13	0.13	0.00
Sat Flow, veh/h	1781	1870	1541	1781	1802	57	1150	269	1514	1236	1805	0
Grp Volume(v), veh/h	7	487	24	48	0	554	16	0	10	5	3	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1541	1781	0	1859	1420	0	1514	1339	1617	0
Q Serve(g_s), s	0.2	7.3	0.3	1.0	0.0	8.1	0.0	0.0	0.2	0.0	0.1	0.0
Cycle Q Clear(g_c), s	0.2	7.3	0.3	1.0	0.0	8.1	0.3	0.0	0.2	0.3	0.1	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.87		1.00	0.95		0.00
Lane Grp Cap(c), veh/h	17	876	722	93	0	950	358	0	197	355	211	0
V/C Ratio(X)	0.42	0.56	0.03	0.52	0.00	0.58	0.04	0.00	0.05	0.01	0.01	0.00
Avail Cap(c_a), veh/h	549	1682	1386	915	0	1671	1179	0	1089	828	764	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	7.4	5.6	18.0	0.0	6.6	14.8	0.0	14.8	14.8	14.7	0.0
Incr Delay (d2), s/veh	15.9	2.0	0.1	1.7	0.0	2.1	0.1	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.5	0.1	0.4	0.0	2.6	0.1	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	9.4	5.7	19.6	0.0	8.7	14.9	0.0	15.0	14.8	14.8	0.0
LnGrp LOS	D	A	A	B	A	A	B	A	B	B	B	A
Approach Vol, veh/h		518			602			26			8	
Approach Delay, s/veh		9.6			9.6			14.9			14.8	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	23.2		9.6	4.5	24.9		9.6
Change Period (Y+Rc), s	4.1	5.0		4.5	4.1	5.0		* 4.5
Max Green Setting (Gmax), s	20.0	35.0		28.0	12.0	35.0		* 18
Max Q Clear Time (g_c+I1), s	3.0	9.3		2.3	2.2	10.1		2.3
Green Ext Time (p_c), s	0.0	8.3		0.1	0.0	9.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	5	35	450	360	305	485	5	140	115	225	25	120
Future Volume (veh/h)	5	35	450	360	305	485	5	140	115	225	25	120
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		37	474	123	321	511	4	147	121	97	26	126
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		136	745	331	565	1072	8	520	452	383	104	469
Arrive On Green		0.08	0.21	0.21	0.16	0.30	0.30	0.15	0.24	0.24	0.06	0.15
Sat Flow, veh/h		1781	3554	1578	3456	3613	28	3456	1870	1585	1781	3129
Grp Volume(v), veh/h		37	474	123	321	251	264	147	121	97	26	71
Grp Sat Flow(s),veh/h/ln		1781	1777	1578	1728	1777	1864	1728	1870	1585	1781	1777
Q Serve(g_s), s		1.2	7.4	4.1	5.2	7.1	7.1	2.3	3.2	3.0	0.8	2.1
Cycle Q Clear(g_c), s		1.2	7.4	4.1	5.2	7.1	7.1	2.3	3.2	3.0	0.8	2.1
Prop In Lane		1.00		1.00	1.00		0.02	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		136	745	331	565	527	553	520	452	383	104	266
V/C Ratio(X)		0.27	0.64	0.37	0.57	0.48	0.48	0.28	0.27	0.25	0.25	0.27
Avail Cap(c_a), veh/h		731	2100	933	1135	1488	1561	1135	1382	1171	731	1371
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		26.5	22.0	20.6	23.5	17.5	17.6	23.0	18.7	18.6	27.4	22.9
Incr Delay (d2), s/veh		0.8	0.3	0.3	0.7	0.2	0.2	0.1	0.4	0.4	0.5	0.6
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.5	2.8	1.4	2.0	2.5	2.7	0.9	1.3	1.0	0.4	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		27.3	22.3	20.9	24.2	17.8	17.8	23.1	19.1	19.1	27.9	23.6
LnGrp LOS		C	C	C	C	B	B	C	B	B	C	C
Approach Vol, veh/h			634			836			365			170
Approach Delay, s/veh			22.3			20.2			20.7			24.2
Approach LOS			C			C			C			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	15.4	9.2	22.7	8.1	21.0	14.5	17.4
Change Period (Y+Rc), s	4.5	6.3	4.5	4.6	4.5	6.3	4.5	4.6
Max Green Setting (Gmax), s	20.0	47.0	25.0	51.0	25.0	45.0	20.0	36.0
Max Q Clear Time (g_c+I1), s	4.3	4.2	3.2	9.1	2.8	5.2	7.2	9.4
Green Ext Time (p_c), s	0.2	1.0	0.0	1.8	0.0	1.2	0.7	2.1

Intersection Summary	
HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	45
Future Volume (veh/h)	45
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	18
Peak Hour Factor	0.95
Percent Heavy Veh, %	2
Cap, veh/h	66
Arrive On Green	0.15
Sat Flow, veh/h	439
Grp Volume(v), veh/h	73
Grp Sat Flow(s),veh/h/ln	1791
Q Serve(g_s), s	2.2
Cycle Q Clear(g_c), s	2.2
Prop In Lane	0.25
Lane Grp Cap(c), veh/h	268
V/C Ratio(X)	0.27
Avail Cap(c_a), veh/h	1382
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.0
Incr Delay (d2), s/veh	0.7
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.9
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	23.6
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

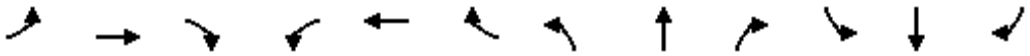
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	700	0	0	735	10	0	0	0	15	0	30
Future Vol, veh/h	20	700	0	0	735	10	0	0	0	15	0	30
Conflicting Peds, #/hr	2	0	3	3	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	729	0	0	766	10	0	0	0	16	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	778	0	0	732	0	0	1158	1552	368	1180	-	391
Stage 1	-	-	-	-	-	-	774	774	-	773	-	-
Stage 2	-	-	-	-	-	-	384	778	-	407	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	834	-	-	868	-	-	151	112	629	146	0	608
Stage 1	-	-	-	-	-	-	357	406	-	358	0	-
Stage 2	-	-	-	-	-	-	611	405	-	592	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	832	-	-	866	-	-	140	109	627	143	-	606
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	109	-	143	-	-
Stage 1	-	-	-	-	-	-	347	395	-	348	-	-
Stage 2	-	-	-	-	-	-	579	404	-	577	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	19.7
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	832	-	-	866	-	-	291
HCM Lane V/C Ratio	-	0.025	-	-	-	-	-	0.161
HCM Control Delay (s)	0	9.4	-	-	0	-	-	19.7
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	570	0	0	600	110	0	0	0	95	0	140
Future Volume (veh/h)	130	570	0	0	600	110	0	0	0	95	0	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	0.99		0.99
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	606	0	0	638	102	0	0	0	101	0	82
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	2128	0	3	1084	173	0	393	0	254	30	143
Arrive On Green	0.17	0.60	0.00	0.00	0.35	0.35	0.00	0.00	0.00	0.21	0.00	0.21
Sat Flow, veh/h	1781	3647	0	1781	3056	488	0	1870	0	696	141	679
Grp Volume(v), veh/h	138	606	0	0	371	369	0	0	0	183	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1777	1766	0	1870	0	1516	0	0
Q Serve(g_s), s	3.6	4.3	0.0	0.0	8.8	8.8	0.0	0.0	0.0	3.9	0.0	0.0
Cycle Q Clear(g_c), s	3.6	4.3	0.0	0.0	8.8	8.8	0.0	0.0	0.0	5.5	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.28	0.00		0.00	0.55		0.45
Lane Grp Cap(c), veh/h	297	2128	0	3	630	626	0	393	0	426	0	0
V/C Ratio(X)	0.46	0.28	0.00	0.00	0.59	0.59	0.00	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	689	4122	0	517	2061	2049	0	1363	0	1211	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.5	5.0	0.0	0.0	13.6	13.6	0.0	0.0	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.9	0.0	0.0	3.0	2.9	0.0	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	5.1	0.0	0.0	14.7	14.7	0.0	0.0	0.0	18.5	0.0	0.0
LnGrp LOS	B	A	A	A	B	B	A	A	A	B	A	A
Approach Vol, veh/h		744			740			0			183	
Approach Delay, s/veh		7.9			14.7			0.0			18.5	
Approach LOS		A			B						B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	36.3		15.5	12.6	23.6		15.5				
Change Period (Y+Rc), s	4.0	5.3		4.6	4.0	5.3		* 4.6				
Max Green Setting (Gmax), s	15.0	60.0		37.7	20.0	60.0		* 38				
Max Q Clear Time (g_c+I1), s	0.0	6.3		0.0	5.6	10.8		7.5				
Green Ext Time (p_c), s	0.0	5.4		0.0	0.1	6.2		0.8				

Intersection Summary		
HCM 6th Ctrl Delay		12.0
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	545	10	10	535	125	25	25	45	175	15	155
Future Volume (veh/h)	100	545	10	10	535	125	25	25	45	175	15	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	112	612	10	11	601	120	28	28	18	197	17	139
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	1546	25	35	1030	205	241	231	124	346	43	189
Arrive On Green	0.10	0.43	0.43	0.02	0.35	0.35	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	3576	58	1781	2938	585	478	714	383	766	133	584
Grp Volume(v), veh/h	112	304	318	11	363	358	74	0	0	353	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1858	1781	1777	1746	1575	0	0	1483	0	0
Q Serve(g_s), s	3.5	6.7	6.7	0.4	9.6	9.6	0.0	0.0	0.0	10.3	0.0	0.0
Cycle Q Clear(g_c), s	3.5	6.7	6.7	0.4	9.6	9.6	1.7	0.0	0.0	12.0	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.34	0.38		0.24	0.56		0.39
Lane Grp Cap(c), veh/h	181	768	803	35	623	612	596	0	0	578	0	0
V/C Ratio(X)	0.62	0.40	0.40	0.31	0.58	0.58	0.12	0.00	0.00	0.61	0.00	0.00
Avail Cap(c_a), veh/h	557	1019	1065	557	1019	1001	946	0	0	1193	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.8	11.2	11.2	27.8	15.2	15.3	13.7	0.0	0.0	17.1	0.0	0.0
Incr Delay (d2), s/veh	3.5	0.7	0.7	5.0	1.8	1.9	0.1	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.2	2.3	0.2	3.5	3.5	0.6	0.0	0.0	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	11.9	11.9	32.9	17.1	17.2	13.8	0.0	0.0	18.1	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h		734			732			74			353	
Approach Delay, s/veh		14.4			17.4			13.8			18.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	29.8		22.6	9.8	25.1		22.6
Change Period (Y+Rc), s	4.0	4.9		4.0	4.0	4.9		4.0
Max Green Setting (Gmax), s	18.0	33.0		43.0	18.0	33.0		32.0
Max Q Clear Time (g_c+I1), s	12.4	8.7		14.0	5.5	11.6		3.7
Green Ext Time (p_c), s	0.0	7.0		2.6	0.2	7.9		0.4

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	210	505	110	180	20	350	255	140	15	350	130
Future Volume (veh/h)	75	210	505	110	180	20	350	255	140	15	350	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	236	0	124	202	7	393	287	87	17	393	135
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	296		155	315	259	386	990	818	55	454	156
Arrive On Green	0.08	0.16	0.00	0.09	0.17	0.17	0.22	0.53	0.53	0.03	0.34	0.34
Sat Flow, veh/h	1781	1870	1585	1781	1870	1541	1781	1870	1547	1781	1325	455
Grp Volume(v), veh/h	84	236	0	124	202	7	393	287	87	17	0	528
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1541	1781	1870	1547	1781	0	1780
Q Serve(g_s), s	4.2	11.2	0.0	6.3	9.3	0.4	20.0	7.9	2.6	0.9	0.0	25.6
Cycle Q Clear(g_c), s	4.2	11.2	0.0	6.3	9.3	0.4	20.0	7.9	2.6	0.9	0.0	25.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	137	296		155	315	259	386	990	818	55	0	610
V/C Ratio(X)	0.62	0.80		0.80	0.64	0.03	1.02	0.29	0.11	0.31	0.00	0.86
Avail Cap(c_a), veh/h	386	588		290	690	568	386	990	818	676	0	849
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.3	37.4	0.0	41.3	35.8	32.0	36.1	12.1	10.8	43.7	0.0	28.3
Incr Delay (d2), s/veh	1.7	4.9	0.0	3.6	2.6	0.1	50.2	0.2	0.1	3.2	0.0	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	5.3	0.0	2.9	4.3	0.1	13.6	3.0	0.8	0.4	0.0	11.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.9	42.3	0.0	45.0	38.4	32.1	86.3	12.3	10.9	46.9	0.0	35.7
LnGrp LOS	D	D		D	D	C	F	B	B	D	A	D
Approach Vol, veh/h		320			333			767			545	
Approach Delay, s/veh		42.5			40.7			50.1			36.1	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	36.6	11.1	20.5	6.8	53.8	12.0	19.6
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	20.0	44.0	20.0	34.0	35.0	44.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	22.0	27.6	6.2	11.3	2.9	9.9	8.3	13.2
Green Ext Time (p_c), s	0.0	3.7	0.0	1.3	0.0	2.4	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	43.4
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	235	5	0	200	25	0	0	0	70	0	90
Future Vol, veh/h	120	235	5	0	200	25	0	0	0	70	0	90
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	78	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	290	6	0	247	31	0	0	0	86	0	111

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	279	0	0	296	0	0	907	868	293	853	-	264
Stage 1	-	-	-	-	-	-	589	589	-	264	-	-
Stage 2	-	-	-	-	-	-	318	279	-	589	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1284	-	-	1265	-	-	257	290	746	279	0	775
Stage 1	-	-	-	-	-	-	494	495	-	741	0	-
Stage 2	-	-	-	-	-	-	693	680	-	494	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1283	-	-	1265	-	-	201	256	746	254	-	774
Mov Cap-2 Maneuver	-	-	-	-	-	-	201	256	-	254	-	-
Stage 1	-	-	-	-	-	-	437	438	-	655	-	-
Stage 2	-	-	-	-	-	-	594	679	-	437	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0	0	21.8
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1283	-	-	1265	-	-	408
HCM Lane V/C Ratio	-	0.115	-	-	-	-	-	0.484
HCM Control Delay (s)	0	8.2	-	-	0	-	-	21.8
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.4	-	-	0	-	-	2.6

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	300	210	5	25	15
Future Vol, veh/h	10	300	210	5	25	15
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	337	236	6	28	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	244	0	-	0	600	241
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	359	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1322	-	-	-	464	798
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1319	-	-	-	458	796
Mov Cap-2 Maneuver	-	-	-	-	458	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	706	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1319	-	-	-	545
HCM Lane V/C Ratio	0.009	-	-	-	0.082
HCM Control Delay (s)	7.8	0	-	-	12.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

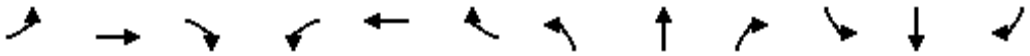
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	310	190	30	55	25
Future Vol, veh/h	15	310	190	30	55	25
Conflicting Peds, #/hr	1	0	0	1	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	369	226	36	65	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	263	0	-	0	654	132
Stage 1	-	-	-	-	245	-
Stage 2	-	-	-	-	409	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1300	-	-	-	415	894
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	670	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1299	-	-	-	407	893
Mov Cap-2 Maneuver	-	-	-	-	407	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1299	-	-	-	490
HCM Lane V/C Ratio	0.014	-	-	-	0.194
HCM Control Delay (s)	7.8	0	-	-	14.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	235	125	130	140	65	70	130	125	145	260	10
Future Volume (veh/h)	5	235	125	130	140	65	70	130	125	145	260	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	273	145	151	163	76	81	151	145	169	302	12
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	553	284	241	870	387	241	365	318	241	715	28
Arrive On Green	0.14	0.24	0.24	0.14	0.24	0.24	0.14	0.21	0.21	0.14	0.21	0.21
Sat Flow, veh/h	1781	2256	1161	1781	3554	1581	1781	1777	1550	1781	3481	138
Grp Volume(v), veh/h	6	213	205	151	163	76	81	151	145	169	154	160
Grp Sat Flow(s),veh/h/ln	1781	1777	1640	1781	1777	1581	1781	1777	1550	1781	1777	1842
Q Serve(g_s), s	0.2	6.1	6.4	4.7	2.1	2.3	2.4	4.4	4.9	5.4	4.4	4.5
Cycle Q Clear(g_c), s	0.2	6.1	6.4	4.7	2.1	2.3	2.4	4.4	4.9	5.4	4.4	4.5
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	241	435	402	241	870	387	241	365	318	241	365	378
V/C Ratio(X)	0.02	0.49	0.51	0.63	0.19	0.20	0.34	0.41	0.46	0.70	0.42	0.42
Avail Cap(c_a), veh/h	482	917	846	482	1833	816	482	932	812	482	932	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	19.2	19.3	24.2	17.7	17.7	23.2	20.4	20.6	24.4	20.4	20.4
Incr Delay (d2), s/veh	0.0	2.6	3.1	1.8	0.3	0.8	0.6	2.2	2.9	2.5	2.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.7	2.6	2.0	0.9	0.9	1.0	1.9	1.8	2.2	1.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	21.8	22.3	26.0	18.0	18.5	23.7	22.6	23.5	26.9	22.7	22.6
LnGrp LOS	C	C	C	C	B	B	C	C	C	C	C	C
Approach Vol, veh/h		424			390			377			483	
Approach Delay, s/veh		22.0			21.2			23.2			24.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	16.1	12.0	19.0	12.0	16.1	12.0	19.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.5
Max Green Setting (Gmax), s	16.0	31.0	16.0	30.5	16.0	31.0	16.0	30.5
Max Q Clear Time (g_c+I1), s	7.4	6.9	6.7	8.4	4.4	6.5	2.2	4.3
Green Ext Time (p_c), s	0.2	3.7	0.2	5.6	0.1	3.9	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	505	15	95	315	5	5	0	30	10	5	5
Future Volume (veh/h)	0	505	15	95	315	5	5	0	30	10	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		0.97	0.98		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	608	10	114	380	6	6	0	6	12	6	-1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	4	977	810	157	1301	21	260	0	98	305	398	0
Arrive On Green	0.00	0.52	0.52	0.09	0.71	0.71	0.06	0.00	0.06	0.06	0.06	0.00
Sat Flow, veh/h	1781	1870	1549	1781	1836	29	1367	0	1545	1218	1906	0
Grp Volume(v), veh/h	0	608	10	114	0	386	6	0	6	13	4	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1549	1781	0	1865	1367	0	1545	1422	1617	0
Q Serve(g_s), s	0.0	9.6	0.1	2.6	0.0	3.2	0.2	0.0	0.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.6	0.1	2.6	0.0	3.2	0.2	0.0	0.2	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	0.92		0.00
Lane Grp Cap(c), veh/h	4	977	810	157	0	1321	260	0	98	0	0	0
V/C Ratio(X)	0.00	0.62	0.01	0.73	0.00	0.29	0.02	0.00	0.06	0.00	0.00	0.00
Avail Cap(c_a), veh/h	512	1569	1300	854	0	1564	1090	0	1037	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	7.0	4.8	18.5	0.0	2.2	18.4	0.0	18.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.4	0.0	2.4	0.0	0.4	0.1	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	1.1	0.0	0.5	0.1	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.4	4.8	21.0	0.0	2.7	18.4	0.0	18.7	0.0	0.0	0.0
LnGrp LOS	A	A	A	C	A	A	B	A	B	A	A	A
Approach Vol, veh/h		618			500			12			17	
Approach Delay, s/veh		9.3			6.8			18.6			0.0	
Approach LOS		A			A			B			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.8	26.8		7.2	0.0	34.6		7.2
Change Period (Y+Rc), s	4.1	5.0		4.5	4.1	5.0		* 4.5
Max Green Setting (Gmax), s	20.0	35.0		28.0	12.0	35.0		* 18
Max Q Clear Time (g_c+I1), s	4.6	11.6		2.2	0.0	5.2		2.0
Green Ext Time (p_c), s	0.1	10.1		0.0	0.0	6.5		0.0

Intersection Summary	
HCM 6th Ctrl Delay	8.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	5	60	710	315	305	500	5	275	195	460	70	250
Future Volume (veh/h)	5	60	710	315	305	500	5	275	195	460	70	250
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.98	1.00		0.97	1.00		1.00	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		65	763	163	328	538	4	296	210	171	75	269
Peak Hour Factor		0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		178	1031	451	468	1178	9	468	370	314	190	428
Arrive On Green		0.10	0.29	0.29	0.14	0.33	0.33	0.14	0.20	0.20	0.11	0.17
Sat Flow, veh/h		1781	3554	1553	3456	3614	27	3456	1870	1585	1781	2530
Grp Volume(v), veh/h		65	763	163	328	264	278	296	210	171	75	187
Grp Sat Flow(s),veh/h/ln		1781	1777	1553	1728	1777	1865	1728	1870	1585	1781	1777
Q Serve(g_s), s		2.5	14.3	6.1	6.7	8.7	8.7	6.0	7.5	7.2	2.9	7.2
Cycle Q Clear(g_c), s		2.5	14.3	6.1	6.7	8.7	8.7	6.0	7.5	7.2	2.9	7.2
Prop In Lane		1.00		1.00	1.00		0.01	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		178	1031	451	468	579	608	468	370	314	190	300
V/C Ratio(X)		0.37	0.74	0.36	0.70	0.46	0.46	0.63	0.57	0.55	0.40	0.62
Avail Cap(c_a), veh/h		604	1735	758	937	1229	1290	937	1142	968	604	1133
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		31.0	23.6	20.7	30.4	19.7	19.7	30.1	26.7	26.6	30.7	28.4
Incr Delay (d2), s/veh		0.9	0.4	0.2	1.4	0.2	0.2	0.5	1.6	1.8	0.5	2.5
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		1.1	5.5	2.1	2.7	3.3	3.4	2.4	3.3	2.7	1.2	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		31.9	24.0	20.9	31.9	19.9	19.9	30.7	28.4	28.4	31.2	31.0
LnGrp LOS		C	C	C	C	B	B	C	C	C	C	C
Approach Vol, veh/h			991			870			677			446
Approach Delay, s/veh			24.1			24.4			29.4			31.2
Approach LOS			C			C			C			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	18.8	11.9	28.6	12.3	20.9	14.5	26.0
Change Period (Y+Rc), s	4.5	6.3	4.5	4.6	4.5	6.3	4.5	4.6
Max Green Setting (Gmax), s	20.0	47.0	25.0	51.0	25.0	45.0	20.0	36.0
Max Q Clear Time (g_c+I1), s	8.0	9.5	4.5	10.7	4.9	9.5	8.7	16.3
Green Ext Time (p_c), s	0.4	3.0	0.1	1.9	0.1	2.3	0.7	3.5

Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	190
Future Volume (veh/h)	190
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.99
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	102
Peak Hour Factor	0.93
Percent Heavy Veh, %	2
Cap, veh/h	158
Arrive On Green	0.17
Sat Flow, veh/h	934
Grp Volume(v), veh/h	184
Grp Sat Flow(s),veh/h/ln	1687
Q Serve(g_s), s	7.5
Cycle Q Clear(g_c), s	7.5
Prop In Lane	0.55
Lane Grp Cap(c), veh/h	285
V/C Ratio(X)	0.65
Avail Cap(c_a), veh/h	1076
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	28.6
Incr Delay (d2), s/veh	2.9
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	3.2
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	31.5
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

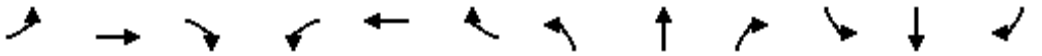
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	1240	0	0	835	30	0	0	0	25	0	25
Future Vol, veh/h	55	1240	0	0	835	30	0	0	0	25	0	25
Conflicting Peds, #/hr	0	0	9	9	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	1305	0	0	879	32	0	0	0	26	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	911	0	0	1314	0	0	1870	2341	662	1664	-	456
Stage 1	-	-	-	-	-	-	1430	1430	-	895	-	-
Stage 2	-	-	-	-	-	-	440	911	-	769	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	743	-	-	522	-	-	44	36	404	63	0	551
Stage 1	-	-	-	-	-	-	141	199	-	302	0	-
Stage 2	-	-	-	-	-	-	566	351	-	360	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	743	-	-	518	-	-	39	33	401	59	-	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	33	-	59	-	-
Stage 1	-	-	-	-	-	-	129	182	-	278	-	-
Stage 2	-	-	-	-	-	-	539	351	-	332	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	67.6
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	743	-	-	518	-	-	107
HCM Lane V/C Ratio	-	0.078	-	-	-	-	-	0.492
HCM Control Delay (s)	0	10.3	-	-	0	-	-	67.6
HCM Lane LOS	A	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	2.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	1115	0	0	760	65	0	0	0	70	0	120
Future Volume (veh/h)	130	1115	0	0	760	65	0	0	0	70	0	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	0.99		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	1212	0	0	826	66	0	0	0	76	0	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	2270	0	3	1364	109	0	349	0	231	26	123
Arrive On Green	0.16	0.64	0.00	0.00	0.41	0.41	0.00	0.00	0.00	0.19	0.00	0.19
Sat Flow, veh/h	1781	3647	0	1781	3323	266	0	1870	0	707	140	658
Grp Volume(v), veh/h	141	1212	0	0	442	450	0	0	0	135	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1777	1812	0	1870	0	1505	0	0
Q Serve(g_s), s	4.1	10.6	0.0	0.0	11.0	11.0	0.0	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	4.1	10.6	0.0	0.0	11.0	11.0	0.0	0.0	0.0	4.4	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.15	0.00		0.00	0.56		0.44
Lane Grp Cap(c), veh/h	280	2270	0	3	730	744	0	349	0	380	0	0
V/C Ratio(X)	0.50	0.53	0.00	0.00	0.61	0.61	0.00	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	629	3766	0	472	1883	1920	0	1246	0	1100	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.8	5.6	0.0	0.0	13.1	13.1	0.0	0.0	0.0	20.4	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.2	0.0	0.0	3.7	3.7	0.0	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	5.8	0.0	0.0	14.1	14.0	0.0	0.0	0.0	20.7	0.0	0.0
LnGrp LOS	C	A	A	A	B	B	A	A	A	C	A	A
Approach Vol, veh/h		1353			892			0			135	
Approach Delay, s/veh		7.6			14.1			0.0			20.7	
Approach LOS		A			B						C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	41.5		15.2	12.9	28.5		15.2				
Change Period (Y+Rc), s	4.0	5.3		4.6	4.0	5.3		* 4.6				
Max Green Setting (Gmax), s	15.0	60.0		37.7	20.0	60.0		* 38				
Max Q Clear Time (g_c+I1), s	0.0	12.6		0.0	6.1	13.0		6.4				
Green Ext Time (p_c), s	0.0	14.0		0.0	0.1	7.9		0.6				

Intersection Summary		
HCM 6th Ctrl Delay		10.7
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	970	40	30	690	115	35	10	35	85	10	100
Future Volume (veh/h)	160	970	40	30	690	115	35	10	35	85	10	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	0.99		0.99
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	170	1032	41	32	734	110	37	11	13	90	11	56
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	1750	70	90	1312	197	271	82	64	247	48	100
Arrive On Green	0.13	0.50	0.50	0.05	0.42	0.42	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1781	3480	138	1781	3087	462	833	446	346	712	262	540
Grp Volume(v), veh/h	170	527	546	32	422	422	61	0	0	157	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1841	1781	1777	1773	1625	0	0	1515	0	0
Q Serve(g_s), s	4.5	10.3	10.3	0.9	8.8	8.8	0.0	0.0	0.0	3.1	0.0	0.0
Cycle Q Clear(g_c), s	4.5	10.3	10.3	0.9	8.8	8.8	1.4	0.0	0.0	4.5	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.26	0.61		0.21	0.57		0.36
Lane Grp Cap(c), veh/h	229	894	926	90	755	753	418	0	0	395	0	0
V/C Ratio(X)	0.74	0.59	0.59	0.36	0.56	0.56	0.15	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	651	1191	1234	651	1191	1188	1092	0	0	1408	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.7	8.6	8.6	22.6	10.7	10.7	16.9	0.0	0.0	18.1	0.0	0.0
Incr Delay (d2), s/veh	4.7	1.3	1.3	2.4	1.4	1.4	0.2	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.9	3.0	0.4	2.8	2.8	0.6	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	10.0	9.9	25.0	12.1	12.1	17.1	0.0	0.0	18.8	0.0	0.0
LnGrp LOS	C	A	A	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h		1243			876			61			157	
Approach Delay, s/veh		12.1			12.5			17.1			18.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	29.7		13.1	10.3	25.8		13.1
Change Period (Y+Rc), s	4.0	4.9		4.0	4.0	4.9		4.0
Max Green Setting (Gmax), s	18.0	33.0		43.0	18.0	33.0		32.0
Max Q Clear Time (g_c+I1), s	12.3	12.3		6.5	6.5	10.8		3.4
Green Ext Time (p_c), s	0.0	11.8		1.0	0.3	9.6		0.3

Intersection Summary	
HCM 6th Ctrl Delay	12.8
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	385	510	195	325	20	415	310	195	20	225	110
Future Volume (veh/h)	190	385	510	195	325	20	415	310	195	20	225	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	389	0	197	328	7	419	313	100	20	227	97
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	445		229	450	369	367	774	633	61	299	128
Arrive On Green	0.13	0.24	0.00	0.13	0.24	0.24	0.21	0.41	0.41	0.03	0.24	0.24
Sat Flow, veh/h	1781	1870	1585	1781	1870	1532	1781	1870	1529	1781	1233	527
Grp Volume(v), veh/h	192	389	0	197	328	7	419	313	100	20	0	324
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1532	1781	1870	1529	1781	0	1760
Q Serve(g_s), s	10.3	19.4	0.0	10.5	15.7	0.3	20.0	11.5	4.0	1.1	0.0	16.6
Cycle Q Clear(g_c), s	10.3	19.4	0.0	10.5	15.7	0.3	20.0	11.5	4.0	1.1	0.0	16.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	225	445		229	450	369	367	774	633	61	0	426
V/C Ratio(X)	0.85	0.87		0.86	0.73	0.02	1.14	0.40	0.16	0.33	0.00	0.76
Avail Cap(c_a), veh/h	367	558		275	654	536	367	847	692	641	0	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.6	35.6	0.0	41.5	34.0	28.2	38.6	20.1	17.9	45.8	0.0	34.2
Incr Delay (d2), s/veh	5.3	12.1	0.0	17.9	2.8	0.0	91.9	0.4	0.1	3.1	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	10.0	0.0	5.7	7.3	0.1	17.7	4.8	1.4	0.5	0.0	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.9	47.7	0.0	59.3	36.8	28.2	130.5	20.5	18.0	48.9	0.0	37.6
LnGrp LOS	D	D		E	D	C	F	C	B	D	A	D
Approach Vol, veh/h		581			532			832			344	
Approach Delay, s/veh		47.4			45.0			75.6			38.3	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	28.5	16.3	28.4	7.3	45.2	16.5	28.1
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	20.0	44.0	20.0	34.0	35.0	44.0	15.0	29.0
Max Q Clear Time (g_c+I2), s	12.3	18.6	12.3	17.7	3.1	13.5	12.5	21.4
Green Ext Time (p_c), s	0.0	2.6	0.1	2.0	0.0	2.7	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	55.7
HCM 6th LOS	E

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	445	0	0	385	25	0	0	0	30	0	125
Future Vol, veh/h	145	445	0	0	385	25	0	0	0	30	0	125
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	78	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	161	494	0	0	428	28	0	0	0	33	0	139

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	458	0	0	494	0	0	1328	1274	494	1260	-	444
Stage 1	-	-	-	-	-	-	816	816	-	444	-	-
Stage 2	-	-	-	-	-	-	512	458	-	816	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1103	-	-	1070	-	-	132	167	575	147	0	614
Stage 1	-	-	-	-	-	-	371	391	-	593	0	-
Stage 2	-	-	-	-	-	-	545	567	-	371	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1101	-	-	1070	-	-	91	142	575	130	-	613
Mov Cap-2 Maneuver	-	-	-	-	-	-	91	142	-	130	-	-
Stage 1	-	-	-	-	-	-	317	334	-	505	-	-
Stage 2	-	-	-	-	-	-	422	566	-	317	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0	0	24.1
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1101	-	-	1070	-	-	357
HCM Lane V/C Ratio	-	0.146	-	-	-	-	-	0.482
HCM Control Delay (s)	0	8.8	-	-	0	-	-	24.1
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.5	-	-	0	-	-	2.5

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	450	405	15	15	10
Future Vol, veh/h	20	450	405	15	15	10
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	495	445	16	16	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	463	0	-	0	994	455
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	539	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1098	-	-	-	272	605
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1096	-	-	-	265	604
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	584	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1096	-	-	-	342
HCM Lane V/C Ratio	0.02	-	-	-	0.08
HCM Control Delay (s)	8.4	0	-	-	16.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

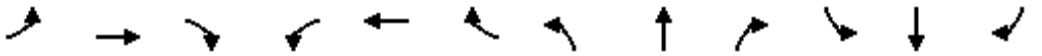
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	430	405	60	50	30
Future Vol, veh/h	25	430	405	60	50	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	462	435	65	54	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	500	0	-	0	984	250
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1062	-	-	-	260	751
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1062	-	-	-	251	751
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	598	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1062	-	-	-	335
HCM Lane V/C Ratio	0.025	-	-	-	0.257
HCM Control Delay (s)	8.5	0	-	-	19.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	365	95	210	300	130	145	205	180	80	150	20
Future Volume (veh/h)	25	365	95	210	300	130	145	205	180	80	150	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	392	102	226	323	140	156	220	194	86	161	22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	704	181	274	1046	457	205	452	376	200	774	104
Arrive On Green	0.11	0.25	0.25	0.15	0.29	0.29	0.12	0.25	0.25	0.11	0.25	0.25
Sat Flow, veh/h	1781	2787	716	1781	3554	1554	1781	1813	1509	1781	3143	422
Grp Volume(v), veh/h	27	248	246	226	323	140	156	215	199	86	90	93
Grp Sat Flow(s),veh/h/ln	1781	1777	1726	1781	1777	1554	1781	1777	1545	1781	1777	1788
Q Serve(g_s), s	1.0	8.6	8.8	8.8	5.0	5.0	6.0	7.4	7.9	3.2	2.9	2.9
Cycle Q Clear(g_c), s	1.0	8.6	8.8	8.8	5.0	5.0	6.0	7.4	7.9	3.2	2.9	2.9
Prop In Lane	1.00		0.42	1.00		1.00	1.00		0.98	1.00		0.24
Lane Grp Cap(c), veh/h	200	449	436	274	1046	457	205	443	385	200	438	441
V/C Ratio(X)	0.13	0.55	0.56	0.82	0.31	0.31	0.76	0.49	0.52	0.43	0.21	0.21
Avail Cap(c_a), veh/h	400	761	739	400	1522	666	400	774	673	400	774	779
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	23.1	23.2	29.2	19.5	19.5	30.5	22.8	23.0	29.5	21.3	21.3
Incr Delay (d2), s/veh	0.2	3.2	3.5	7.2	0.5	1.2	3.9	2.4	3.1	1.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	3.9	3.9	4.2	2.1	1.9	2.7	3.2	3.0	1.4	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.7	26.4	26.7	36.4	20.0	20.6	34.5	25.2	26.1	30.5	22.0	22.0
LnGrp LOS	C	C	C	D	C	C	C	C	C	C	C	C
Approach Vol, veh/h		521			689			570			269	
Approach Delay, s/veh		26.6			25.5			28.1			24.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	21.7	15.0	22.5	12.2	21.5	12.0	25.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.5
Max Green Setting (Gmax), s	16.0	31.0	16.0	30.5	16.0	31.0	16.0	30.5
Max Q Clear Time (g_c+I1), s	5.2	9.9	10.8	10.8	8.0	4.9	3.0	7.0
Green Ext Time (p_c), s	0.1	5.1	0.2	6.3	0.2	2.1	0.0	6.0

Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	550	55	55	605	20	15	0	110	5	5	5
Future Volume (veh/h)	10	550	55	55	605	20	15	0	110	5	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.96		0.96	0.97		0.93
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	585	35	59	644	20	16	0	29	5	5	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	930	767	103	976	30	349	0	216	279	249	53
Arrive On Green	0.01	0.50	0.50	0.06	0.54	0.54	0.14	0.00	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	1870	1542	1781	1803	56	1325	0	1519	977	1748	369
Grp Volume(v), veh/h	11	585	35	59	0	664	16	0	29	7	0	4
Grp Sat Flow(s),veh/h/ln	1781	1870	1542	1781	0	1859	1325	0	1519	1490	0	1604
Q Serve(g_s), s	0.3	10.3	0.5	1.5	0.0	11.5	0.5	0.0	0.8	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.3	10.3	0.5	1.5	0.0	11.5	0.6	0.0	0.8	0.1	0.0	0.1
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	0.75		0.23
Lane Grp Cap(c), veh/h	25	930	767	103	0	1006	349	0	216	352	0	229
V/C Ratio(X)	0.43	0.63	0.05	0.57	0.00	0.66	0.05	0.00	0.13	0.02	0.00	0.02
Avail Cap(c_a), veh/h	475	1455	1199	792	0	1446	995	0	945	738	0	656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.0	8.3	5.8	20.6	0.0	7.4	16.8	0.0	16.9	16.6	0.0	16.6
Incr Delay (d2), s/veh	11.2	2.5	0.1	1.8	0.0	2.7	0.1	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.7	0.1	0.6	0.0	3.9	0.1	0.0	0.3	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.2	10.8	5.9	22.5	0.0	10.1	16.9	0.0	17.3	16.6	0.0	16.6
LnGrp LOS	C	B	A	C	A	B	B	A	B	B	A	B
Approach Vol, veh/h		631			723			45			11	
Approach Delay, s/veh		10.9			11.1			17.1			16.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	27.4		10.9	4.7	29.3		10.9
Change Period (Y+Rc), s	4.1	5.0		4.5	4.1	5.0		* 4.5
Max Green Setting (Gmax), s	20.0	35.0		28.0	12.0	35.0		* 18
Max Q Clear Time (g_c+I1), s	3.5	12.3		2.8	2.3	13.5		2.1
Green Ext Time (p_c), s	0.0	9.7		0.2	0.0	10.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

LANE SUMMARY

Site: 101 [Cumulative AM (Site Folder: Harbor and Sac Ave)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Harbor Boulevard													
Lane 1[d]	268	3.0	858	0.313	100	7.7	LOS A	1.3	32.9	Full	1600	0.0	0.0
Lane 2	237	3.0	890	0.266	100	6.8	LOS A	1.1	27.3	Short	100	0.0	NA
Approach	505	3.0		0.313		7.3	LOS A	1.3	32.9				
East: WB Sac Avenue													
Lane 1	418	3.0	1041	0.402	100	7.8	LOS A	2.1	52.5	Full	1600	0.0	0.0
Lane 2[d]	418	3.0	1041	0.402	100	7.8	LOS A	2.1	52.5	Full	1600	0.0	0.0
Approach	837	3.0		0.402		7.8	LOS A	2.1	52.5				
North: SB Harbor Boulevard													
Lane 1[d]	153	3.0	582	0.262	100	9.7	LOS A	0.9	23.9	Full	1600	0.0	0.0
Lane 2	47	3.0	771	0.061	100	5.3	LOS A	0.2	5.3	Short	100	0.0	NA
Approach	200	3.0		0.262		8.6	LOS A	0.9	23.9				
West: EB Reed Avenue													
Lane 1[d]	516	3.0	885	0.583	100	12.5	LOS B	5.0	129.0	Full	1600	0.0	0.0
Lane 2	379	3.0	884	0.428	100	9.2	LOS A	2.4	60.7	Full	1600	0.0	0.0
Approach	895	3.0		0.583		11.1	LOS B	5.0	129.0				
Intersection	2437	3.0		0.583		9.0	LOS A	5.0	129.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: NB Harbor Boulevard

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	147	121	-	268	3.0	858	0.313	100	NA	NA
Lane 2	-	-	237	237	3.0	890	0.266	100	0.0	1
Approach	147	121	237	505	3.0		0.313			

East: WB Sac Avenue

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	321	97	-	418	3.0	1041	0.402	100	NA	NA

Lane 2	-	413	5	418	3.0		1041	0.402	100	NA	NA
Approach	321	511	5	837	3.0			0.402			
North: SB Harbor Boulevard											
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	26	126	-	153	3.0		582	0.262	100	NA	NA
Lane 2	-	-	47	47	3.0		771	0.061	100	0.0	1
Approach	26	126	47	200	3.0			0.262			
West: EB Reed Avenue											
Mov. From W To Exit:	U W	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	5	37	474	-	516	3.0	885	0.583	100	NA	NA
Lane 2	-	-	-	379	379	3.0	884	0.428	100	NA	NA
Approach	5	37	474	379	895	3.0		0.583			
	Total	%HV	Deg.Satn (v/c)								
Intersection	2437	3.0	0.583								

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: NB Harbor Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: WB Sac Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
Full Length Lane	2	Merge Analysis not applied.										
North Exit: SB Harbor Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: EB Reed Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
Full Length Lane	2	Merge Analysis not applied.										

LANE SUMMARY

Site: 101 [Future AM (Site Folder: Jefferson Intersection)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Jefferson													
Lane 1	380	3.0	1021	0.372	100	12.0	LOS B	2.8	72.9	Short	200	0.0	NA
Lane 2[d]	429	3.0	1245	0.345	100	5.9	LOS A	2.7	69.9	Full	1600	0.0	0.0
Approach	810	3.0		0.372		8.8	LOS A	2.8	72.9				
East: WB Sac													
Lane 1	120	3.0	576	0.208	100	13.9	LOS B	1.0	24.4	Short	200	0.0	NA
Lane 2[d]	217	3.0	733	0.296	100	7.6	LOS A	1.5	38.3	Full	1600	0.0	0.0
Approach	337	3.0		0.296		9.8	LOS A	1.5	38.3				
North: SB Jefferson													
Lane 1[d]	538	3.0	761	0.707	100	12.0	LOS B	6.3	161.5	Full	1600	0.0	0.0
Approach	538	3.0		0.707		12.0	LOS B	6.3	161.5				
West: EB Sac													
Lane 1[d]	310	3.0	1107	0.280	100	7.9	LOS A	2.1	52.6	Full	1600	0.0	0.0
Lane 2	549	3.0	1124	0.489	100	6.7	LOS A	4.1	104.7	Short	200	0.0	NA
Approach	859	3.0		0.489		7.1	LOS A	4.1	104.7				
Intersection	2543	3.0		0.707		9.0	LOS A	6.3	161.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: NB Jefferson

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	380	-	-	380	3.0	1021	0.372	100	0.0	2
Lane 2	-	277	152	429	3.0	1245	0.345	100	NA	NA
Approach	380	277	152	810	3.0		0.372			

East: WB Sac

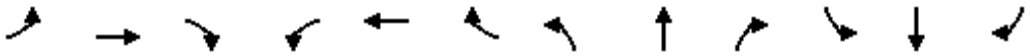
Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	120	-	-	120	3.0	576	0.208	100	0.0	2
Lane 2	-	196	22	217	3.0	733	0.296	100	NA	NA

Approach	120	196	22	337	3.0		0.296			
North: SB Jefferson										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	16	380	141	538	3.0	761	0.707	100	NA	NA
Approach	16	380	141	538	3.0		0.707			
West: EB Sac										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	82	228	-	310	3.0	1107	0.280	100	NA	NA
Lane 2	-	-	549	549	3.0	1124	0.489	100	0.0	1
Approach	82	228	549	859	3.0		0.489			
	Total	%HV	Deg.Satn (v/c)							
Intersection	2543	3.0		0.707						

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: NB Jefferson Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
East Exit: WB Sac Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
North Exit: SB Jefferson Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
West Exit: EB Sac Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	235	125	130	140	65	70	130	125	145	260	10
Future Volume (veh/h)	5	235	125	130	140	65	70	130	125	145	260	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	273	145	151	163	76	81	151	145	169	302	12
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	346	184	198	371	173	189	213	204	215	467	19
Arrive On Green	0.11	0.30	0.30	0.11	0.31	0.31	0.11	0.25	0.25	0.12	0.26	0.26
Sat Flow, veh/h	1781	1143	607	1781	1205	562	1781	861	826	1781	1784	71
Grp Volume(v), veh/h	6	0	418	151	0	239	81	0	296	169	0	314
Grp Sat Flow(s),veh/h/ln	1781	0	1750	1781	0	1767	1781	0	1687	1781	0	1855
Q Serve(g_s), s	0.2	0.0	16.5	6.2	0.0	8.2	3.2	0.0	12.1	7.0	0.0	11.4
Cycle Q Clear(g_c), s	0.2	0.0	16.5	6.2	0.0	8.2	3.2	0.0	12.1	7.0	0.0	11.4
Prop In Lane	1.00		0.35	1.00		0.32	1.00		0.49	1.00		0.04
Lane Grp Cap(c), veh/h	189	0	530	198	0	544	189	0	417	215	0	486
V/C Ratio(X)	0.03	0.00	0.79	0.76	0.00	0.44	0.43	0.00	0.71	0.79	0.00	0.65
Avail Cap(c_a), veh/h	377	0	706	377	0	713	377	0	692	377	0	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	24.1	32.6	0.0	20.9	31.7	0.0	26.0	32.3	0.0	24.8
Incr Delay (d2), s/veh	0.0	0.0	8.4	4.2	0.0	1.7	1.1	0.0	6.4	4.3	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	7.8	2.9	0.0	3.5	1.4	0.0	5.3	3.1	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	0.0	32.5	36.8	0.0	22.6	32.7	0.0	32.4	36.6	0.0	28.9
LnGrp LOS	C	A	C	D	A	C	C	A	C	D	A	C
Approach Vol, veh/h		424			390			377			483	
Approach Delay, s/veh		32.5			28.1			32.4			31.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	22.7	12.4	27.4	12.0	23.8	12.0	27.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.5
Max Green Setting (Gmax), s	16.0	31.0	16.0	30.5	16.0	31.0	16.0	30.5
Max Q Clear Time (g_c+I1), s	9.0	14.1	8.2	18.5	5.2	13.4	2.2	10.2
Green Ext Time (p_c), s	0.2	3.3	0.2	4.2	0.1	3.5	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

LANE SUMMARY

Site: 101 [Cumulative PM (Site Folder: Harbor and Sac Ave)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Harbor Boulevard													
Lane 1[d]	505	3.0	622	0.812	100	30.0	LOS D	8.5	218.1	Full	1600	0.0	0.0
Lane 2	495	3.0	662	0.748	100	23.5	LOS C	7.0	178.7	Short	100	0.0	NA
Approach	1000	3.0		0.812		26.8	LOS D	8.5	218.1				
East: WB Sac Avenue													
Lane 1	435	3.0	804	0.542	100	12.3	LOS B	3.9	100.4	Full	1600	0.0	0.0
Lane 2[d]	435	3.0	804	0.542	100	12.3	LOS B	3.9	100.4	Full	1600	0.0	0.0
Approach	871	3.0		0.542		12.3	LOS B	3.9	100.4				
North: SB Harbor Boulevard													
Lane 1[d]	344	3.0	496	0.693	100	25.5	LOS D	4.5	115.1	Full	1600	0.0	0.0
Lane 2	204	3.0	662	0.309	100	9.4	LOS A	1.2	31.0	Short	100	0.0	NA
Approach	548	3.0		0.693		19.5	LOS C	4.5	115.1				
West: EB Reed Avenue													
Lane 1	586	3.0	734	0.798	100	25.3	LOS D	10.2	261.5	Full	1600	0.0	0.0
Lane 2[d]	586	3.0	734	0.798	100	25.3	LOS D	10.2	261.5	Full	1600	0.0	0.0
Approach	1172	3.0		0.798		25.3	LOS D	10.2	261.5				
Intersection	3591	3.0		0.812		21.7	LOS C	10.2	261.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: NB Harbor Boulevard

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	296	210	-	505	3.0	622	0.812	100	NA	NA
Lane 2	-	-	495	495	3.0	662	0.748	100	26.3	1
Approach	296	210	495	1000	3.0		0.812			

East: WB Sac Avenue

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	328	108	-	435	3.0	804	0.542	100	NA	NA

Lane 2	-	430	5	435	3.0		804	0.542	100	NA	NA
Approach	328	538	5	871	3.0			0.542			
North: SB Harbor Boulevard											
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	75	269	-	344	3.0		496	0.693	100	NA	NA
Lane 2	-	-	204	204	3.0		662	0.309	100	0.0	1
Approach	75	269	204	548	3.0			0.693			
West: EB Reed Avenue											
Mov. From W To Exit:	U W	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	5	65	516	-	586	3.0	734	0.798	100	NA	NA
Lane 2	-	-	247	339	586	3.0	734	0.798	100	NA	NA
Approach	5	65	763	339	1172	3.0		0.798			
	Total	%HV	Deg.Satn (v/c)								
Intersection	3591	3.0	0.812								

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: NB Harbor Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: WB Sac Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
Full Length Lane	2	Merge Analysis not applied.										
North Exit: SB Harbor Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: EB Reed Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
Full Length Lane	2	Merge Analysis not applied.										

LANE SUMMARY

Site: 101 [Future PM (Site Folder: Jefferson Intersection)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Jefferson													
Lane 1	419	3.0	740	0.566	100	17.2	LOS B	5.6	144.1	Short	200	0.0	NA
Lane 2[d]	510	3.0	963	0.530	100	9.0	LOS A	5.3	135.8	Full	1600	0.0	0.0
Approach	929	3.0		0.566		12.7	LOS B	5.6	144.1				
East: WB Sac													
Lane 1	197	3.0	478	0.412	100	16.2	LOS B	2.2	57.5	Short	200	0.0	NA
Lane 2[d]	348	3.0	616	0.566	100	10.8	LOS B	3.9	99.6	Full	1600	0.0	0.0
Approach	545	3.0		0.566		12.7	LOS B	3.9	99.6				
North: SB Jefferson													
Lane 1[d]	359	3.0	633	0.566	100	11.6	LOS B	3.9	99.9	Full	1600	0.0	0.0
Approach	359	3.0		0.566		11.6	LOS B	3.9	99.9				
West: EB Sac													
Lane 1[d]	581	3.0	1200	0.484	100	8.3	LOS A	3.9	98.6	Full	1600	0.0	0.0
Lane 2	515	3.0	1220	0.422	100	6.1	LOS A	3.2	81.4	Short	200	0.0	NA
Approach	1096	3.0		0.484		7.3	LOS A	3.9	98.6				
Intersection	2929	3.0		0.566		10.5	LOS B	5.6	144.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: NB Jefferson

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	419	-	-	419	3.0	740	0.566	100	0.0	2
Lane 2	-	313	197	510	3.0	963	0.530	100	NA	NA
Approach	419	313	197	929	3.0		0.566			

East: WB Sac

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	197	-	-	197	3.0	478	0.412	100	0.0	2
Lane 2	-	328	20	348	3.0	616	0.566	100	NA	NA

Approach	197	328	20	545	3.0		0.566				
North: SB Jefferson											
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	20	227	111	359	3.0	633	0.566	100	NA	NA	
Approach	20	227	111	359	3.0		0.566				
West: EB Sac											
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	192	389	-	581	3.0	1200	0.484	100	NA	NA	
Lane 2	-	-	515	515	3.0	1220	0.422	100	0.0	1	
Approach	192	389	515	1096	3.0		0.484				
	Total	%HV	Deg.Satn (v/c)								
Intersection	2929	3.0		0.566							

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: NB Jefferson Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
East Exit: WB Sac Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
North Exit: SB Jefferson Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
West Exit: EB Sac Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	430	405	60	50	30
Future Vol, veh/h	25	430	405	60	50	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	462	435	65	54	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	500	0	-	0	984	468
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1064	-	-	-	275	595
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1064	-	-	-	266	595
Mov Cap-2 Maneuver	-	-	-	-	266	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	599	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	19.4
HCM LOS			C

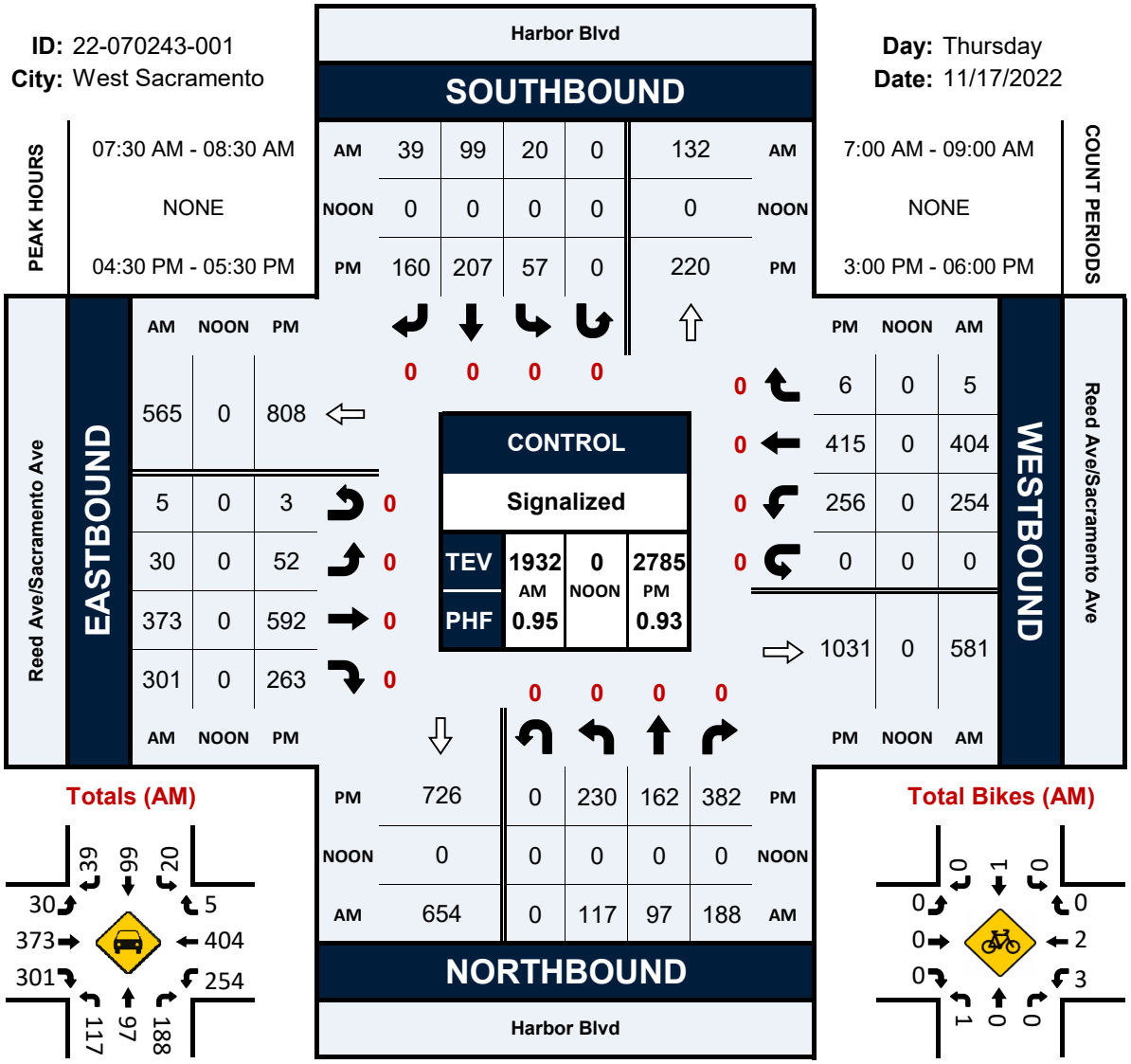
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1064	-	-	-	336
HCM Lane V/C Ratio	0.025	-	-	-	0.256
HCM Control Delay (s)	8.5	0	-	-	19.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Appendix B: Intersection Traffic Count Data

Prepared by National Data & Surveying Services

Harbor Blvd & Reed Ave/Sacramento Ave

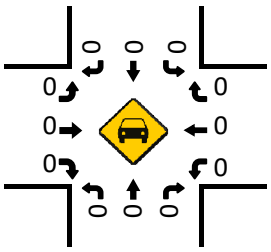
Peak Hour Turning Movement Count



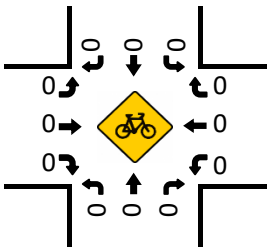
Totals (AM)

Total Bikes (AM)

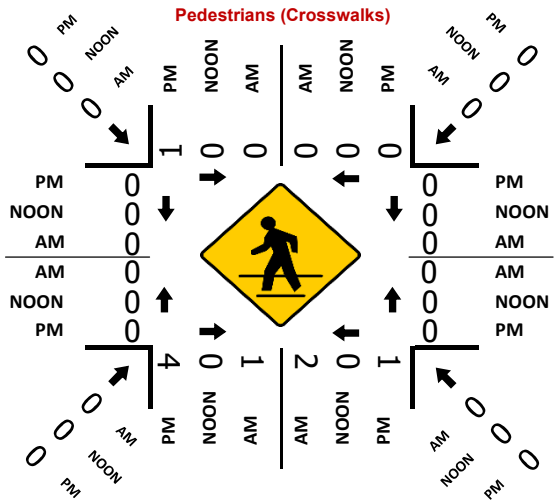
Totals (NOON)



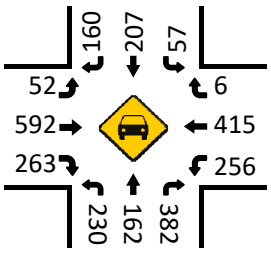
Total Bikes (NOON)



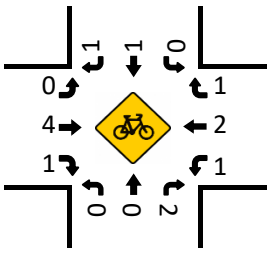
Pedestrians (Crosswalks)



Totals (PM)



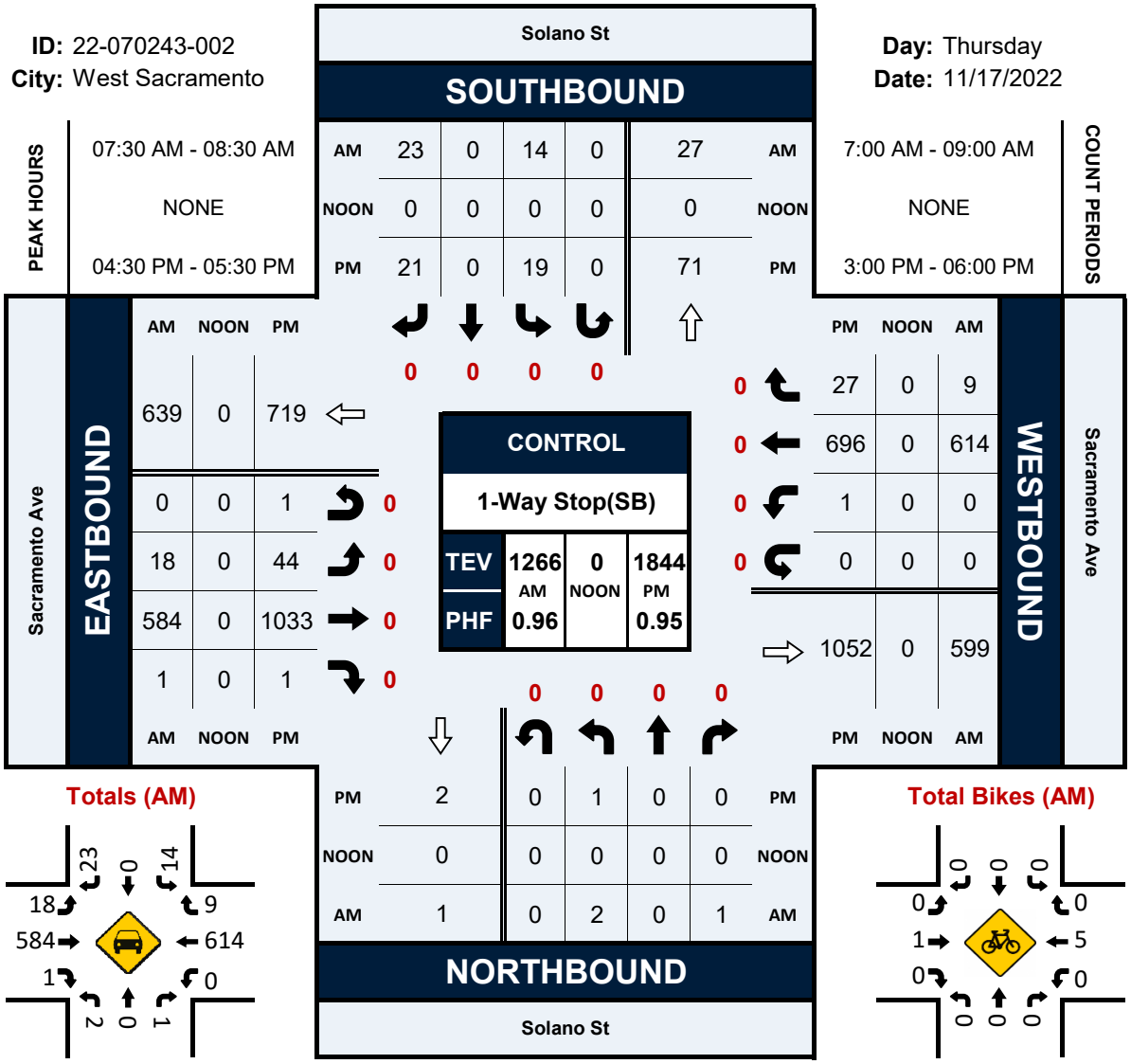
Total Bikes (PM)



Prepared by National Data & Surveying Services

Solano St & Sacramento Ave

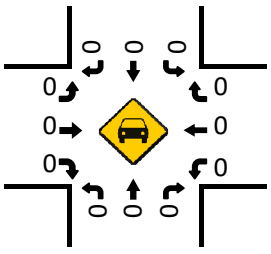
Peak Hour Turning Movement Count



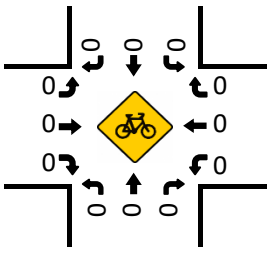
Totals (AM)

Total Bikes (AM)

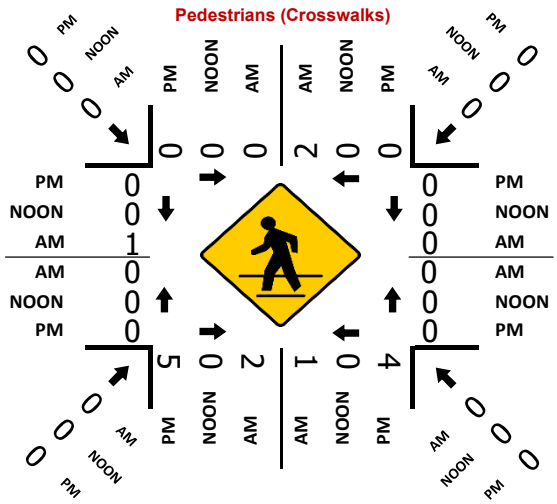
Totals (NOON)



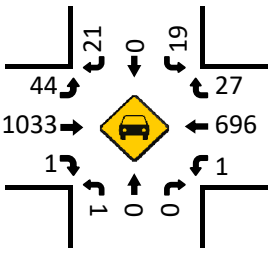
Total Bikes (NOON)



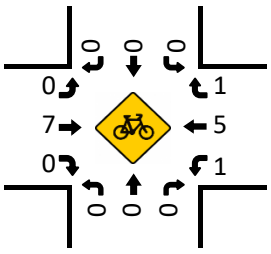
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Bryte Ave & Sacramento Ave

Peak Hour Turning Movement Count

ID: 22-070243-003
City: West Sacramento

Day: Thursday
Date: 11/17/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	3:00 PM - 06:00 PM

SOUTHBOUND (Bryte Ave)

AM	117	0	80	0	200	AM
NOON	0	0	0	0	0	NOON
PM	98	0	64	0	166	PM

EASTBOUND (Sacramento Ave)

AM	NOON	PM	
616	0	744	⇦
0	0	0	↶ 0
108	0	107	↱ 0
474	0	903	→ 0
0	0	1	↴ 0
AM	NOON	PM	

WESTBOUND (Sacramento Ave)

PM	NOON	AM	
59	0	92	0 ↰
645	0	499	0 ←
0	0	0	0 ↙
0	0	0	0 ↲
967	0	554	⇨
PM	NOON	AM	

NORTHBOUND (Bryte Ave)

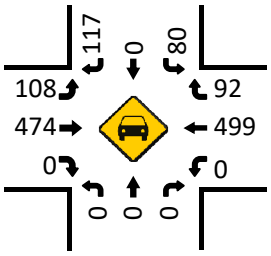
PM	1	0	1	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL

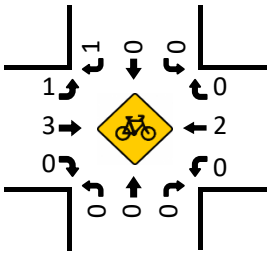
Signalized

	AM	NOON	PM
TEV	1370	0	1878
PHF	0.94		0.92

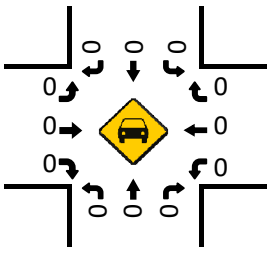
Totals (AM)



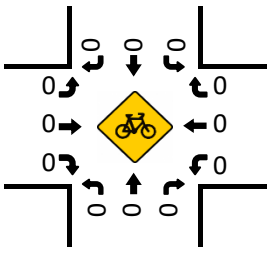
Total Bikes (AM)



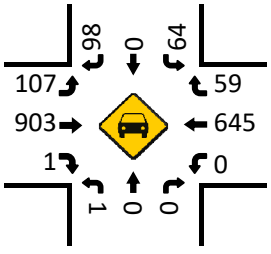
Totals (NOON)



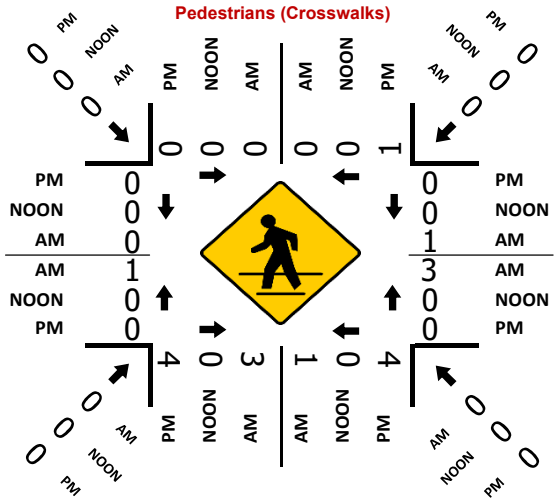
Total Bikes (NOON)



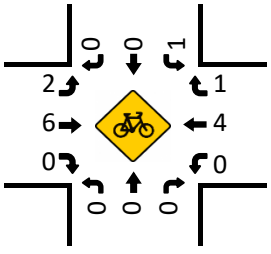
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Todhunter Ave/Sierra Pl & Sacramento Ave

Peak Hour Turning Movement Count

ID: 22-070243-004
City: West Sacramento

Day: Thursday
Date: 11/17/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	3:00 PM - 06:00 PM

SOUTHBOUND — Todhunter Ave/Sierra Pl

AM	129	13	147	0	208	AM
NOON	0	0	0	0	0	NOON
PM	84	8	69	0	233	PM

EASTBOUND — Sacramento Ave

AM	NOON	PM	
593	0	689	
0	0	1	0
82	0	132	0
455	0	789	0
7	0	34	0
AM	NOON	PM	

WESTBOUND — Sacramento Ave

PM	NOON	AM	
94	0	105	0
576	0	445	0
24	0	10	0
0	0	0	0
886	0	640	
PM	NOON	AM	

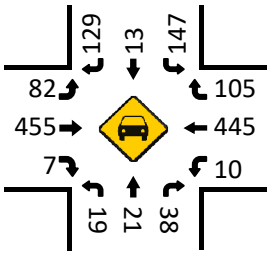
NORTHBOUND — Todhunter Ave/Sierra Pl

PM	66	0	28	7	28	PM
NOON	0	0	0	0	0	NOON
AM	30	0	19	21	38	AM

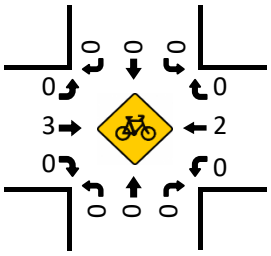
CONTROL: Signalized

TEV	1471 AM	0 NOON	1874 PM
PHF	0.89		0.94

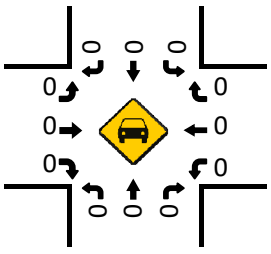
Totals (AM)



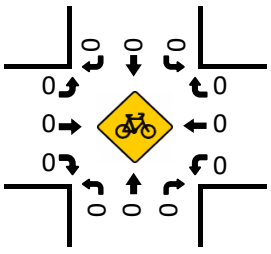
Total Bikes (AM)



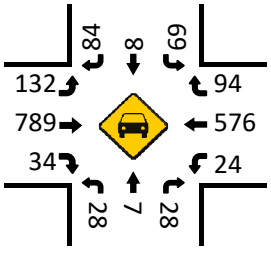
Totals (NOON)



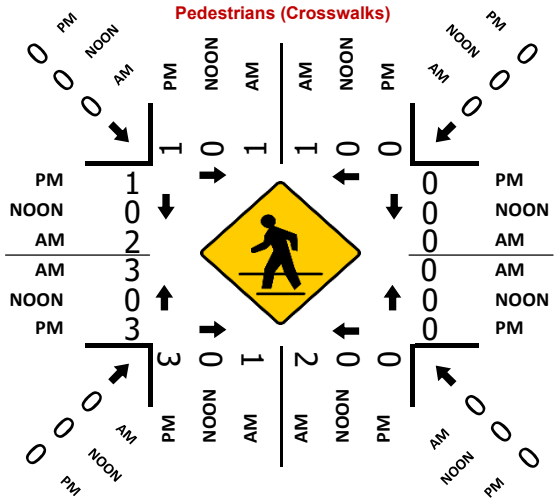
Total Bikes (NOON)



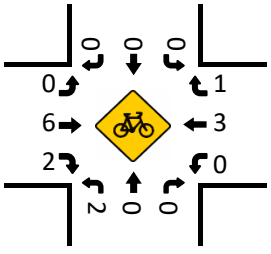
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Kegle Dr/Jefferson Blvd & Sacramento Ave

Peak Hour Turning Movement Count

ID: 22-070243-005
City: West Sacramento

Day: Thursday
Date: 11/17/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	3:00 PM - 06:00 PM

SOUTHBOUND (Kegle Dr/Jefferson Blvd)

AM	110	292	11	0	287	AM
NOON	0	0	0	0	0	NOON
PM	93	188	18	0	431	PM

EASTBOUND (Sacramento Ave)

AM	NOON	PM	
554	0	708	
0	0	0	0
61	0	154	0
177	0	317	0
420	0	416	0

WESTBOUND (Sacramento Ave)

PM	NOON	AM	
17	0	15	0
270	0	151	0
161	0	92	0
0	0	0	
499	0	304	

NORTHBOUND (Kegle Dr/Jefferson Blvd)

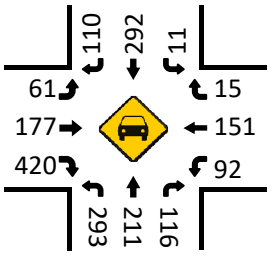
PM	765	0	345	260	164	PM
NOON	0	0	0	0	0	NOON
AM	804	0	293	211	116	AM

CONTROL

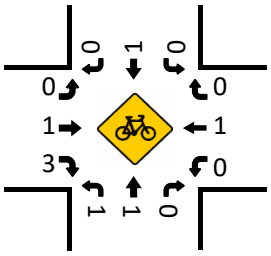
Signalized

TEV	1949 AM	0 NOON	2403 PM
PHF	0.89		0.99

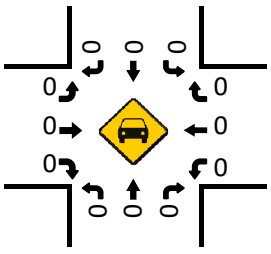
Totals (AM)



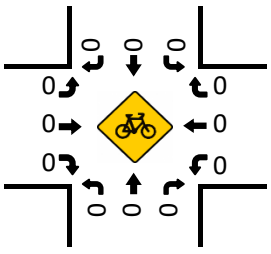
Total Bikes (AM)



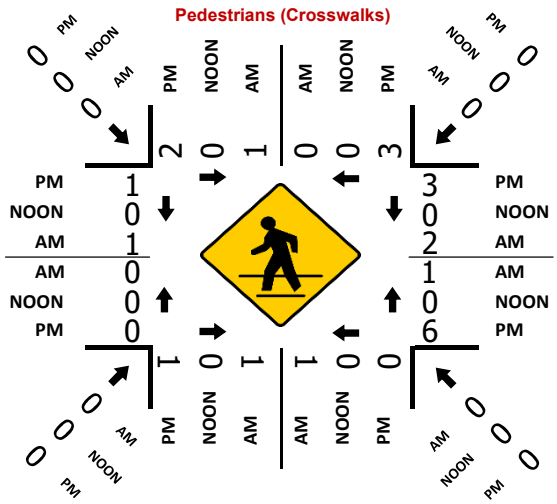
Totals (NOON)



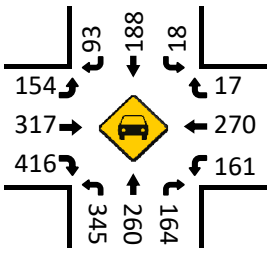
Total Bikes (NOON)



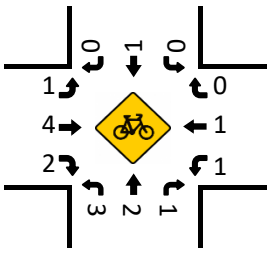
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Dougles St & Sacramento Ave

Peak Hour Turning Movement Count

ID: 22-070243-006
City: West Sacramento

Day: Thursday
Date: 11/17/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:15 PM - 05:15 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	3:00 PM - 06:00 PM

SOUTHBOUND (Dougles St)

AM	76	0	60	0	120	AM
NOON	0	0	0	0	0	NOON
PM	103	0	20	0	151	PM

EASTBOUND (Sacramento Ave)

AM	NOON	PM	
244	0	418	
0	0	0	0
98	0	129	0
195	0	367	0
3	0	0	0
AM	NOON	PM	

WESTBOUND (Sacramento Ave)

PM	NOON	AM	
22	0	22	0
314	0	167	0
0	0	1	0
0	0	0	0
388	0	257	
PM	NOON	AM	

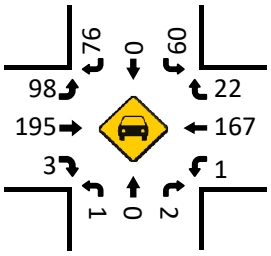
NORTHBOUND (Dougles St)

PM	0	0	1	0	1	PM
NOON	0	0	0	0	0	NOON
AM	4	0	1	0	2	AM

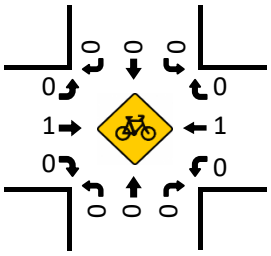
CONTROL: 1-Way Stop(SB)

	AM	NOON	PM
TEV	625	0	957
PHF	0.81		0.90

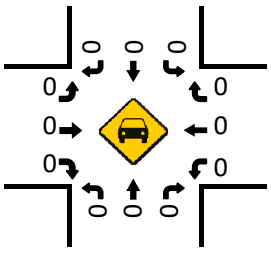
Totals (AM)



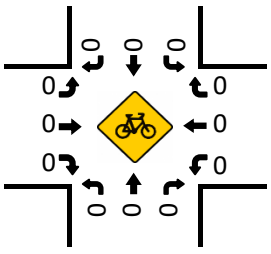
Total Bikes (AM)



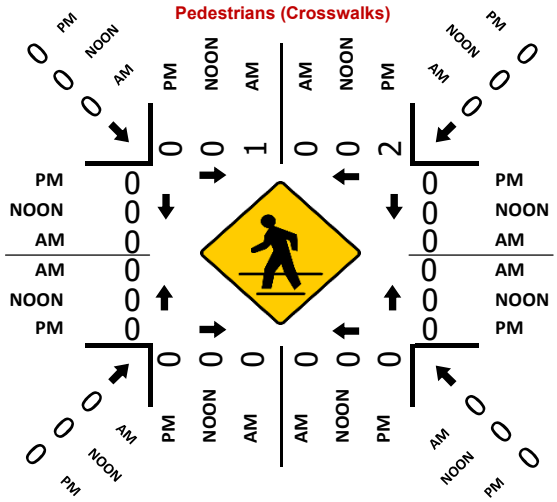
Totals (NOON)



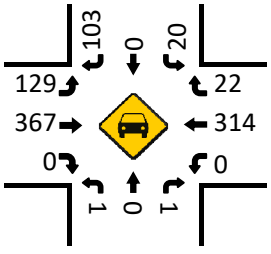
Total Bikes (NOON)



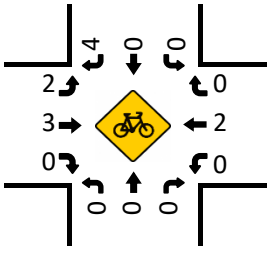
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Reuter Dr & Sacramento Ave

Peak Hour Turning Movement Count

ID: 22-070243-007
City: West Sacramento

Day: Thursday
Date: 11/17/2022

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 3:00 PM - 06:00 PM

Reuter Dr

SOUTHBOUND

AM	13	0	19	0	14	AM
NOON	0	0	0	0	0	NOON
PM	9	0	14	0	30	PM

EASTBOUND (Sacramento Ave)

AM	NOON	PM	
190	0	346	⇦
1	0	0	↶ 0
8	0	16	↱ 0
248	0	374	→ 0
0	0	0	↷ 0
AM	NOON	PM	

CONTROL

1-Way Stop(SB)

TEV	471 AM	0 NOON	764 PM
PHF	0.89		0.91

WESTBOUND (Sacramento Ave)

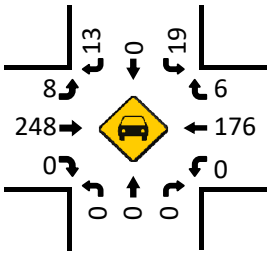
PM	NOON	AM	
14	0	6	0 ↶
337	0	176	0 ←
0	0	0	0 ↰
0	0	0	0 ↶
388	0	267	⇨
PM	NOON	AM	

NORTHBOUND

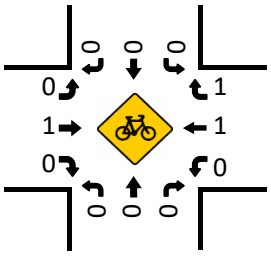
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

Reuter Dr

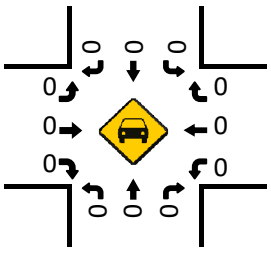
Totals (AM)



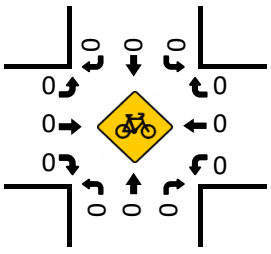
Total Bikes (AM)



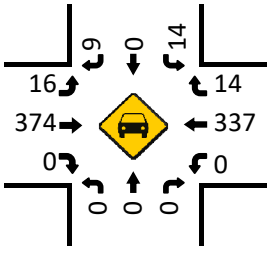
Totals (NOON)



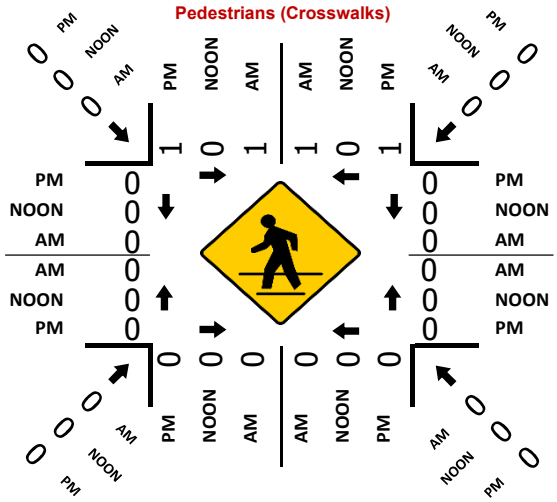
Total Bikes (NOON)



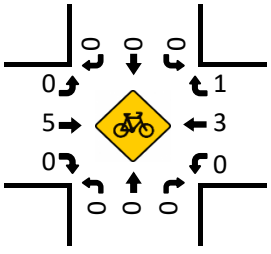
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



Prepared by National Data & Surveying Services

6th St & C St

Peak Hour Turning Movement Count

ID: 22-070243-008
City: West Sacramento

Day: Thursday
Date: 11/17/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	3:00 PM - 06:00 PM

SOUTHBOUND (6th St)

	L	T	R	U	Total	
AM	19	0	47	0	37	AM
NOON	0	0	0	0	0	NOON
PM	25	0	44	0	75	PM

EASTBOUND (6th St/C St)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

WESTBOUND (6th St/C St)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

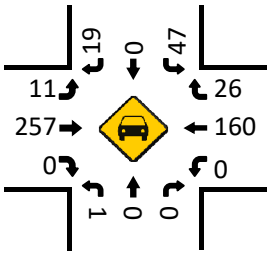
NORTHBOUND (6th St)

	L	T	R	U	Total	
AM	0	0	1	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

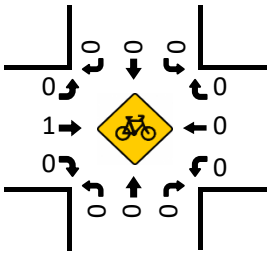
CONTROL	
1-Way Stop(SB)	

	AM	NOON	PM
TEV	521	0	848
PHF	0.84		0.93

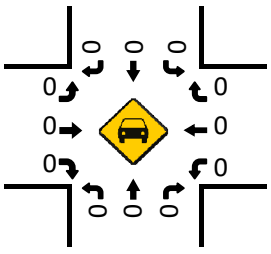
Totals (AM)



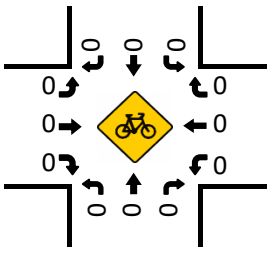
Total Bikes (AM)



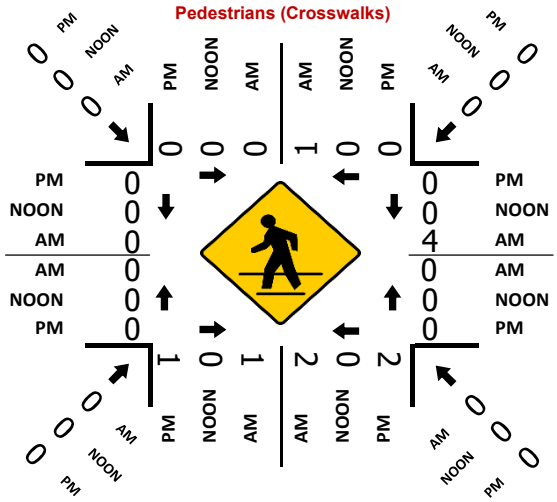
Totals (NOON)



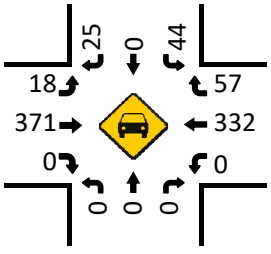
Total Bikes (NOON)



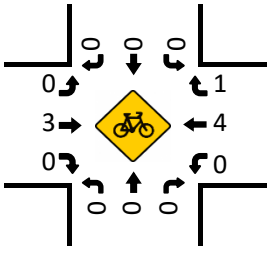
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



Prepared by National Data & Surveying Services

5th St & C St

Peak Hour Turning Movement Count

ID: 22-070243-009
City: West Sacramento

Day: Thursday
Date: 11/17/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	3:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	1211	0	1582
PHF	0.86		0.93

SOUTHBOUND (5th St)

	Left	Thru	Right	U-Turn		
AM	9	218	122	0	169	AM
NOON	0	0	0	0	0	NOON
PM	18	123	67	0	298	PM

EASTBOUND (C St)

	Left	Thru	Right	U-Turn		
AM	186	0	389			AM
NOON	0	0	0	0	0	NOON
PM	5	0	20	0	0	PM
AM	197	0	303	0	0	AM
NOON	105	0	79	0	0	NOON
PM					377	PM

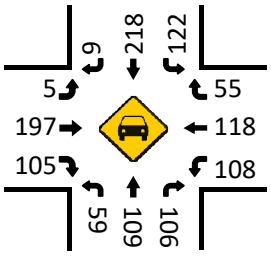
WESTBOUND (C St)

	Left	Thru	Right	U-Turn		
PM	109	0	55	0		PM
NOON	249	0	118	0	0	NOON
AM	175	0	108	0	0	AM
PM	0	0	0		518	PM
NOON				0	0	NOON
AM				0	425	AM

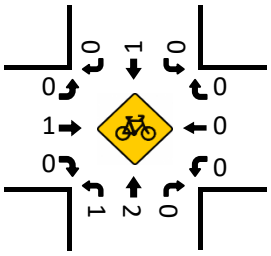
NORTHBOUND (5th St)

	Left	Thru	Right	U-Turn		
PM	0	122	169	148	0	PM
NOON	0	0	0	0	0	NOON
AM	0	59	109	106	431	AM

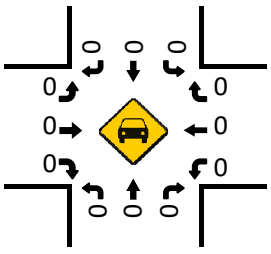
Totals (AM)



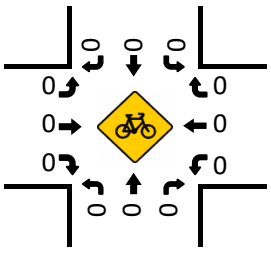
Total Bikes (AM)



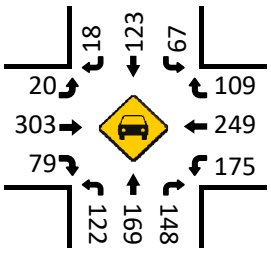
Totals (NOON)



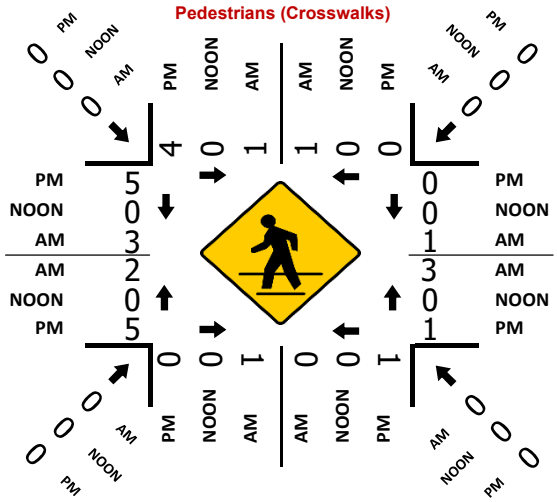
Total Bikes (NOON)



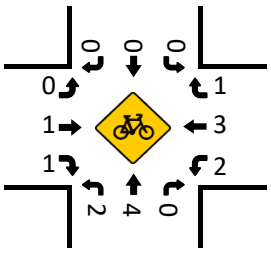
Totals (PM)



Pedestrians (Crosswalks)



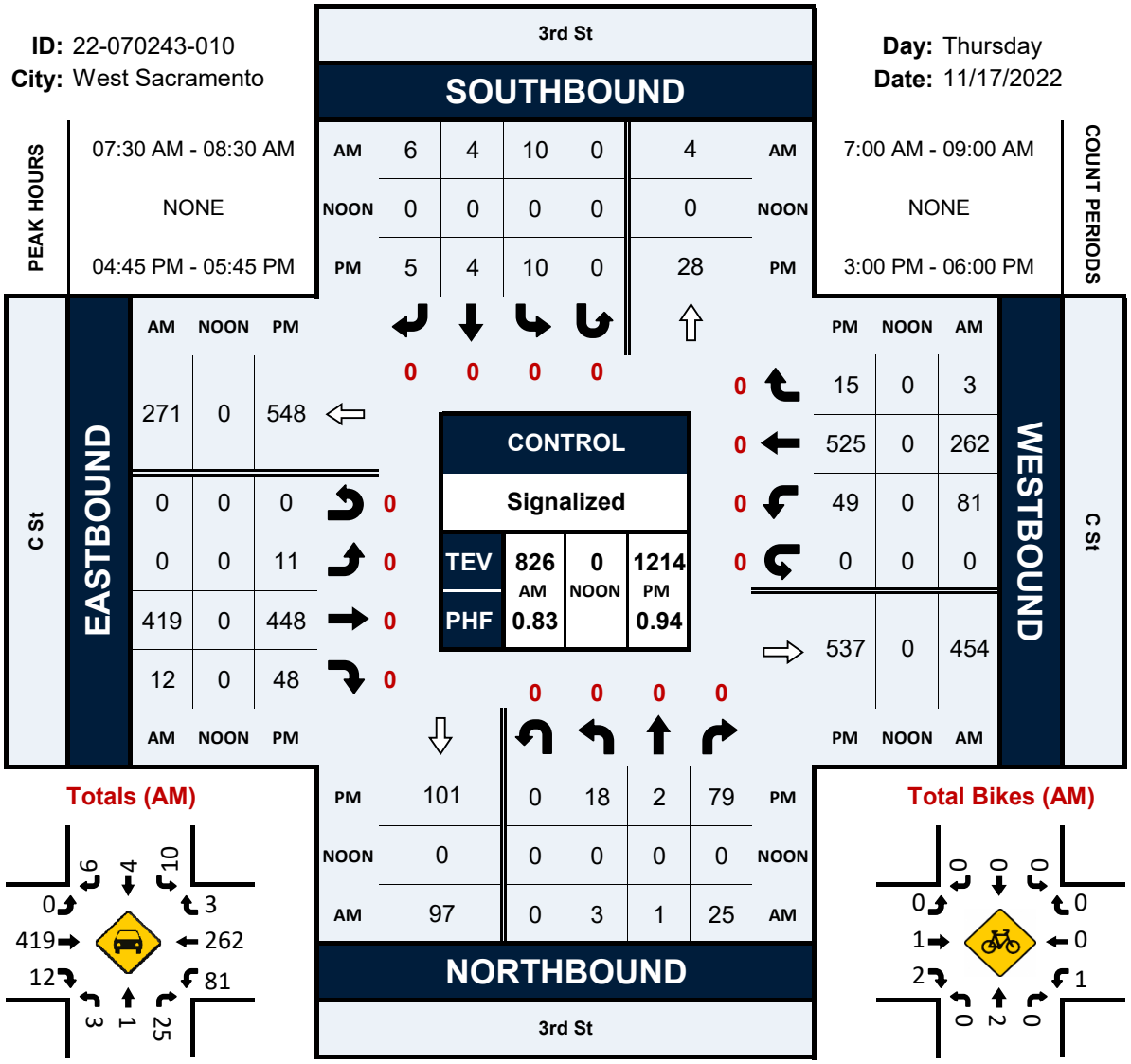
Total Bikes (PM)



Prepared by National Data & Surveying Services

3rd St & C St

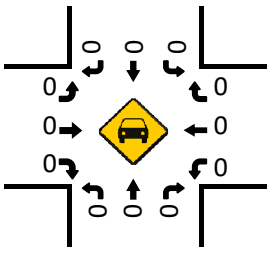
Peak Hour Turning Movement Count



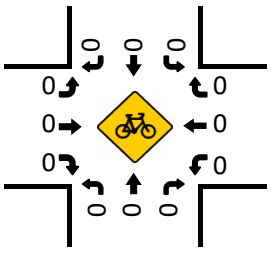
Totals (AM)

Total Bikes (AM)

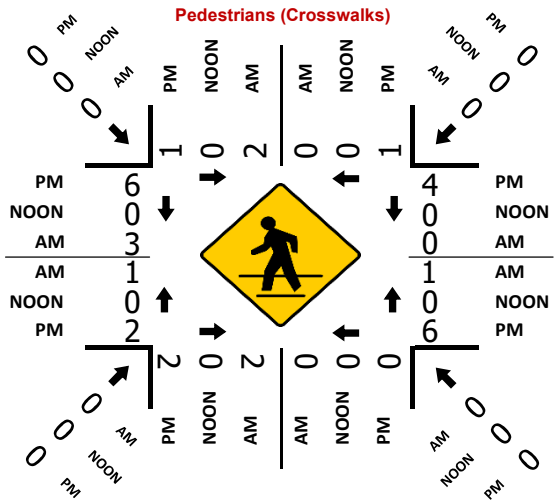
Totals (NOON)



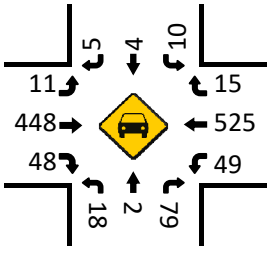
Total Bikes (NOON)



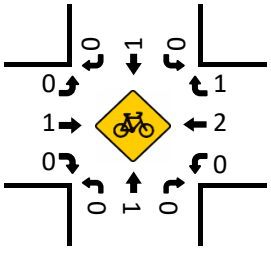
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



Appendix C: Bicycle Level of Traffic Stress Methodology and Results

Level of traffic stress (LTS) is a suitability rating system from the perspective of different subsets of the population, which measures the perceived comfort, safety and convenience associated with bicycling or walking in or adjacent to vehicle traffic. Studies have shown that 60 percent of the population will be deterred from bicycling or walking if an active transportation facility features high levels of traffic stress and they will only choose the routes with the highest levels of perceived safety.[1] The less stressful the experience, and the lower the LTS score, the more likely bicycling or walking is to appeal to a broader segment of the population.

A bicycle and pedestrian network will attract greater numbers of residents, employees and visitors of all ages and abilities if it is designed to reduce the level of stress associated with potential conflicts with motor vehicles and safely connect people to their destinations. Facilities that provide greater separation between vehicle traffic and people walking and bicycling, as well as minimize the potential for stressful conflicts between these road user groups, will result in the lowest levels of traffic stress and highest comfort using the facility.

The level of traffic stress (LTS) analysis for the City of West Sacramento's Sacramento Avenue Complete Streets Plan ("{The Plan") analyses the traffic stress associated with bicycling along the corridor and employs the LTS methodology described in the Oregon Department of Transportation (ODOT) "Analysis Procedures Manual Version 2, Chapter 14, Multimodal Analysis," (October 2020). The methodology presented there is based on the paper, *Low Stress Bicycling and Network Connectivity,* Report 11-19, published by the Mineta Transportation Institute (MTI) (May 2012). The LTS methodology as reported by ODOT's latest Multimodal Analysis Procedure Manual includes updates to the methodology that was originally published by MTI. The updated methodology includes analysis criteria for new bicycle facility types that have become more popularly used since the original report was published and considers additional infrastructure types not analyzed under the MTI methodological approach.

The LTS methodology and analysis criteria employed in The Plan is discussed in additional detail in the following sections.

[1] *"Four Types of Transportation Cyclists in Portland," Geller, 2006*

Methodology

The bicycle level of traffic stress methodology considers a variety of roadway infrastructure characteristics to determine the LTS score of a roadway or intersection, including:

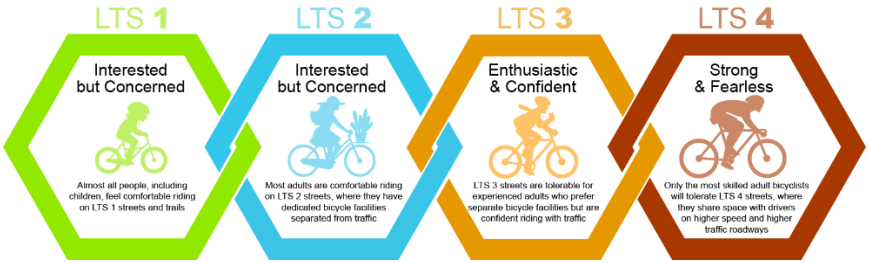
- level of separation from vehicular traffic
- street width (number of lanes), daily traffic volumes and/or functional classification
- presence and width of bike lanes, parking lanes, medians and turn lanes
- frequency of bike lane blockage
- speed limit or prevailing speed of adjacent street or streets being travelled along or crossed
- intersection control type

Level of traffic stress scores are governed by the worst-case principle, meaning that the highest stress score associated with analyzed criteria will determine the LTS score of the overall segment, with LTS 1 being the lowest stress and LTS 4 being the highest stress. The application of these criteria specific to the bicycle level of traffic stress analysis as applied to Sacramento Avenue's streets and bikeways is described below.

Types of Bicyclists

Figure 1 describes each LTS score by bicycle user type or category. 60 percent of the population falls within the interested but concerned LTS 1 or LTS 2 categories. Bicycle level of traffic stress analyzes roadway segments, intersection approaches and intersection crossings, and the worst score among the three analysis categories determine the overall LTS score of the overall segment.

Figure 1 Level of Traffic Stress by User Category



Segments

The criteria for analyzing Bicycle LTS is broken into three categories:

- physically separated paths or lanes, such as Class I shared-use paths or Class IV cycle tracks
- streets with standard bicycle lanes, such as Class II or Class II buffered bicycle lanes
- streets without bicycle lanes, also referred to as mixed traffic

The segment LTS analyzed for The Plan considered roadway segments within the corridor area of interest and within a roughly 0.75-mile proximity of the corridor to allow for connectivity to nearby destinations to be assessed. A "segment" is identified by logical breaks in infrastructure characteristics. This is generally where a segment intersects with a crossing or intersection approach location, but can also be where roadway characteristics, such as speed or number of lanes, change along the segment.

Physically Separated Bikeways

Physically separated paths or lanes are generally assigned LTS scores of one due to the greater separation from vehicular traffic, while the LTS scores associated with the other two categories vary based on a variety of factors.

Segments with Bike Lanes

The criteria for analyzing the segment LTS of streets with Class II bicycle lanes are presented in Table 2 and Table 3, which are separated by segments that feature an adjacent parking lane, and those that do not. As shown, the segment BLTS score considers bicycle lane width, presence and parking lane width, speed and lanes per direction.

Table 2 BLTS Criteria for Segment with Bike Lane and Adjacent Parking Lane

Prevailing or Posted Speed	1 Lane per direction			≥2 lanes per direction	
	≥ 15' bike lane + parking	14' – 14.5' bike lane + parking	13' bike lane + parking or Frequent blockage [1]	≥ 15' bike lane + parking	≤ 14.5' bike lane + parking or Frequent blockage[1]
≤25 mph	BLTS 1	BLTS 2	BLTS 3	BLTS 2	BLTS 3
30 mph	BLTS 1	BLTS 2	BLTS 3	BLTS 2	BLTS 3
35 mph	BLTS 2	BLTS 3	BLTS 3	BLTS 3	BLTS 3
≥40 mph	BLTS 2	BLTS 4	BLTS 4	BLTS 3	BLTS 4

1 Typically occurs in urban areas (i.e., delivery trucks, parking maneuvers, stopped buses).

Table 3 BLTS Criteria for Segment with Bike Lane, no Adjacent Parking Lane

Prevailing or Posted Speed	1 Lane per direction				≥2 lanes per direction	
	≥ 7' bike lane (buffered bike lane)	5.5' – 7' bike lane	≤ 5.5' bike lane	Frequent bike lane blockage [1]	≥ 7' bike lane (buffered bike lane)	< 7' bike lane or frequent blockage [1]
≤30 mph	BLTS 1	BLTS 1	BLTS 2	BLTS 3	BLTS 1	BLTS 3
35 mph	BLTS 2	BLTS 3	BLTS 3	BLTS 3	BLTS 2	BLTS 3
≥40 mph	BLTS 3	BLTS 4	BLTS 4	BLTS 4	BLTS 3	BLTS 4

1 Typically occurs in urban areas (i.e., delivery trucks, parking maneuvers, stopped buses).

Mixed Traffic Segments

Table 4 and Table 5 presents the criteria for analyzing segments without bicycle lanes that require a bicyclist to ride with mixed traffic. If daily traffic volume is available, then that data should be considered in the analysis. If daily volume data is not available, functional classification should be analyzed in place of daily traffic volumes. As shown, lower speed roadways and higher speed roadways are analyzed differently, but both categories consider presence of a marked centerline, number of through lanes per direction, daily traffic volume or functional classification, and speed.

While daily traffic counts from 2021 were provided by the City of West Sacramento for some locations along Sacramento Avenue, this is not the case for all locations within the study area. In addition to the 2021 ADT, Replica was referenced to assess network link volume for collector roadways to identify if the roadway should be categorized in the "Local/Collector" or "Collector" categories seen in Table 4 and Table 5 below.

Per the methodology described below, local, or neighborhood streets with speeds of 25 mph or less and one lane per direction are assumed to be low stress. Table 4 BLTS Criteria for Segments in Mixed Traffic - 30 mph or less

Number of Lanes	ADT (Average Daily Traffic)	Functional Class	Posted or Prevailing Speed (mph)		
			≤20	25	30
Unmarked Centerline	≤750	Local	BLTS 1	BLTS 1	BLTS 2
	750 - ≤1,500	Local/Collector	BLTS 1	BLTS 1	BLTS 2
	1,500 - ≤3,000	Collector	BLTS 2	BLTS 2	BLTS 2
	>3,000	Arterial	BLTS 2	BLTS 3	BLTS 3
1 through lane per direction	≤750	Local	BLTS 1	BLTS 1	BLTS 2
	750 - ≤1,500	Local/Collector	BLTS 2	BLTS 2	BLTS 2
	1,500 - ≤3,000	Collector	BLTS 2	BLTS 3	BLTS 3
	>3,000	Arterial	BLTS 3	BLTS 3	BLTS 3
2 through lanes per direction	≤8,000	Arterial	BLTS 3	BLTS 3	BLTS 3
	>8,000	Arterial	BLTS 3	BLTS 3	BLTS 4
3+ through lanes per direction	Any ADT	Arterial	BLTS 3	BLTS 3	BLTS 4

Table 5 BLTS Criteria for Segments in Mixed Traffic - 35 mph or more

Number of Lanes	ADT (Average Daily Traffic)	Functional Class	Posted or Prevailing Speed (mph)		
			35	40	>45
Unmarked Centerline	≤750	Local	BLTS 2	BLTS 3	BLTS 3
	750 - ≤1,500	Local/Collector	BLTS 3	BLTS 3	BLTS 4
	1,500 - ≤3,000	Collector	BLTS 3	BLTS 4	BLTS 4
	>3,000	Arterial	BLTS 3	BLTS 4	BLTS 4
1 through lane per direction	≤750	Local	BLTS 2	BLTS 3	BLTS 3
	750 - ≤1,500	Local/Collector	BLTS 3	BLTS 3	BLTS 4
	1,500 - ≤3,000	Collector	BLTS 3	BLTS 4	BLTS 4
	>3,000	Arterial	BLTS 3	BLTS 4	BLTS 4
2 through lanes per direction	≤8,000	Arterial	BLTS 3	BLTS 4	BLTS 4
	>8,000	Arterial	BLTS 4	BLTS 4	BLTS 4
3+ through lanes per direction	Any ADT	Arterial	BLTS 4	BLTS 4	BLTS 4

Intersection Approaches

The Bicycle LTS criteria for analyzing intersection approaches along the corridor used in The Plan considers locations with right-turn lanes and left-turn lanes at the intersection approach within a roughly 0.25-mile proximity of the corridor.

Right-Turns

The Bicycle LTS criteria for analyzing intersection approaches along the corridor considers locations with right-turn lanes at the intersection approach, as well as the configuration, lane length, alignment, vehicle turning speed or curb radius at the intersection corner.

Figure 2 presents the types of right-turn lane configurations analyzed to assess the BLTS of intersection approaches where bike lanes are present. Approaches with right-turn lanes where no bike lanes are present are considered high stress unless the right-turn lane is less than 100 feet including the lane taper or is rarely used. Additional high stress scenarios include approaches with turn lanes longer than 300 feet, and locations with dual turn lanes. The criteria for analyzing intersection approach

BLTS at locations with right-turn lanes with bike lanes is shown in Table 6.

Figure 2 Right Turn Lane Configuration Types [2]

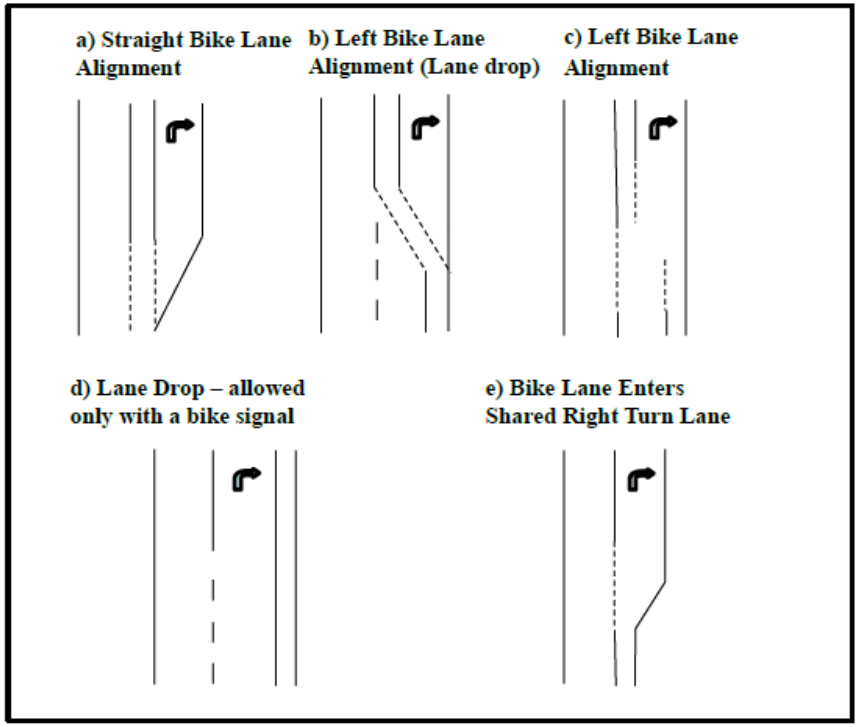


Table 6 BLTS Criteria for Intersection Approaches with Right-Turn Lanes [1]

Right-turn Lane Configuration	Right-turn Lane Length (ft)[2]	Bike Lane Approach Alignment	Vehicle Turning Speed (mph)[3]	BLTS
a)	≤ 150	Straight	≤ 15	BLTS 2
a)	> 150 to 500' maximum	Straight	≤ 20	BLTS 3
b) or c)	< 150	Shift to Left	≤ 15	BLTS 3
d)	N/A	N/A	N/A	BLTS 1
e)	≤ 75	Straight	≤ 15	BLTS 2
e)	>75' to 150' maximum	Straight	≤ 15	BLTS 3

1 Assign BLTS 4 for any lengths, speeds, or configurations (e.g. dual right turns or Exhibit d if bike signal is not present) not shown in the table.
2 For the purposes of this methodology, the right turn lane length includes the length of the taper.
3 This is vehicle speed at the corner, not the speed crossing the bike lane. Corner radius can also be used as a proxy for turning speeds.

LEFT-TURNS

The original LTS methodology published by MTI did not consider the effect of left turns on an intersection approach. However, the ODOT methodology suggests an approach for considering left-turn lanes in locations where a route requires a left-turn and typically uses the vehicle lane rather than a two-stage movement for facilitating the left-turn. Left-turn locations where a dedicated left turn or through-left turn lane are assessed herein.

Table 7 presents the criteria for analyzing the left turns considered in this analysis. For locations where bicyclists use a lower-stress two-stage movement such as with a bike box or left-turn queue box markings at a low-speed signalized intersection, then the left-turn approach LTS is scored as LTS 1 and the crossing LTS score will determine the stress of

[2] Oregon Department of Transportation (ODOT), "Analysis Procedures Manual Version 2, Chapter 14, Multimodal Analysis," (October 2020).

the movement. High-speed intersections should include additional treatments to provide the lowest-stress bicycling experience.

Table 7 BLTS Criteria for Intersection Approaches with Left-Turn Lanes [1]

Prevailing Speed or Speed Limit (mph)	No Lane Crossed [2]	1 Lane Crossed	2 + Lanes Crossed
≤ 25	BLTS 2	BLTS 3	BLTS 4
30	BLTS 3	BLTS 4	BLTS 4
≥ 35	BLTS 4	BLTS 4	BLTS 4

1 Use BLTS 4 for any shared/exclusive dual left turn lane configuration.
2 For shared through-left lanes or where mixed traffic conditions occur (no bike lanes present)

Intersection Crossings

The Bicycle LTS criteria for analyzing intersection crossings considers traffic control, speed, functional classification and/or ADT, and number of traffic lanes crossed. Locations within a roughly 0.75-mile radius of the corridor area of interest were considered to assess connectivity to destinations within biking distance.

Traffic control type (i.e., signalized versus unsignalized) is first considered, as signalized and unsignalized intersections are considered differently.

Signalized Intersection Locations

Because signalized intersections usually do not create a barrier as the signal generally provides adequate protections. BLTS 1 is assumed for the crossing movements at signalized intersections unless the location creates a barrier for the user. High stress signal locations that may results in a barrier to the user include locations such as those with a large amount of travel lanes that must be cross (≥ 6 lanes crossed), high traffic volumes, difficulty in triggering signal detection, or improper (or faded) markings, ramps, and/or push-button accommodations. Locations with Rectangular Rapid Flashing Beacons (RRFBs) or midblock pedestrian signals[3] are also assumed LTS 1.

If there are signalized locations known or suspected to feature issues causing a barrier, the LTS score of the locations should be adjusted to reflect this information. In locations such as these, the bicyclist is often forced to use the crosswalk like a pedestrian and should be assigned BLTS 2. Engineering judgement should be used for assigning stress levels higher than BLTS 1 at signalized intersections.

Unsignalized Intersection Locations

Table 8 and Table 9 present the BLTS criteria for analyzing unsignalized crossing locations, which considers the total number of through lanes, daily traffic volume or functional classification and speed. Locations with a median refuge can lower traffic stress by providing space for bicyclists if they are unable to cross before oncoming traffic is approaching. Thus, they are analyzed differently, as shown in Table 8 and Table 9.

Table 8 BLTS Criteria for Unsignalized Intersection Crossing without a Median Refuge [1]

Prevailing Speed or Speed Limit (mph)	Total Through/Turn Lanes Crossed (Both Directions)[2]					
	≤ 3 Lanes			4 -5 Lanes		≥ 6 Lanes
	Functional Class/ADT (daily traffic volume)					
	Local	Collector	Arterial	Arterial		Arterial
	≤ 1,200	1,200 - ≤3,000	>3,000	≤ 8,000	>8,000	Any ADT
≤ 25	BLTS 1	BLTS 1	BLTS 2	BLTS 3	BLTS 4	BLTS 4
30		BLTS 1	BLTS 3	BLTS 3	BLTS 4	BLTS 4
35		BLTS 2	BLTS 3	BLTS 4	BLTS 4	BLTS 4
≥ 40		BLTS 3	BLTS 4	BLTS 4	BLTS 4	BLTS 4

1 For street being crossed.
2 For one-way streets, see Table 9.

[3] *There are no locations such as these along the Sacramento Avenue corridor, but locations within the evaluated areas to the south of the corridor area.*

Table 9 BLTS Criteria for Unsignalized Intersection Crossing with a Median Refuge [1]

Prevailing Speed or Speed Limit (mph)	Maximum Through/Turn Lanes Crossed per Direction			
	1 Lane	2 Lanes	3 Lanes	4+ Lanes
≤ 25	BLTS 1[2]	BLTS 2[2]	BLTS 2	BLTS 3
30	BLTS 1[2]	BLTS 2[2]	BLTS 3	BLTS 3
35	BLTS 2	BLTS 3	BLTS 4	BLTS 4
≥ 40	BLTS 3	BLTS 4	BLTS 4	BLTS 4

1 For street being crossed.
2 Refuge should be at least 10 feet to accommodate a wide range of bicyclists (i.e., bicycle with a trailer) for BLTS 1, otherwise BLTS=2 for refuges 6 to <10 feet.

Bicycle LTS Results

Segments

The segment LTS analyzed for The Plan considered roadway segments within the corridor area of interest and within a roughly 0.75-mile proximity of the corridor to allow for connectivity to nearby destinations to be assessed. Local, or neighborhood streets with speeds of 25 mph or less and one lane per direction were assumed to be low stress, while streets classified as collector or arterial streets, and/or those with speeds greater than 25 mph were analyzed. Segment LTS results are shown in Figure 3.

Figure 3 illustrates the low-stress connections and high stress barriers associated with roadway segments in the study area of interest and surrounding vicinity. While many of the segments were scored LTS one (64 percent), these facilities are primarily minor local roads or off-street paths. Low-stress islands are surrounded by higher stress arterials where most average adults would not feel comfortable bicycling.

When only arterial roadways are examined, which serve as the direct connections to most destinations, 76 percent of the analyzed segments are LTS three & four. Most residents may not feel comfortable bicycling outside their immediate neighborhood on low-stress local streets. This means reaching major destinations from residential areas may not be possible given most people's tolerance for bicycling with traffic, even on streets that have bicycle lanes.

Intersection Approaches

Intersection approaches are analyzed in locations where right or left turn lanes are present. [7] At right-turn locations, the configuration of turn lanes, length of turn lanes, and vehicle turning speeds are considered. At left-turn locations, the analysis considers the number and speed of vehicle lanes a bicyclist must cross to access the left-turn movement.

Intersection approaches with right- and left-turn lanes along the corridor and within a roughly 0.25-mile proximity of the corridor were analyzed for The Plan. Intersection approach scores for locations with right- or left-turn lanes are presented in Figure 4. As shown, intersection approaches reflect high-stress experiences at many of the intersections evaluated.

Right-Turns

At right-turn locations, many of the intersections evaluated features long turn pockets where bicyclists forced to contend with high speed and high-volume traffic. In some locations, the bicycle lane is trapped on the right side of the turn lane, which increases the risk if right-hook collisions. In other locations, bicycle lanes end abruptly, creating a stressful environment when bicyclists must mix with traffic unexpectedly. High-stress intersection approaches can present an increased risk of collision with motor vehicles, as drivers merge with bicyclists or turn across bicycle lanes.

Left-Turns

At left-turn locations, specifically along the Sacramento Avenue corridor, a bicyclist must shift left across several lanes of high-speed and high-volume traffic to reach the left turn lane. Without the presence of a two-stage left turn maneuver, or bike box to assist with reaching the left turn pocket, left turns at most of the evaluated intersections create a highly stressful experience.

Intersection Crossings

Intersection crossing LTS considers several factors, including signal control (signal vs. stop sign), the number of lanes a bicyclist must cross, and the speed of the street being crossed.

Generally, signalized intersections do not create a barrier as the signal generally provides adequate protections. BLTS 1 is assumed for the crossing movements at signalized intersections unless the location is known to create a barrier for the user. Barriers could result from difficulty in triggering signal detection, or an intersection may not have the proper markings, ramps, and/or push-button accommodations for bicyclists. The signalized intersections evaluated in this Plan were assigned a BLTS score of 1, except in locations where the intersections are large, with many lanes of high-volume traffic to cross. In locations such as these, the bicyclist is often forced to use the crosswalk like a pedestrian and are assigned BLTS 2.

Intersection crossing LTS scores are shown in Figure 5. Crossings at intersections of two local residential streets were typically found to be low-stress, likely to be easy for most adults and children on bicycles to navigate. Moderately stressful LTS 3 crossings were identified primarily along collector and arterial roadways, contributing to the perception of these larger streets as barriers to low-stress connectivity. A stressful crossing can discourage a potential bicyclist, even if the route is otherwise low stress.

Overall LTS

The overall LTS score reflects the worst-case score between a given segment and the adjacent intersection approaches and crossings. This reflects the impact a higher-stress crossing or approach can have on an otherwise lower stress segment, which can result in a barrier to connectivity. Figure 6 presents the overall bicycle LTS results for the study area of interest and the surrounding areas.

When considering segment LTS scores alone, the entirety of the Sacramento Avenue corridor is already considered high stress, with segment LTS scores of three and four. When crossings and approaches are considered, many locations with segment LTS scores of three increase to LTS four, and almost all of the adjacent segments are also considered high stress.

Connectivity Assessment

Low stress connectivity is defined in this analysis by connections that can be made via the LTS 1 and LTS 2 bicycling network. The overall LTS results highlight the “islands of connectivity” created by high-stress barriers that surround pockets, or “islands” of lower-stress streets. Most local neighborhood streets, with lower traffic volumes and speed are buttressed by high stress segments, approaches and intersections, specifically along collector and arterial streets with higher speeds and traffic volumes, which serve as barriers to low stress connectivity throughout the analyzed areas.

With 100 percent of segments along the corridor assigned overall LTS scores of three or four, all connections between destinations to the north and south of the corridor are cut off by the high stress corridor, meaning that 0 percent of destinations between the north and south of the corridor can be accessed via the low stress network. With higher stress barriers creating islands of low stress connectivity within small areas to the north and south of the corridor, potential connection points between key destinations and points of interest are closed off, resulting in no low stress connectivity. While low stress connections can be made within the small pockets of low stress areas to the north and south of the corridor, residential and non-residential destinations are mostly cut off from one another.

Infrastructure recommendations proposed as part of this Plan will seek to improve level of traffic stress to LTS 1 or 2, where possible. As recommendations for The Plan are developed, a connectivity assessment of future conditions will assess the improvement in connectivity between destinations within the area of interest.

Figure 3 *Bicycle Level of Traffic Stress – Segments*

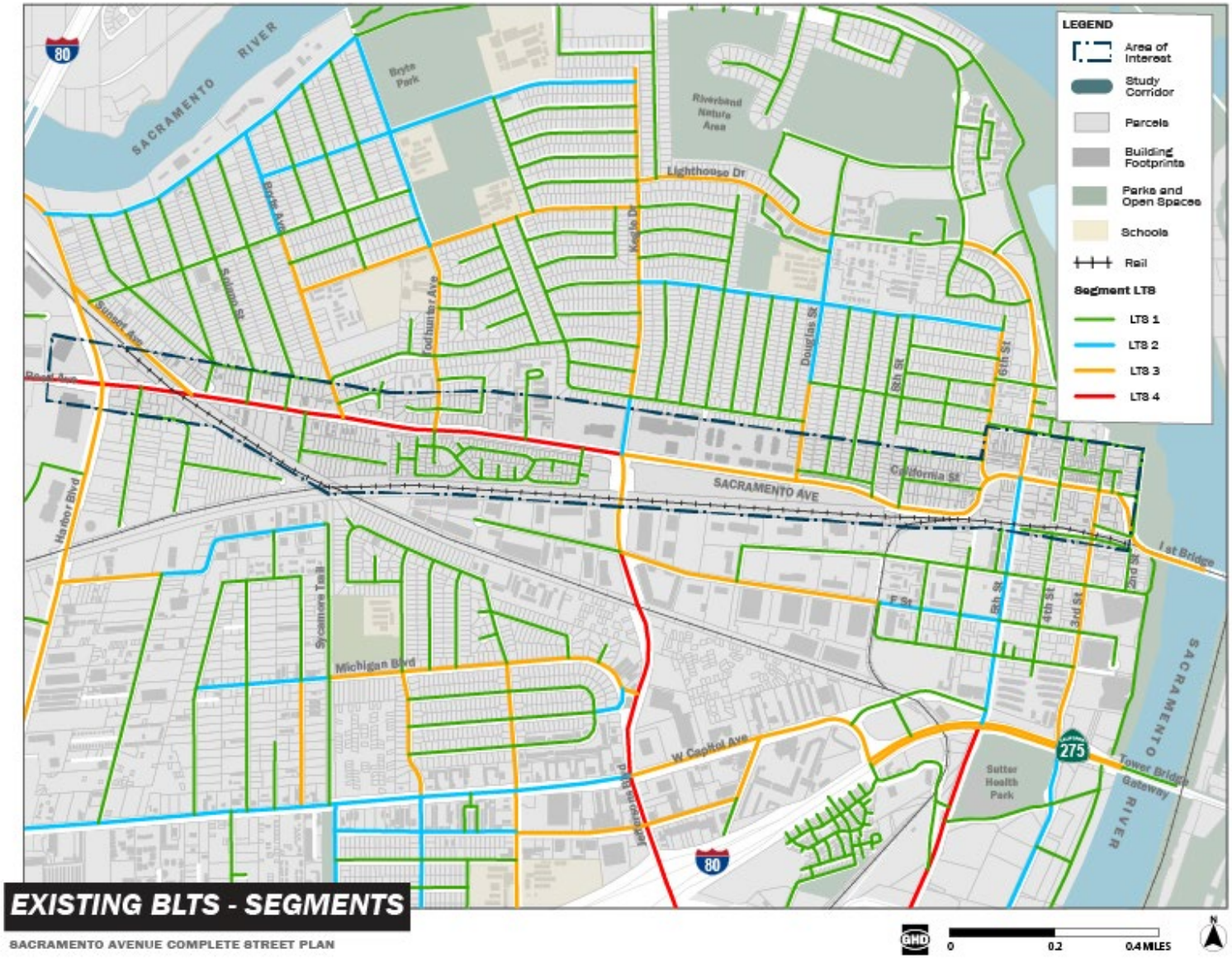


Figure 4 *Bicycle Level of Traffic Stress – Intersection Approaches*

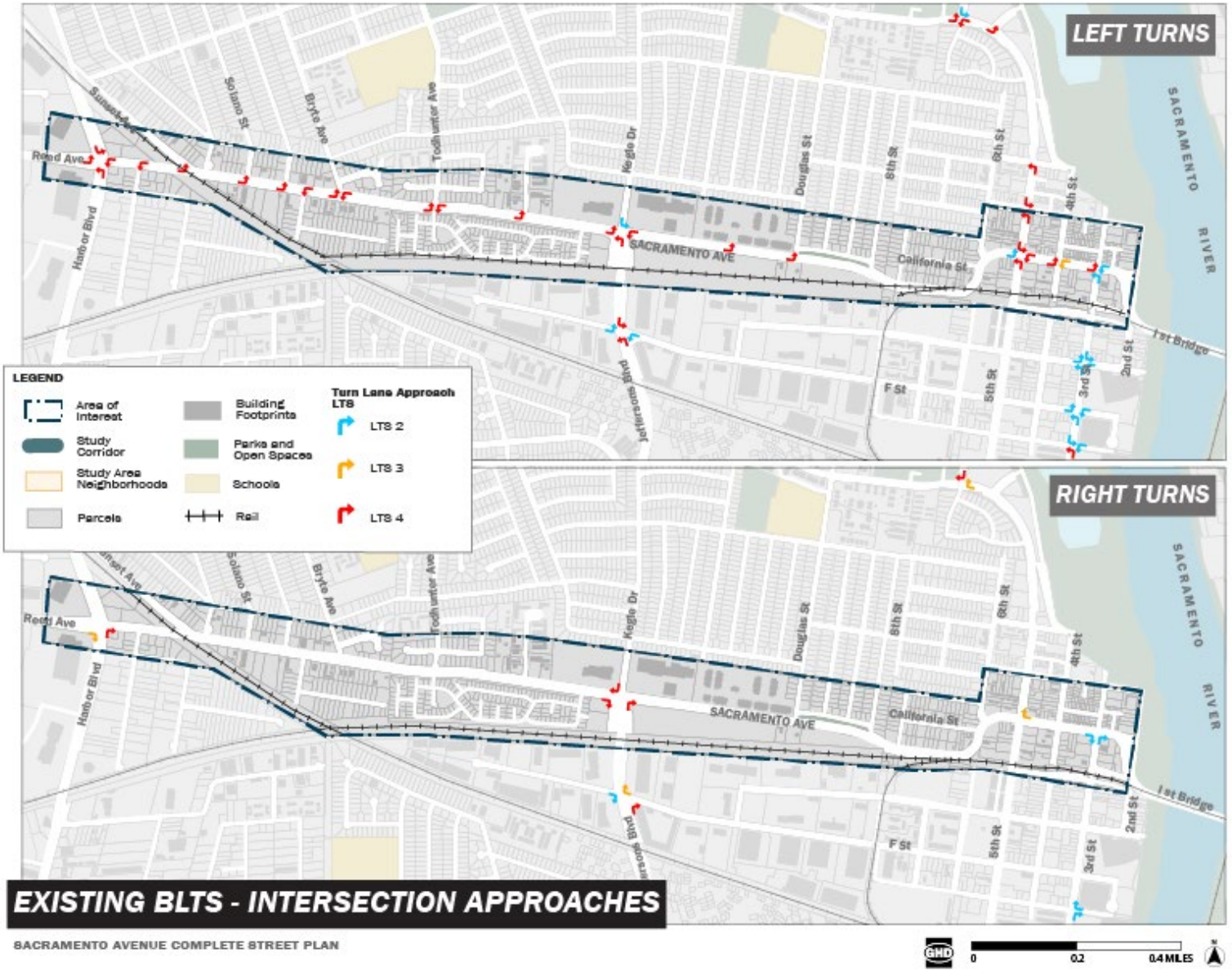


Figure 5 *Bicycle Level of Traffic Stress – Intersection Crossings*

Figure 6 *Bicycle Level of Traffic Stress – Overall*

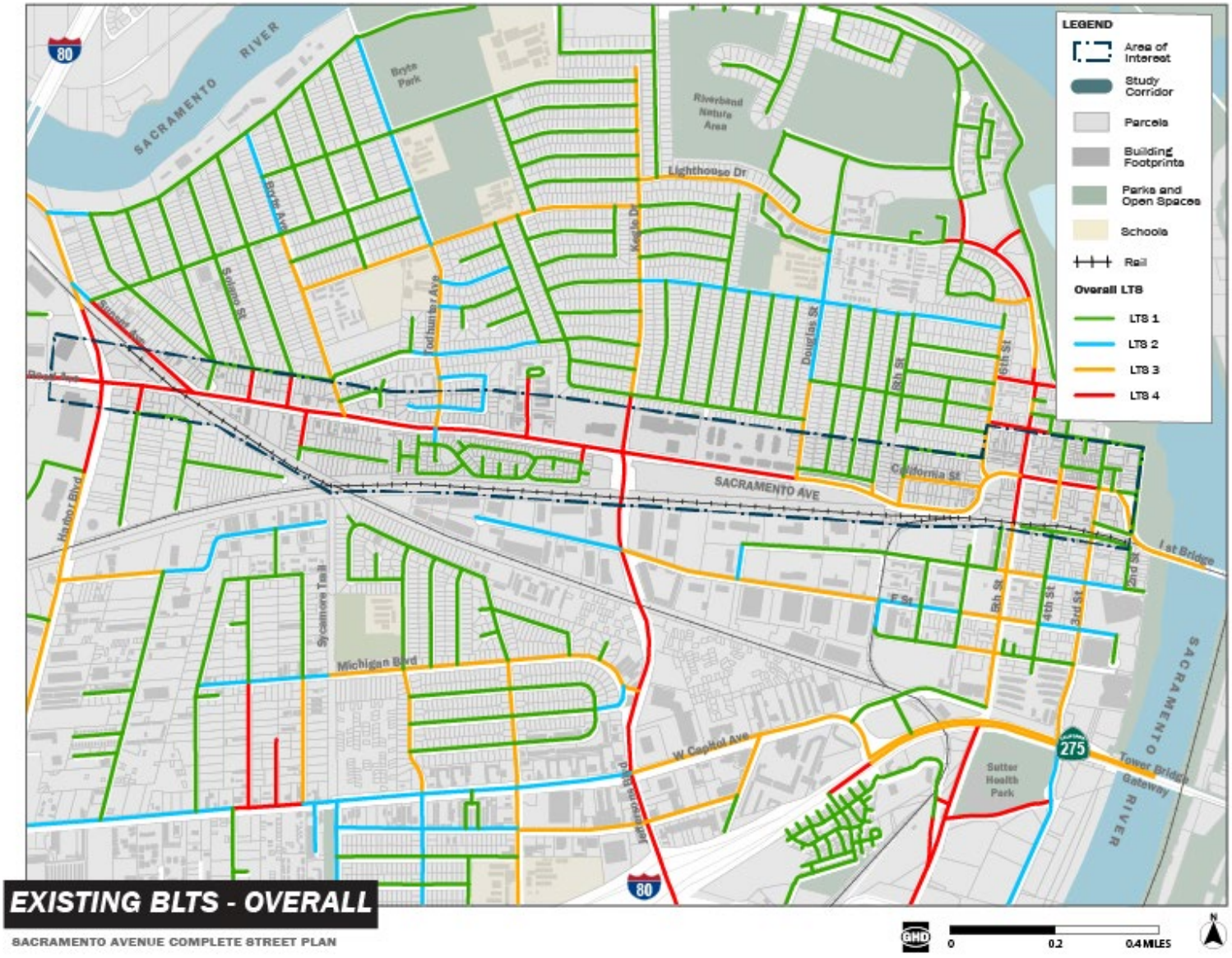
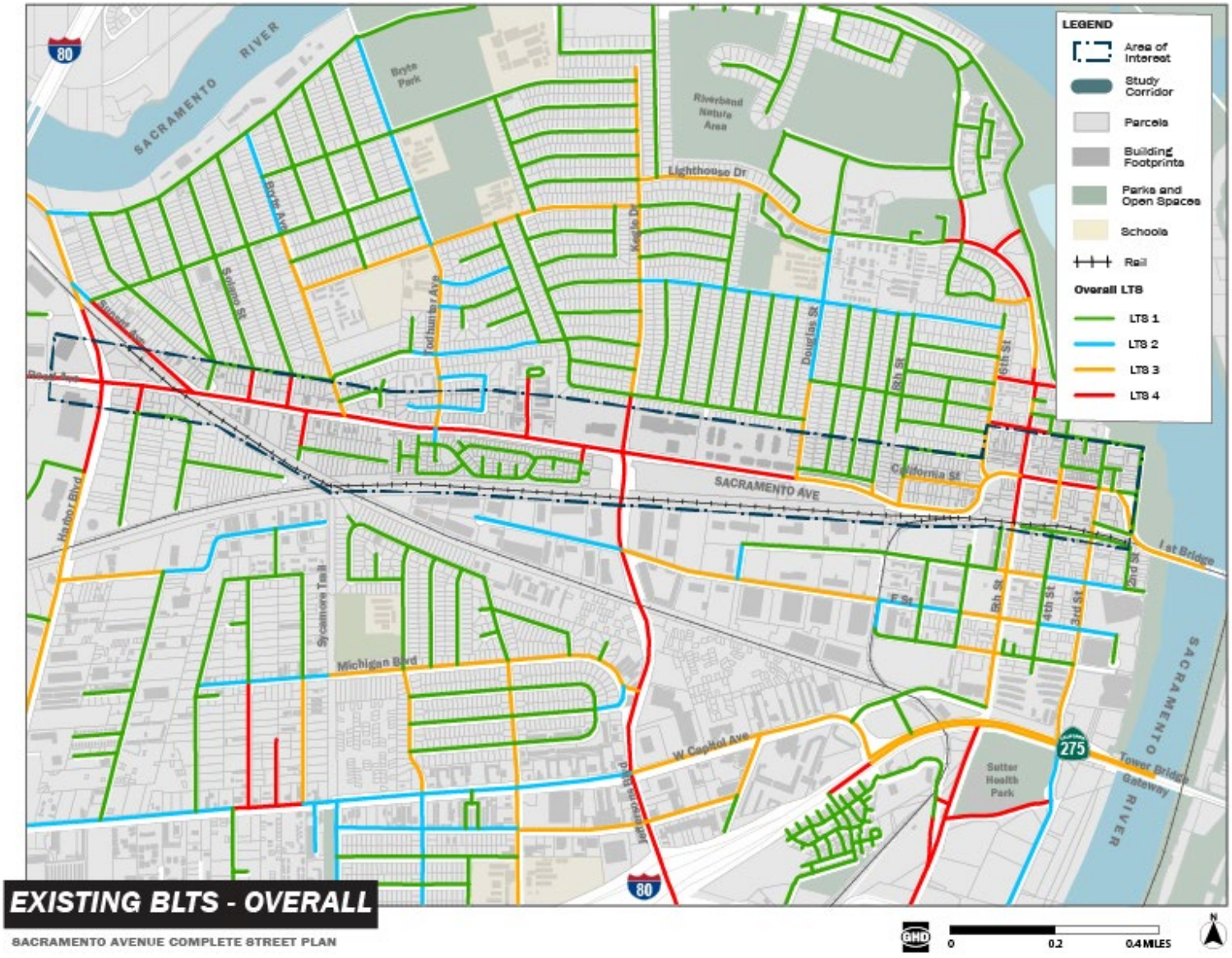


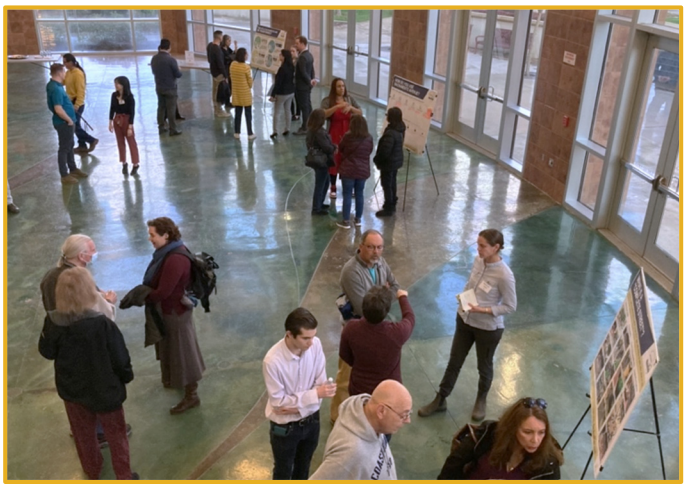
Figure 6 *Bicycle Level of Traffic Stress – Overall*



Appendix D: Community Engagement Summaries

Introduction

On Thursday, March 23, 2023, from 6:00 – 7:30 pm., the City of West Sacramento hosted the first Community Workshop at the West Sacramento City Hall Galleria at 1110 West Capitol Avenue as part of the public outreach process for the Sacramento Avenue Complete Street Plan. Attendees had the opportunity to learn more about the plan, discuss details of the project with the planning team, and share their feedback on potential improvements to the Sacramento Avenue corridor, including bike and pedestrian safety changes and landscaping design. A total of 66 community members attended the workshop.



Project Background & Overview

Sacramento Avenue is a major east-west commercial corridor through West Sacramento and provides a key connection to the City of Sacramento, to Interstate 5, and to Interstate 80. The roadway serves diverse residential communities and provides access to outdoor recreation opportunities, local restaurants, grocery and commercial stores, schools, and churches. The Sacramento Avenue Complete Street Plan will include community-driven improvements to Sacramento Avenue between Harbor Boulevard and 2nd Street to provide more safe and comfortable transportation options for people of all ages and abilities while also enhancing public spaces for community activity along the corridor. The Plan will aim to support equitable and sustainable development along Sacramento Avenue and to mitigate existing barriers for those who walk, bike, and take transit, including stressful intersection crossings and the lack of comfortable bicycle and sidewalk facilities. This phase of the planning process focuses on making recommendations to improve Sacramento Avenue, including improvements to streets, intersections, landscape, and building frontages using Complete Street planning and design elements.

Workshop Purpose & Format

The purpose of the initial Community Workshop is to introduce the project to the public and solicit community feedback on ways to make future improvements to Sacramento Avenue. The workshop included background information on the planning process and community engagement schedule, key components of the plan, and interactive stations for attendees to share their thoughts and comments. Members from the City and consultant design team were available during the workshop to answer questions and provide clarity on the plan.

The workshop was structured in an open-house format with multiple stations for attendees to visit: a section with informational project exhibits, an interactive station where participants could answer questions with dot stickers, tables with detailed maps of the corridor, and a commenting station with cards for public feedback.

Information Station

Board 1: Background & Schedule

- This exhibit included a map of the project location, an overview of the plan purpose, the planning teams' approach, and an estimated timeline for the planning and community engagement process.

Board 2: What is a "Complete Street"?

- This exhibit included a vision statement for the plan as well as some key components of what defines a complete street. Example photos of potential street improvements were also included.

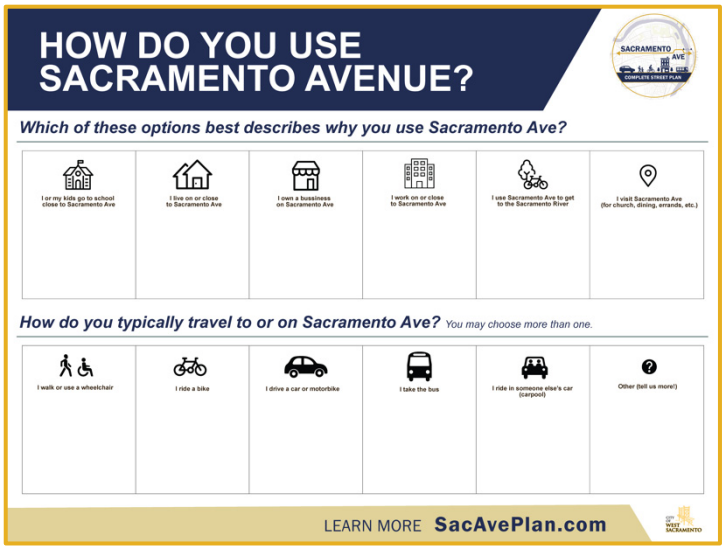
Interactive Stations

Board 3: How do you use Sacramento Avenue?

- This exhibit prompted participants to share their feedback on what kind of corridor they would like to see Sacramento Avenue transformed into. Participants could choose a different sticker color for whether they live/work along Sacramento Avenue or if they are from the broader West Sacramento region.

Board 4: How could Sacramento Avenue be transformed?

- This exhibit prompted participants to share their feedback on what kind of trips they take on Sacramento and what mode of travel they use. Dot stickers were available at this exhibit.



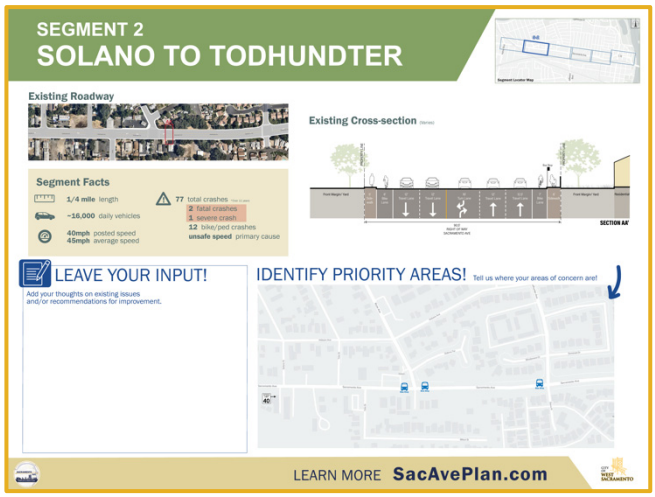
Interactive Segment Map Station

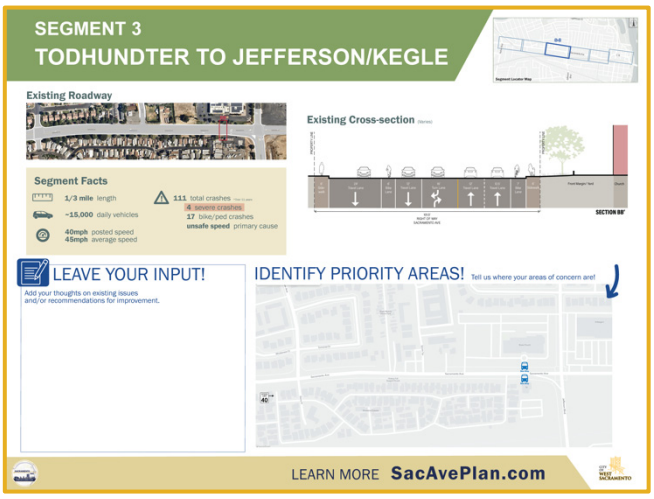
This station included exhibits on tables, post-it notes and pens for participants to share their feedback on each of the below segments of the Sacramento Avenue corridor. Each exhibit included a map of the corridor segment, statistics about traffic and safety on the segment, and a prompt to identify priority areas for improvement.

- Segment 1: Harbor Blvd/Reed Ave to Solano St
- Segment 2: Solano St to Todhunter Ave
- Segment 3: Todhunter Ave to Jefferson Blvd/Kegle Dr
- Segment 4: Jefferson Blvd/Kegle Dr to Douglas St
- Segment 5: Douglas St to California St
- Segment 6: California St to 3rd St

The following page includes images of the six-segment maps. The full-sized version of the maps is available in the Appendix section of this document.


SEGMENT 1
HARBOR / REED TO SOLANO
Existing Roadway
Existing Cross-section
Segment Facts
1/2 mile length
~16,000 daily vehicles
40mph posted speed
45mph average speed
107 total crashes
2 severe crashes
8 bike/ped crashes
unsafe speed primary cause
LEAVE YOUR INPUT!
Add your thoughts on existing issues and/or recommendations for improvement.
IDENTIFY PRIORITY AREAS!
Tell us where your areas of concern are!
LEARN MORE SacAvePlan.com


SEGMENT 2
SOLANO TO TODHUNDTER
Existing Roadway
Existing Cross-section
Segment Facts
1/4 mile length
~16,000 daily vehicles
40mph posted speed
45mph average speed
77 total crashes
2 fatal crashes
1 severe crash
12 bike/ped crashes
unsafe speed primary cause
LEAVE YOUR INPUT!
Add your thoughts on existing issues and/or recommendations for improvement.
IDENTIFY PRIORITY AREAS!
Tell us where your areas of concern are!
LEARN MORE SacAvePlan.com


SEGMENT 3
TODHUNDTER TO JEFFERSON/KEGLE
Existing Roadway
Existing Cross-section
Segment Facts
1/3 mile length
~15,000 daily vehicles
40mph posted speed
45mph average speed
111 total crashes
4 severe crashes
17 bike/ped crashes
unsafe speed primary cause
LEAVE YOUR INPUT!
Add your thoughts on existing issues and/or recommendations for improvement.
IDENTIFY PRIORITY AREAS!
Tell us where your areas of concern are!
LEARN MORE SacAvePlan.com


SEGMENT 4
JEFFERSON/KEGLE TO DOUGLAS
Existing Roadway
Existing Cross-section
Segment Facts
1/3 mile length
~9,000 daily vehicles
40mph posted speed
45mph average speed
22 total crashes
1 severe crash
7 bike/ped crashes
illegal auto movement primary cause
LEAVE YOUR INPUT!
Add your thoughts on existing issues and/or recommendations for improvement.
IDENTIFY PRIORITY AREAS!
Tell us where your areas of concern are!
LEARN MORE SacAvePlan.com

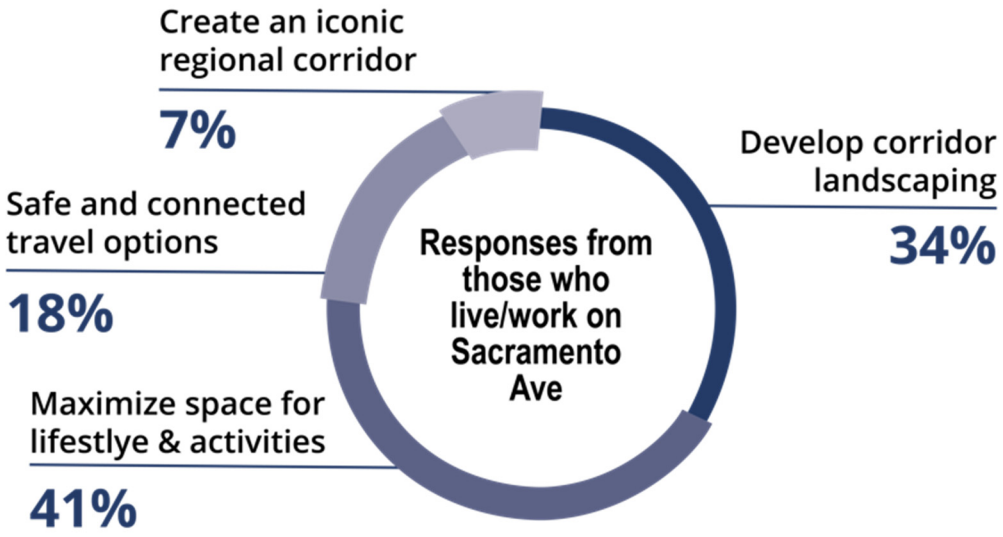

SEGMENT 5
DOUGLAS TO CALIFORNIA
Existing Roadway
Existing Cross-section
Segment Facts
1/2 mile length
~8,500 daily vehicles
40mph posted speed
45mph average speed
32 total crashes
1 severe crash
unsafe speed/ auto wrong-way travel primary cause
LEAVE YOUR INPUT!
Add your thoughts on existing issues and/or recommendations for improvement.
IDENTIFY PRIORITY AREAS!
Tell us where your areas of concern are!
LEARN MORE SacAvePlan.com

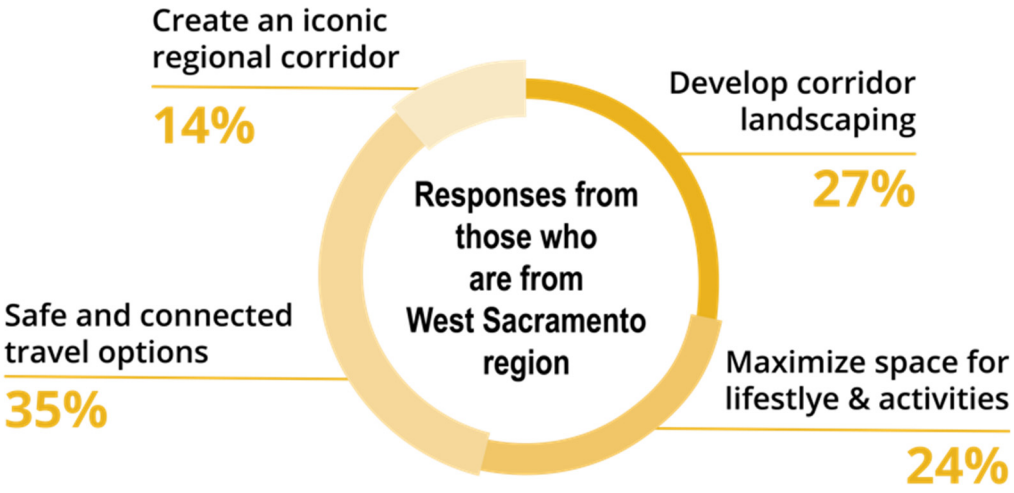

SEGMENT 6
CALIFORNIA TO 3RD
Existing Roadway
Existing Cross-sections
Segment Facts
1/4 mile length
~10,000 daily vehicles
25mph posted speed
162 total crashes
1 severe crash
15 bike/ped crashes
unsafe speed primary cause
LEAVE YOUR INPUT!
Add your thoughts on existing issues and/or recommendations for improvement.
IDENTIFY PRIORITY AREAS!
Tell us where your areas of concern are!
LEARN MORE SacAvePlan.com

Summary of Feedback

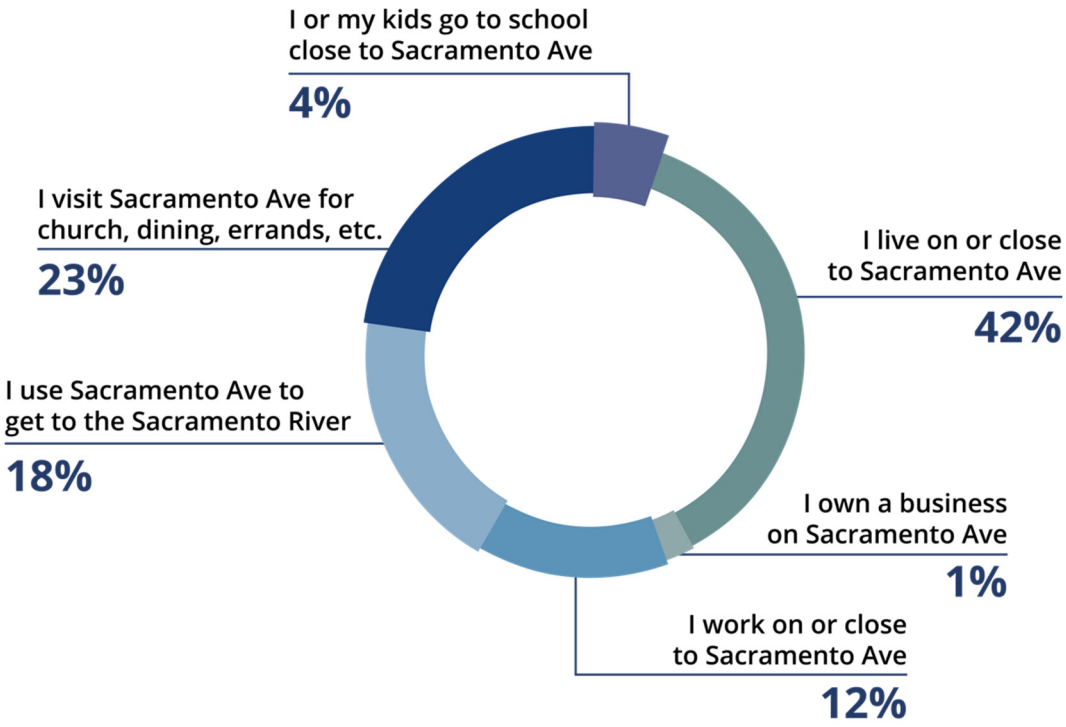
Below is a summary of all feedback received from the interactive boards and stations.

Question 1: How could Sacramento Avenue be transformed?

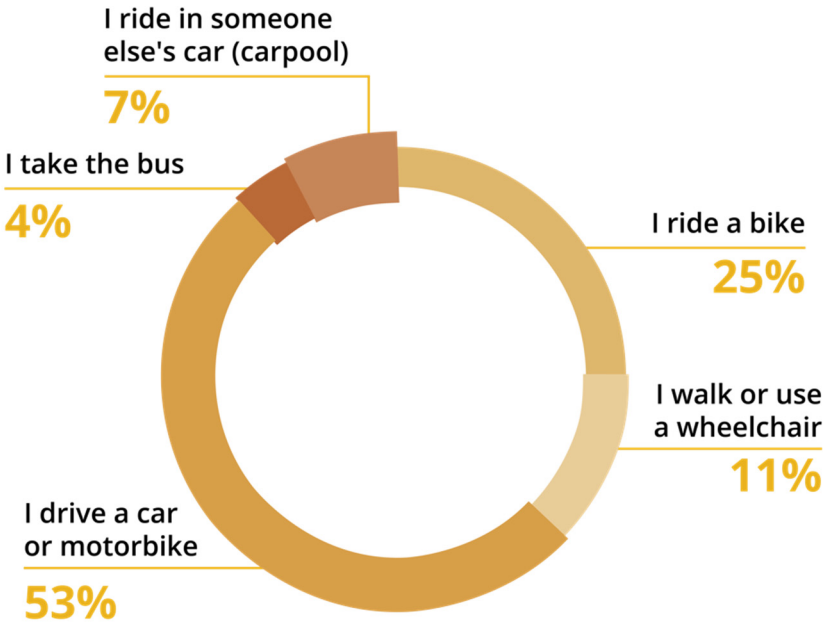




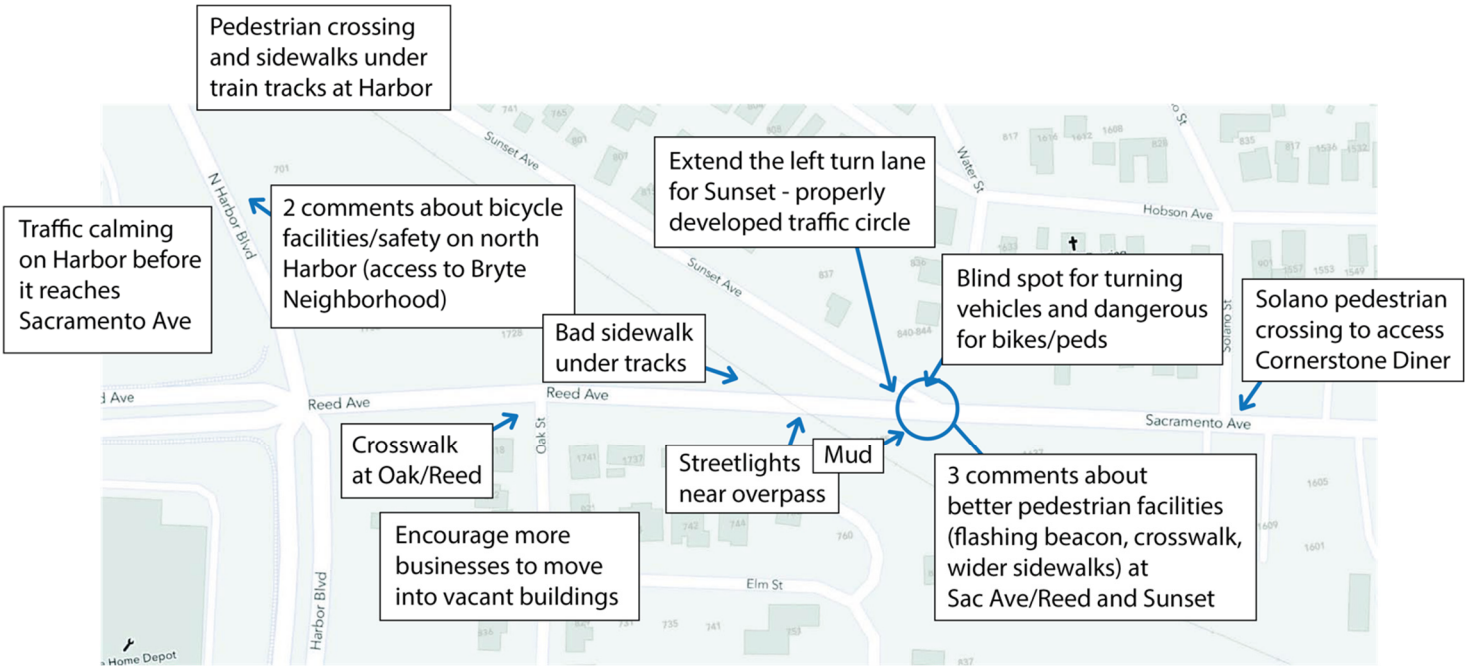
Question 2a: How do you use Sacramento Avenue?



Question 2b: How do you typically travel to or on Sacramento Avenue?



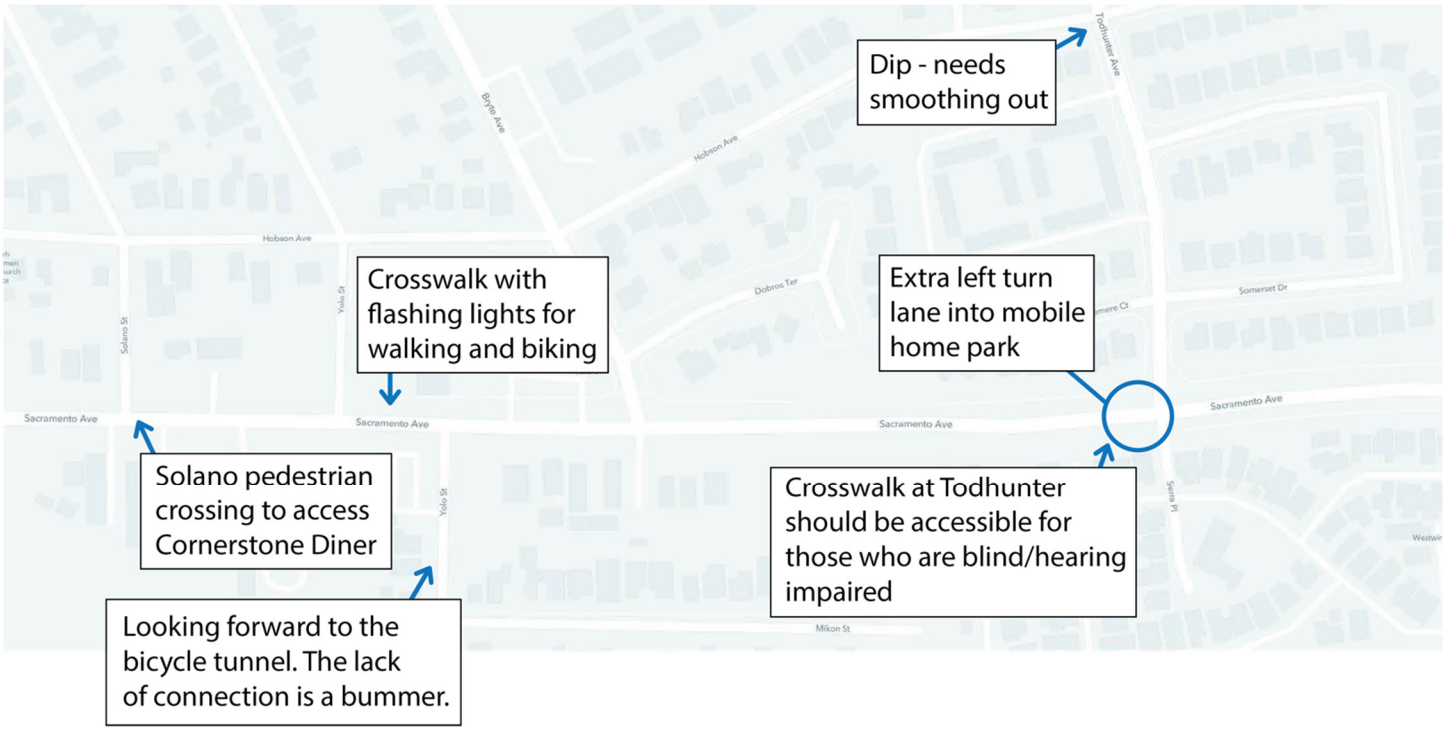
Segment 1: Harbor/Reed to Solano



General input for this road segment included:

- 6 comments about sidewalks (more on both sides of Sacramento Ave., more accessible, and widened sidewalks)
- 5 comments about fixing potholes
- 4 comments about improving bicycle lanes (clearly marked paths, creating more bicycle buffer space, and safer bike lanes at intersections)
- 3 comments about road diets or traffic slowing
- 3 comments about more streetlights
- 2 comments about pedestrian crossings (need crossings that are accessible for those who are blind/hearing-impaired)
- Add reflectors to road for night driving
- Bus stop benches and trash cans need to be maintained

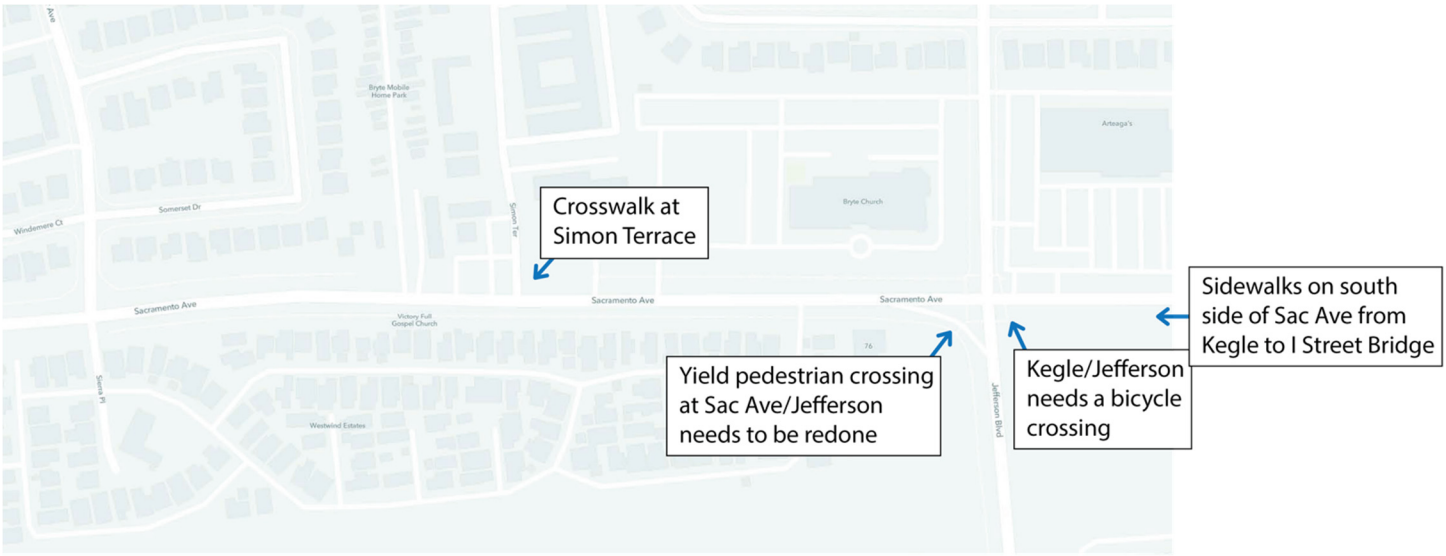
Segment 2: Solano to Todhunter



General input for this road segment included:

- 5 comments about sidewalk improvements (more on both side of Sacramento Ave, need to be separated by landscaping, and widened sidewalks)
- 3 comments about improved or safer bicycle lanes
- 3 comments about more street lighting
- 2 comments about traffic slowing/road diets
- 2 comments about fixing potholes
- Need more pedestrian crossings
- Subsidize electric bikes for the community
- Utilize properly developed traffic circles at major intersections to control speed while maintaining traffic flow
- More speed laws enforcement through Cummins Ave.

Segment 3: Todhunter to Jefferson/Kegle



General input for this road segment included:

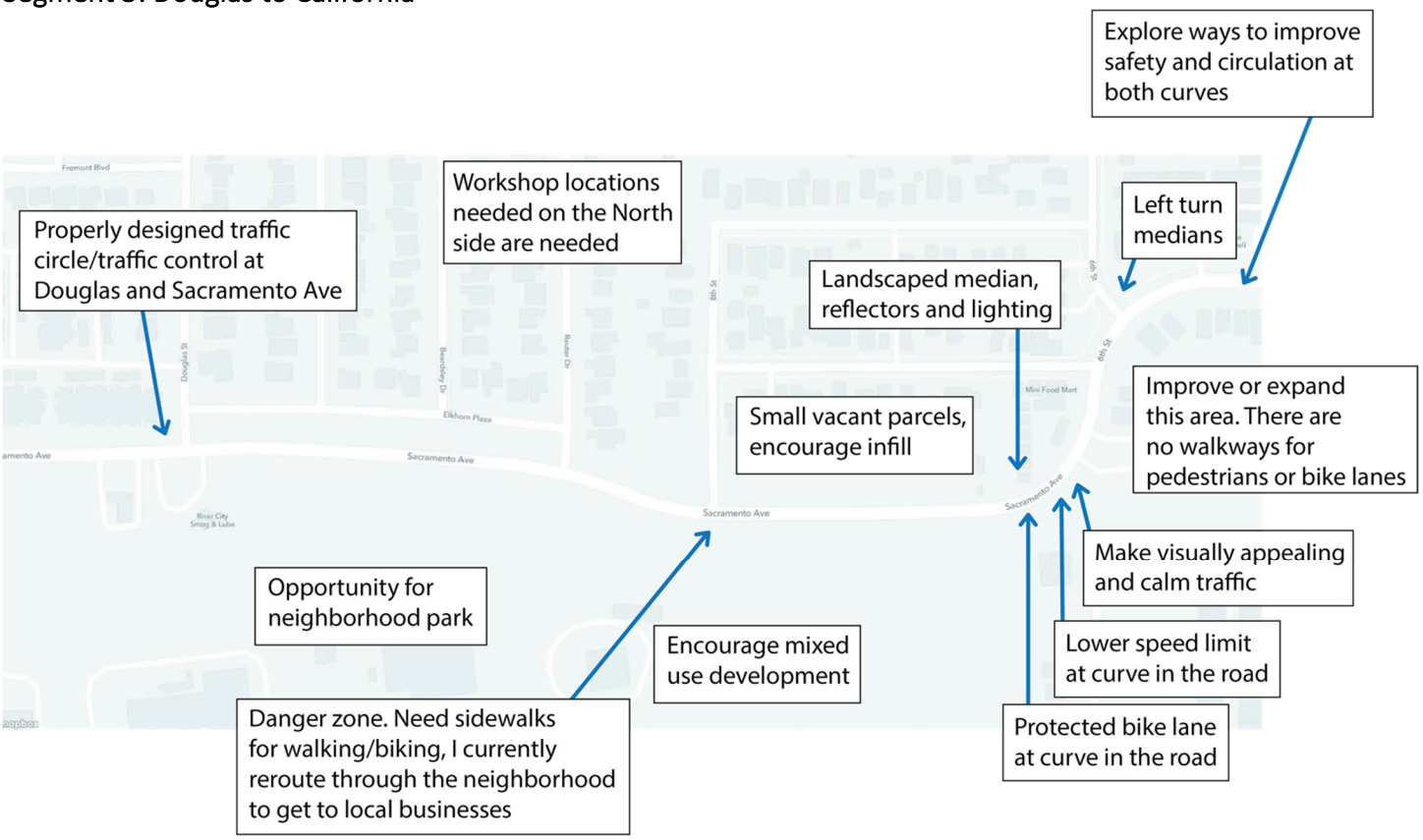
- 3 comments about bicycle facilities including adding bike racks or protected bike lanes
- Wider sidewalks
- Need to make vehicle lane changes/merging safer
- Landscaping could improve
- Better street lighting
- Slow traffic down
- Accessible crosswalks for those who are blind/hearing-impaired

Segment 4: Jefferson/Kegle to Douglas

General input for this road segment included:

- 3 comments about adding bicycle lanes, specifically protected bike lanes
- 2 comments about adding street lighting to improve pedestrian safety
- 2 comments about redoing street or sidewalk paving (the road currently feels too rough/bumpy)
- 2 comments about planting more native trees with substantial shade or other landscaping in strips
- Wide sidewalks
- More farmers markets
- Slow traffic
- The intersection light barrier is confusing to drivers
- Channelization is not safe
- Elevation change hinders visibility
- Separate pedestrian paths

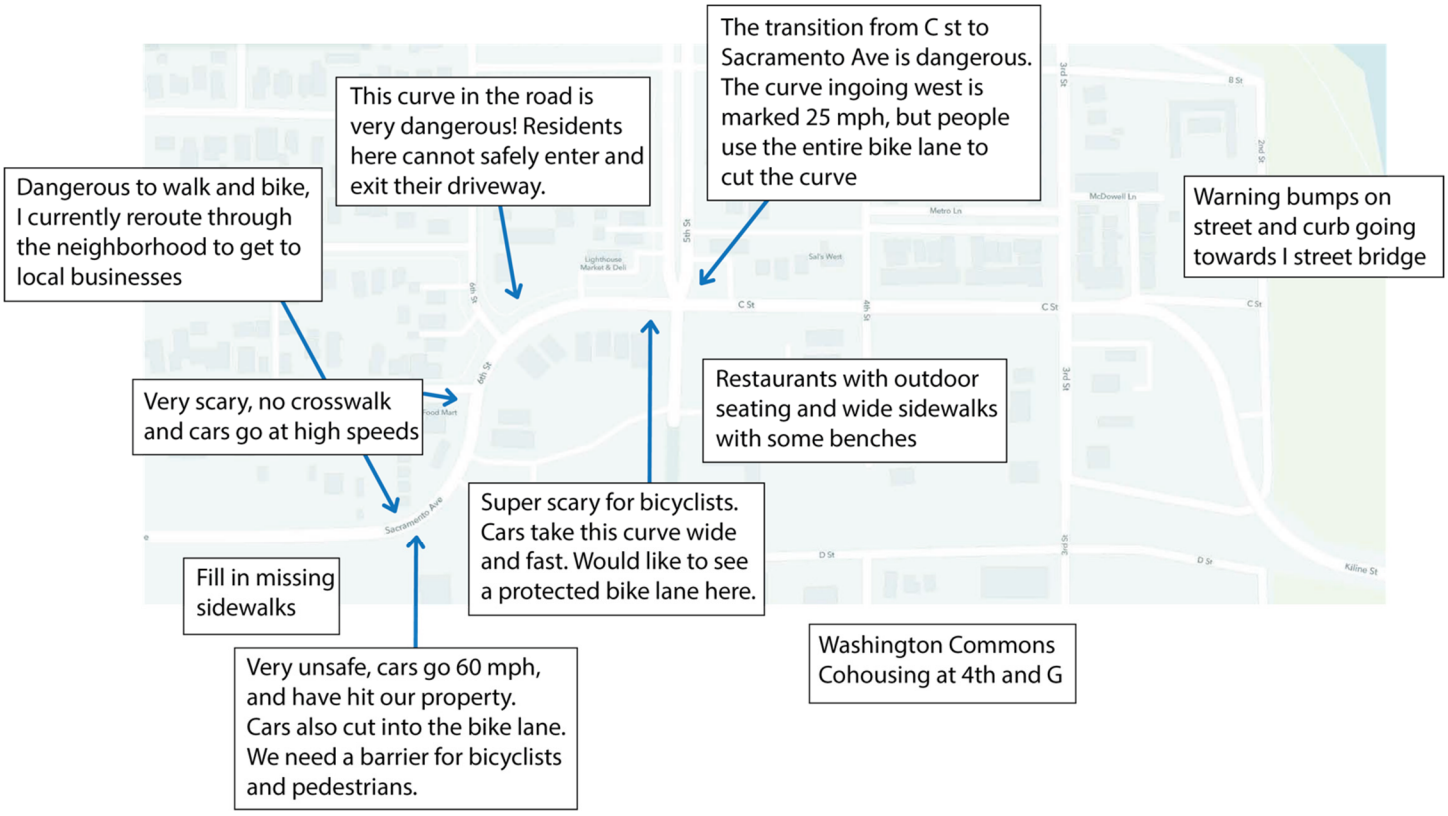
Segment 5: Douglas to California



General input for this road segment included:

- 4 comments about clearly marking bike lanes or adding protected bike lanes
- 2 comments about street lighting
- 2 comments about beautifying open lots near the train tracks (ie. walking paths, trees, benches)
- Gravel from potholes gets into bicycle lanes
- Sidewalks are incomplete or missing
- Curve in the road needs to be straightened out
- Street parking for businesses at the curves in the road is dangerous
- Need to slow traffic

Segment 6: California to 3rd



General input for this road segment included:

- 3 comments about protected bicycle lanes on both sides/bicycle safety throughout area
- 2 comments about pedestrian/bicycle safety at road curves and needing a signal light to slow down cars
- 2 comments about needing parking at curves for local residents
- 2 comments about needing safer sidewalks or protected pedestrian walkways
- Renovate old buildings such as the locksmith and gas station buildings
- Street lighting
- I'd like to see a community area with small restaurants. Not a commercial area/thoroughfare to freeway on-ramps
- Replace wild river trees with new shade trees and landscaping
- Fill potholes
- Decorative crosswalks at the corner of C/5th

Comment Card Input

Nineteen community members submitted feedback via comment cards during the open house. Below is a compilation, sorted by topic.

Safety Concerns

- Have been a homeowner in the area for six years and would like to see protected bike lanes, and crosswalks like West Capitol project. I'm often concerned for my safety when traveling on the corridor in current conditions.
- I live off Sacramento Avenue and Yolo Street. I would like to see bike lanes added to the corridor, so I can commute on my bike, and feel safe walking to local businesses such as Cornerstone Café. I'm excited to see the progress on Sac Ave and feel more connected to the community by walking and biking.
- I live on Sac Ave right on the turn after Broderick's. We have called in multiple accidents. Our street is full of potholes, has no clear speed limit, no sidewalks, and walking on the shoulder is dangerous. These limitations make it hard to enjoy all the great things our neighborhood has to offer.
- The curve headed west from C St to Sac Ave is particularly and uniquely wild. No marked speed limit, contradictory signage, and people cutting the lanes.
- In general, the traffic needs to slow. Maybe cut lanes down if that's feasible. I would love to ride my bike places on Sac Ave but don't feel safe. Having complete sidewalks on both sides of the road and bike racks at businesses.

Community/Green Spaces

- I'd like to see a community area with safety features, not a way for Sacramento residents/victors to use as an exit.
- Would love to see the corridor with more green spaces, protected bike lanes, and plenty of space for social activities/leisure.

- Improvements need to be made and this appears to be a good start. As a resident of more than 30 years my concern is that this will become a heavily traveled, filled with traffic. I would like to see café or small businesses. No heavy commercialization, community growth and landscaping would be greatly needed.
- Happy to see an investment in the North area of West Sac. We need our pools and water park. Invest in the roads of the people. We want a community center.
- I'd like to see a designated no-car area somewhere with access to dinning and shops.
- Slow down traffic by Broderick's Café. Ample sidewalks with some seating. Small businesses, outside cafes with outdoor seating. Transportation from West Sac to other areas, including Sacramento.

Walking and Biking Facilities

- My vision for Sac Ave: 1 lane road in each direction, a center median with landscaping, bike lanes with green paint on each side of the street, protected bike lanes at the part where Sac Ave curves, and another crosswalk between Bryte Ave and Harbor Blvd.
- As a resident of Broderick, I would utilize safer walking/biking along roadways (Sac Ave), e-bike/scooters, restaurants/bars align Sac Ave, public parks (green space w/trees, benches, trash, playgrounds).
- Improve current bike lanes. Paint in the 3' buffer. Create a bike lane at intersections between a car lane for turning right, and vehicle going straight. Get rid of turn lane in the middle of the road to make room for the bicycle safety lanes.

Roadway Concerns

- We need the road reinforced. Too many potholes. It will only get worse once the eagerly awaited I Street bridge is built. So excited to have easy access to the Railyards.
- As we improve river crossings and the I Street Bridge, we invite more traffic onto Sac Ave. People already use it as a short form from I-80 to I-5, which doesn't work because of I bridge's limitations.

Other

- Choices are very vague. These are not specific, very vague.
- I have concerns about our levee system on the north side. We need more work done in the events of more atmospheric rivers.

Workshop Notification & Awareness

During the three-week outreach process, the project team implemented a public awareness campaign about the workshop. A full-sized version of the flyer is available in the Appendix of this document. The workshop flyer, mailer, and lawn signs included Spanish and Russian translations.

The following summarizes the notification efforts made to increase awareness of the community workshop:

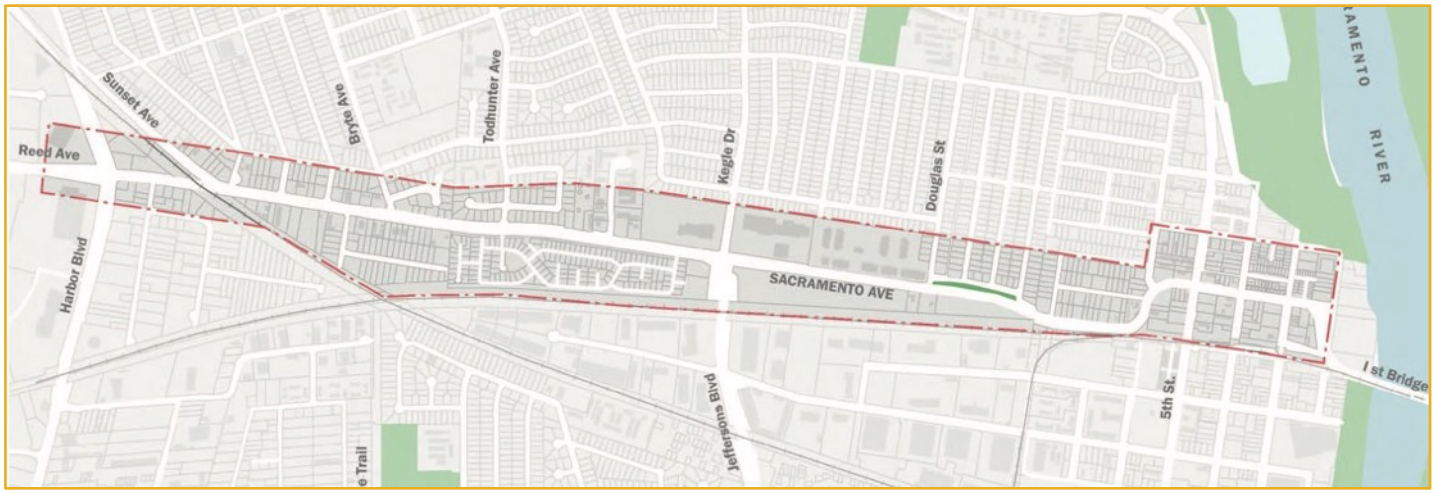
- Community partners: Community partners were contacted via phone and email to notify them of the City of West Sacramento's planning efforts for the Sacramento Avenue Complete Street Plan. This included representatives from transportation/environmental advocacy groups, community-based organizations, schools, public safety organizations, neighborhood associations, churches, business interests, and local destinations.
- Email Notifications: The project team distributed two email notifications via Constant Contact on March 1 and March 9, and made personal emails to community partners about the upcoming Open House.
- Social Media: The City of West Sacramento posted the event flyer on their Facebook, Instagram, and Twitter pages on March 1, and made reminder posts leading up to the workshop. Additionally, the project team also made posts in local West Sacramento Facebook groups about the workshop.
- Utility Mailer: The workshop flyer was included in the March utility mailer sent to homes located adjacent to the project area.
- Flyer delivery: The project team delivered workshop flyers to businesses located along the length of the Sacramento Avenue corridor. Flyers were also posted in the windows of these local businesses or available at the front counters for customers to take.
- Lawn Signs: The project team posted lawn signs at regular intervals along Sacramento Avenue.
- Media: The City of West Sacramento distributed a media release to local news outlets on March 14. KCRA 3 wrote and published an article about the project and community workshop on March 24. KCRA 3 staff were also present at the community workshop and interviewed attendees and City staff about the project.

Appendix

- Workshop Exhibits (10)
- Workshop Flyer

Introduction

On Tuesday, October 10, 2023, from 6:00 – 7:30 pm., the City of West Sacramento hosted the second Community Workshop at the West Sacramento City Hall Galleria at 1110 West Capitol Avenue as part of the public outreach process for the Sacramento Avenue Complete Street Plan. Attendees had the opportunity to hear a project update, discuss the proposed improvements with the planning team, and share their feedback on potential changes to the Sacramento Avenue corridor, including bike and pedestrian safety changes and landscaping design. A total of 38 community members attended the workshop.



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enhancing public spaces for community activity along the corridor. The Plan will aim to support equitable and sustainable development along Sacramento Avenue and to mitigate existing barriers for those who walk, bike, and take transit, including stressful intersection crossings and the lack of comfortable bicycle and sidewalk facilities. This phase of the planning process focuses on making recommendations to improve Sacramento Avenue, including improvements to streets, intersections, landscape, and building frontages using Complete Street planning and design elements.

Workshop Purpose & Format

The purpose of the initial Community Workshop in March 2023 was to introduce the project to the public and gather community feedback on challenges they experience while traveling along Sacramento Avenue. The purpose of the second workshop is to provide an update on the planning work that has been completed using initial public input, and also to present and solicit community feedback on potential street improvements to Sacramento Avenue. The workshop included background information on the planning process and community engagement schedule, key components of the plan, and interactive stations for attendees to share their thoughts and comments. Members from the City and consultant design team were available during the workshop to answer questions and provide clarity on the plan.

The workshop was structured in an open-house format with multiple stations for attendees to visit: a section with informational project exhibits, an interactive station where participants could note their preferences with dot stickers, tables with interactive exhibits, and a commenting station with cards for public feedback.

Summary of Feedback

Below is a summary of all feedback received from the interactive boards and stations.

1. Interactive Board: Corridor Opportunities

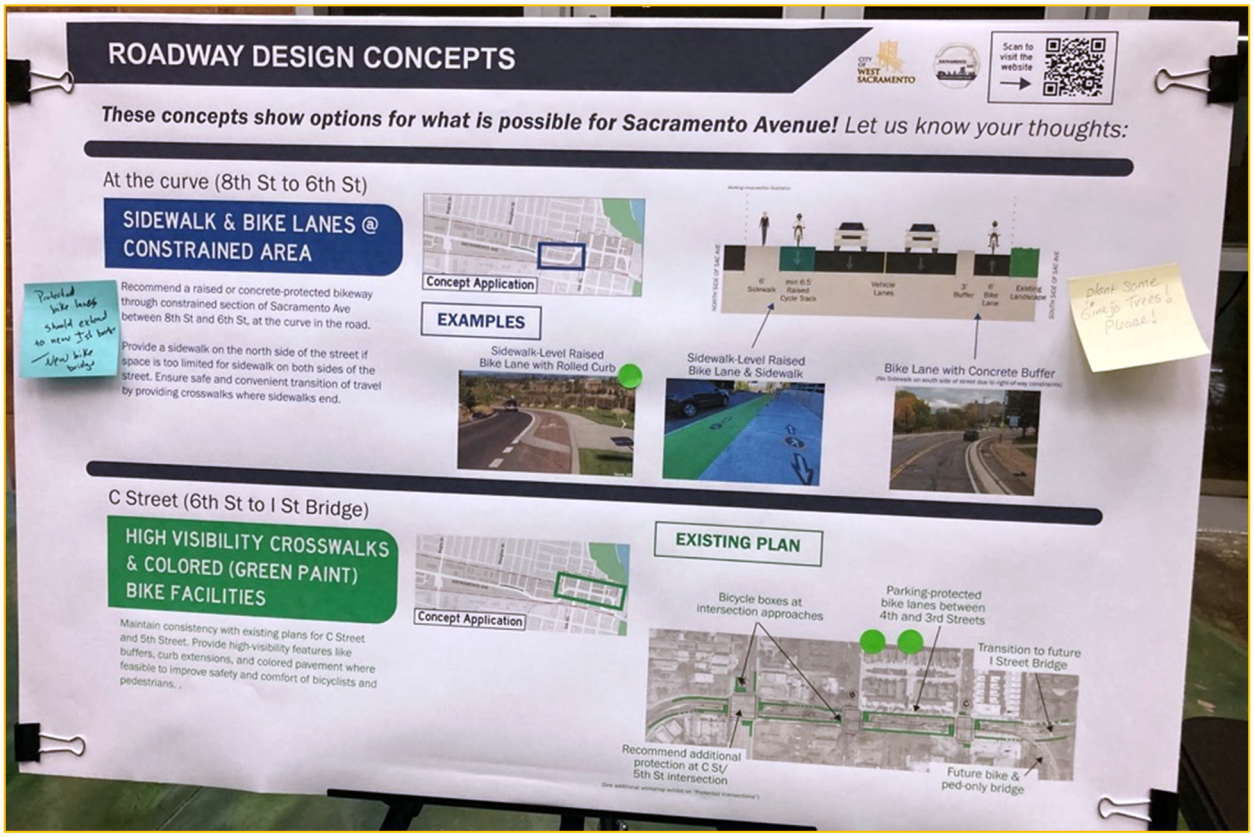
Comments:

- Keep trucks off North Harbor, make the river road to Woodland a bike destination.
- Driveway entry concern at 1453 Sacramento Avenue. Maintain full property width access.
- Road diet Sacramento Avenue enough to discourage through traffic to the I-80.
- What will happen to trees on empty lots on Sacramento Avenue?
- Support for signal at Douglas.
- Add signal light at Douglas and Sacramento Avenue.
- Add lighting on Sacramento Avenue for crosswalk by Brodericks.
- Railroad quiet zone here (D and 3rd Street).

Participants also added dot stickers (showing agreement) on the following improvements listed on the board:

- Safer crosswalks (1)
- Continuous sidewalks (1)
- Douglas Street and Reuter Drive Intersection Safety Improvement: Traffic Signal and Crosswalks (1)

2. Interactive Board: Roadway Design Concepts #1



Comments:

- Protected bike lanes should extend to new I Street bridge/new bike bridge
- Plant some Ginkgo trees, please!

Participants also added dot stickers (showing agreement) on the following improvements listed on the board:

- Sidewalk-level raised bike lane with rolled curb (1)
- Parking-protected bike lanes between 4th and 3rd Streets (1)

3. Interactive Board: Roadway Design Concepts #2

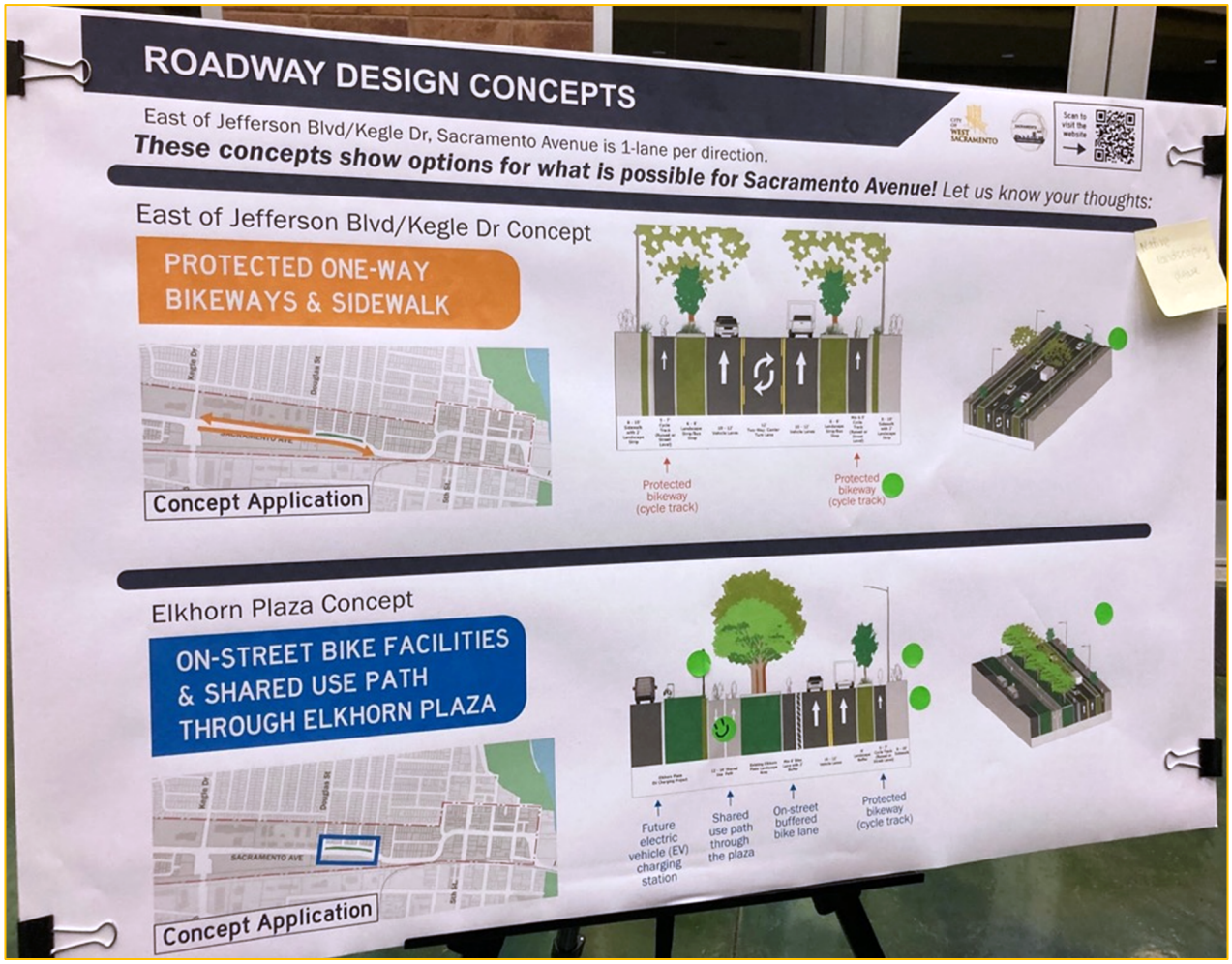
Comments:

- Prefer bollards.

Participants also added dot stickers (showing agreement) on the following improvements listed on the board:

- Landscape protected bikeways and sidewalk (6)
  - Green infrastructure protection (1)
- Two-way neighborhood shared use path (6)
  - Shared mobility area for all users (1)

4. Interactive Board: Roadway Design Concepts #3



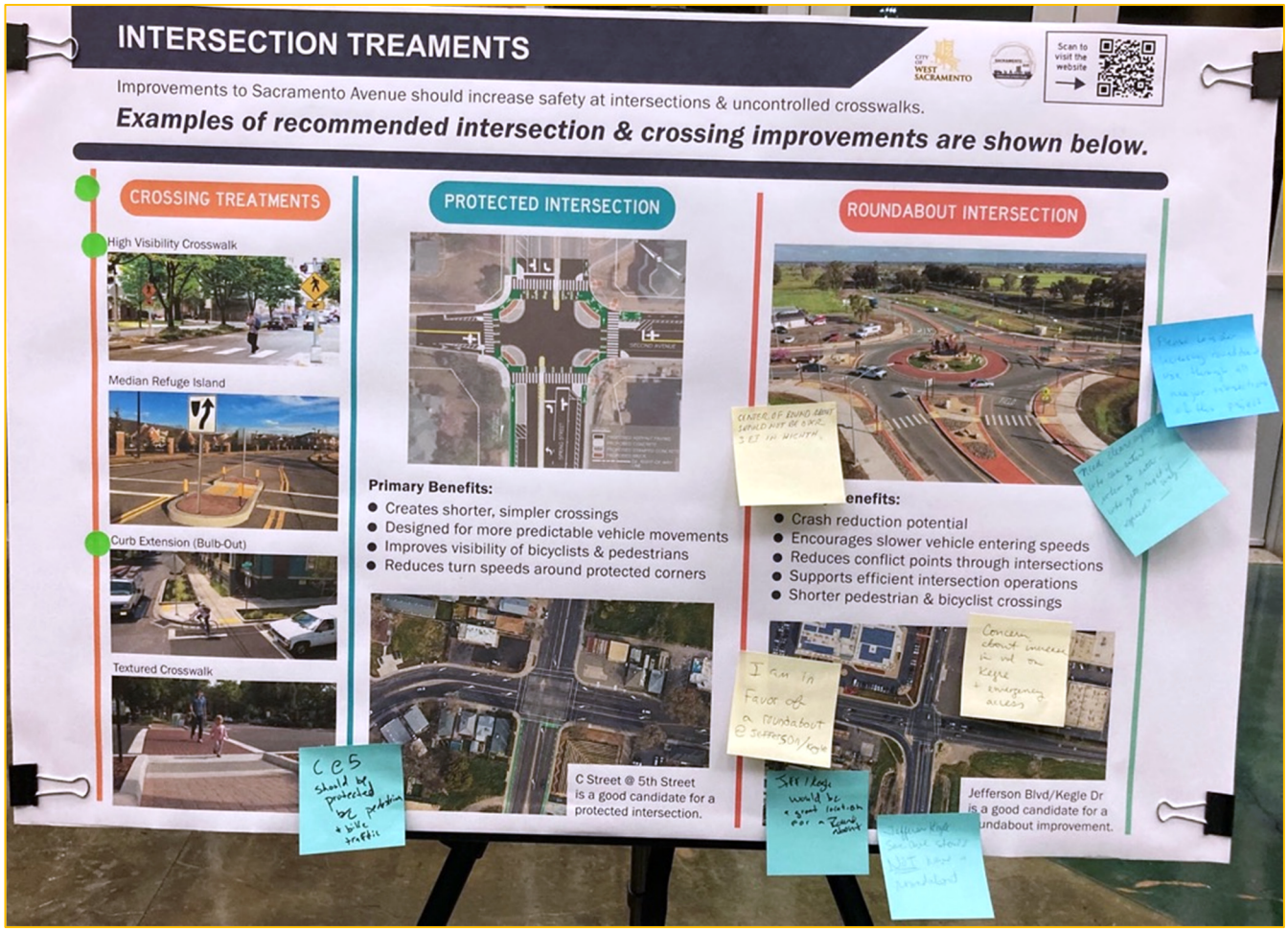
Comments:

- Native landscaping please.

Participants also added dot stickers (showing agreement) on the following improvements listed on the board:

- Protected one-way bikeways and sidewalk (2)
- On-street bike facilities and shared use path through Elkhorn Plaza (5)

5. Interactive Board: Intersection Treatments



Comments:

- C and 5th should be protected for pedestrian/bike traffic.
- Center of roundabout should not be over 3 feet in height.
- I am in favor of a roundabout at Jefferson/Kegle.
- Jefferson/Kegle would be a great location for a roundabout.
- Jefferson/Kegle at Sacramento Avenue should not have a roundabout.
- Concern about increase in ? on Kegle and emergency access.
- Need clear signage on who can enter [roundabouts], when to enter, who gets right of way.
- Please consider increasing roundabout use through all major intersections of the project.

Participants also added dot stickers (showing agreement) on the following improvements listed on the board:

- High visibility crosswalk (2)
- Curb extension (bulb-out) (1)

6. Interactive Board: Elkhorn Plaza Social Node

Comments:

- The bend at the end of Sacramento Avenue (by Brodericks Restaurant) is dark and dangerous We need better lights and signals in this area.
- Don't see the point of EV charging here, but lighting, bike/scooter station and a path would be great.

Participants also added dot stickers (showing agreement) on the following improvements listed on the board:

- Enhancement opportunities View 1 (1)

- Enhancement opportunities View 2 (1)

7. Interactive Board: Jefferson-Kegle Social Hub

Participants added dot stickers (showing agreement) on the following improvements listed on the board:

- Schematic plan option 1 (2)
- Schematic plan option 2 (3)

8. Interactive Board: Elkhorn Plaza Social Node

Comments:

- Bryte is a big family neighborhood – dedicated walking and biking paths will be great.
- Traffic calming ideas: narrow roads, roundabouts
- 6th and Brodericks intersection is a problem, more pedestrian beacons
- Close sidewalk gaps, widen sidewalks, more lighting, visibility is a problem at night, tow trucks are parked in the median at Bryte and Sacramento Avenue

Participants also added dot stickers (showing agreement) on the following improvements listed on the board:

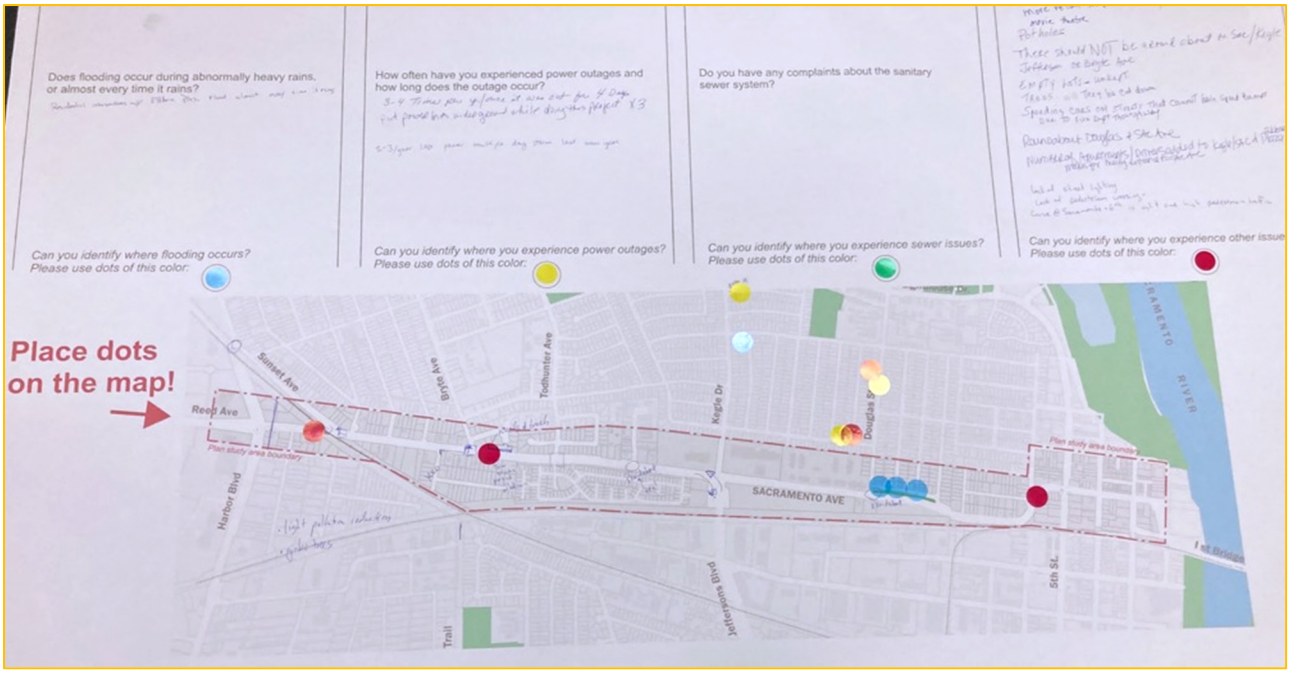
- Accessible green corridor (3)

9. Interactive Board: Additional proposed improvements

Participants added dot stickers (showing agreement) on the following improvements listed on the board:

- Two-way bike lane (2)
- One-way bike lane (2)
- Street trees (2)
- Bicycle parking (1)
- Food truck/Mini market (1)
- Mobile library (1)
- EV charging (1)
- Multi-use path (1)
- Pollinator habitat (1)
- Green infrastructure (1)
- Outdoor dining (1)

10. Interactive Board: Sacramento Avenue Corrdior Map



Map comments:

- Light pollution reduction
- Ginkgo trees
- Tow trucks parked in media (between Bryte and Todhunter)
- Weeds and bushes (between Bryte and Todhunter)
- Roundabout, yes! (at Sacramento Ave/Simon Terrace
- Roundabout (at Sacramento Ave/Douglas)

Participants dot stickers on the project map based on the type of concern:

- Flooding:
  - Douglas St/Sacramento Avenue (3)
  - Kegle Dr/Cummins Way (1)
- Power:
  - Kegle Dr/Anna St (1)
  - Douglas Ave (between Sacramento Ave and Cummins Way) (1)
  - Elder Dr/Fremont Blvd (1)
- Other concerns:
  - Douglas Ave (between Sacramento Ave and Cummins Way) (1)
  - Sunset Ave/Sacramento Avenue (1)
  - Bryte Ave/Sacramento Avenue (1)
  - Sacramento Ave/6th St (1)

Additionally, participants could share their feedback on specific questions around challenges with Sacramento Avenue on this same board display. On the following page is a table showing the prompting question (left) and public feedback (right).

Question	Public Comments
Have you experienced flooding on Sacramento Avenue?	• Have not experienced flooding – sand and prior levee area.
Does flooding occur during abnormally heavy rains, or almost every time it rains?	• Residential intersections with Elkhorn Plaza flood almost every time it rains.
How reliable is electricity in this area?	• Not at all – much lights needed. Needs PG&E to check. Lights flicker a lot on Douglas and Fremont.
How often have you experienced power outages and how long does the outage occur?	• 3 – 4 times per year. Once it was out for 4 days. Put power lines underground while doing this project three times. • 2 – 3 times a year. Lost power multiple day storm last new year.
Have you experienced sewer backups?	No comments
Do you have any complaints about the sanitary sewer system?	No comments
List other concerns/comments	• Pedestrian safety, ie. unleashed dogs, speeding vehicles • More efficient police response to illegal fireworks • Water supply • More retail shops, Safeway replacement store • Movie theater • Potholes • There should not be a roundabout on Sacramento Ave/Kegle Dr, Jefferson, or Bryte Ave. • Empty lots – unkempt • Trees – will they be cut down • Speeding cars on streets that cannot have speed bumper due to fire department throughway. • Roundabout Douglas and Sacramento Ave • Number of apartments/drivers added to Kegle/Sacramento Ave and Elkhorn Plaza makes for messy entrance to Sacramento Avenue • Lack of street lighting lack of pedestrian crossings • Curve at Sacramento Ave and 6th St is unlit and high pedestrian traffic

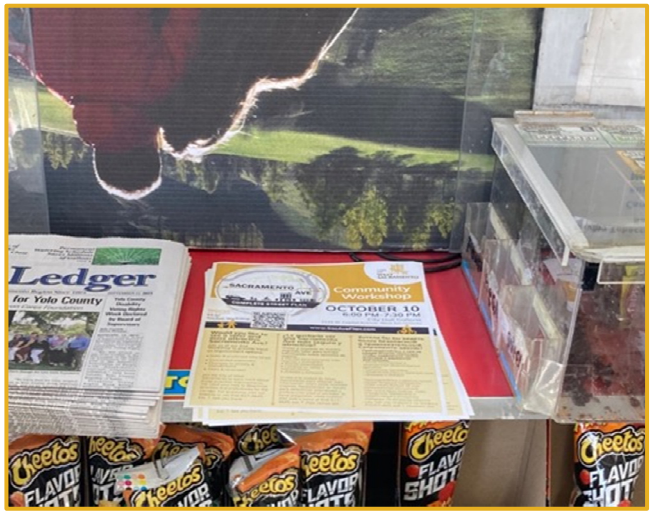
Comment Card Input

Four community members submitted feedback via comment cards during the open house.

- At 1453 Sacramento Avenue – entry to remain the same width. Our driveway is entire property width. Roundabout at Kegle/Jefferson = pedestrian nightmare.
- Many curbs are not appropriately identified (curb or ramp?)
- 1. Build a step on step off trolley runs on Sacramento Ave to 3rd or Jefferson back on tower gateway to tower bridge across on 5th downtown Sacramento and back up I Street. 2. Huge regional fountain like Salmon Street sprints in Portland that people will come and stay all day. 3. Railroad quiet zone at D and 3rd Street. Just need street traffic directionals.
- Why is the old Safeway store still vacant? What is the city doing to put in more retail stores? We need a ban on construction vehicles on city streets blocking drivers view. More enforcement of non-operational vehicles taking up space.

Workshop Notification & Awareness

During the three-week outreach process, the project team implemented a public awareness campaign about the workshop. A full-sized version of the flyer is available in the Appendix of this document. The workshop flyer, utility mailer, and lawn signs included Spanish and Russian translations.



The following summarizes the notification efforts made to increase awareness of the community workshop:

- Community partners: Community partners were contacted via phone and email to notify them of the City of West Sacramento's planning efforts for the Sacramento Avenue Complete Street Plan. This included representatives from transportation/environmental advocacy groups, community-based organizations, schools, public safety organizations, neighborhood associations, churches, business interests, and local destinations.
- Email Notifications: The project team distributed three email notifications via Constant Contact on September 19, October 2 and on October 10, and made personal emails to community partners about the upcoming Open House.

- Social Media: The City of West Sacramento posted the event flyer on their Facebook, Instagram, and Twitter pages, and made reminder posts leading up to the workshop.
- Utility Mailer: The workshop flyer was included in the September utility mailer sent to homes located adjacent to the project area.
- Flyer delivery: The project team delivered workshop flyers to businesses located along the length of the Sacramento Avenue corridor. Flyers were also posted in the windows of these local businesses or available at the front counters for customers to take.
- Lawn Signs: The project team posted lawn signs at regular intervals along Sacramento Avenue.
- Media: The City of West Sacramento distributed a media release to local news outlets. KRCA 3 published an article about the workshop.

Appendix

- Workshop Exhibits (10)
- Workshop Flyer

Introduction

On August 3, 2023, the City of West Sacramento hosted a pop-up workshop at the Yolo County Children's Alliance's Back-to-School Family Resource fair at Bryte Park (425 Todhunter Avenue). The goal of the pop-up event was to meet community members at spaces where they were already gathering to encourage them to participate in the Sacramento Avenue Complete Street Plan, gather their feedback on potential street improvements, and promote upcoming outreach opportunities planned for Fall 2023.

The project team engaged approximately thirty community members about the Sacramento Avenue Complete Street Plan, handed out more than 100 flyers with information on the project website, and distributed more than 125 cards promoting the community meeting planned for Fall 2023.

Project Background & Overview

Sacramento Avenue is a major east-west commercial corridor through West Sacramento and provides a key connection to the City of Sacramento, to Interstate 5, and to Interstate 80. The roadway serves diverse residential communities and provides access to outdoor recreation opportunities, local restaurants, grocery and commercial stores, schools, and churches. The Sacramento Avenue Complete Street Plan will include community-driven improvements to Sacramento Avenue between Harbor Boulevard and 3rd Street to provide more safe and comfortable transportation options for people of all ages and abilities while also enhancing public spaces for community activity along the corridor. The Plan will aim to support equitable and sustainable development along Sacramento Avenue and to mitigate existing barriers for those who walk, bike, and take transit, including stressful intersection crossings and the lack of comfortable bicycle and sidewalk facilities. This phase of the planning process focuses on making recommendations to improve Sacramento Avenue, including improvements to streets, intersections, landscape, and building frontages using Complete Street planning and design elements.

Pop-up Workshop Purpose & Format

The pop-up workshop was one of many booths available for community members to visit during the Back-to-School Resource Fair. Project team members engaged families and individuals in a conversation about Sacramento Avenue, what is being planned for improvement, and upcoming outreach opportunities for sharing

input. The purpose of the pop-up workshop is to spread awareness of the Sacramento Avenue Complete Street Plan, obtain community feedback on how the street can better fit their needs, and encourage people to visit the project website for upcoming engagement opportunities.

Interactive Boards

In addition to handing out collateral pieces such as project fliers and business cards, the project team also asked pop-up workshop attendees to share their input on the two (2) interactive board displays using dot stickers. Below is an overview of the feedback received, organized by board.

Board 1: What [improvements] would you like to see?

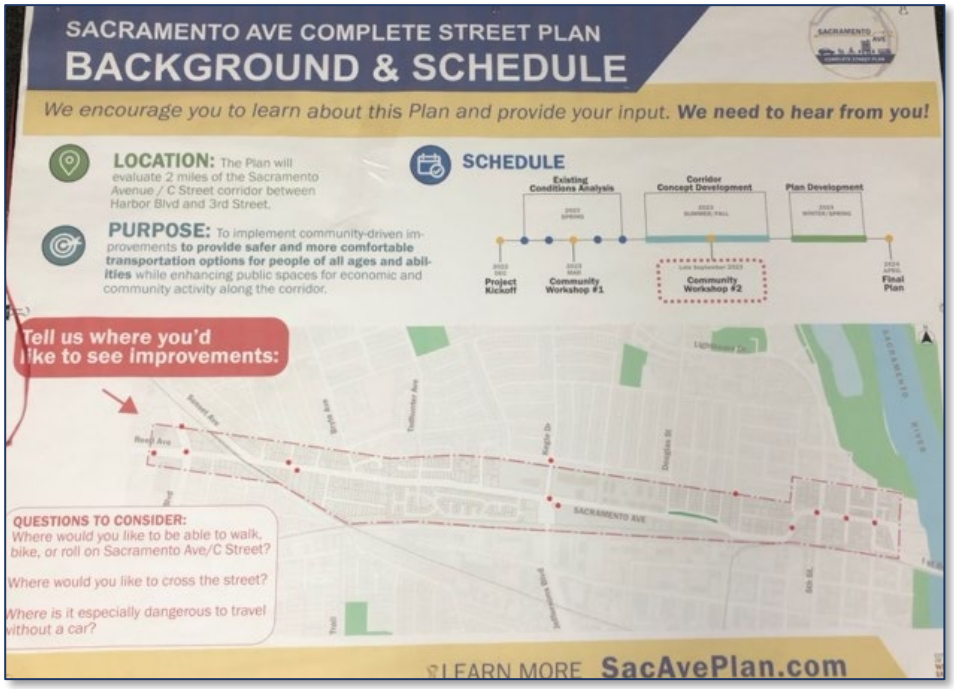
This interactive board prompted participants to choose the street and infrastructure improvements they would like to see made on Sacramento Avenue. The project team received thirteen (13) votes total.

- Safer Crossings
  - High-Visibility Crosswalks with Flashing Beacons – 3 votes
  - Media Refuge Islands – 0 votes
  - Curb Extension (Bulb-Out) – 0 votes
- One-Way Protected Bikeways
  - Bollard Protected Bike Lane – 0 votes
  - Concrete Protected Bikeways – 3 votes
  - Landscaping Protected Bikeways – 1 vote
- Two-Way Bike Facilities
  - Shared-Use Path – 0 votes
  - Shared-Use Path with Landscape – 2 votes
  - Bike-Only Cycle Track – 1 votes
- Raised Bikeways
  - Sidewalk-Leve Raised Bikeway – 2 votes
  - Rolled-Curb Raised Bikeway – 0 votes
  - Two-Way Raised Bikeway – 1 vote

Board 2: Sacramento Avenue Map

This board included information with an overview of the project and a map of where the project limitations are. Participants were prompted to place dot stickers on areas of concern where they want to see improvements made. The project team received thirteen (13) votes in total.

- 2 votes for the intersection of Kegle Drive and Sacramento Avenue
- 2 votes for the intersection of Yolo Street and Sacramento Avenue
- 1 vote for the intersection of 3rd Street and Sacramento Avenue
- 1 vote for the intersection of 4th Street and Sacramento Avenue
- 1 vote for the intersection of 5th Street and Sacramento Avenue
- 1 vote for the intersection of California Street and Sacramento Avenue
- 1 vote for the intersection of Elizabeth Street and 8th Street
- 1 vote for the intersection of Kegle Drive and Fremont Boulevard
- 1 vote for the intersection of Harbor Boulevard and Reed Avenue
- 1 vote for the west most point of Reed Avenue
- 1 vote for the area slightly north of the Reed Avenue and Harbor Boulevard



Next Steps

With the feedback collected during the initial phase of the Sacramento Avenue Complete Street, including from the first Community Workshop, the pop-up workshop, and through the project website online mapping tool, the project team will develop an initial draft of the Plan. The next phase of the project will include outreach to the community at-large to ensure that the Plan will meet the community's needs.

Sacramento Ave Breath Bike Festival Pop-Up Memo

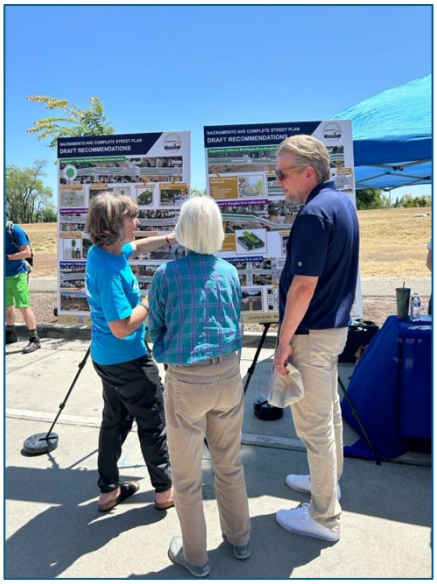
On Sunday, April 28th, 2024, the project team for West Sacramento Ave attended the Breath May is Bike Month Bike festival. Five team members engaged with community members to discuss the upcoming release of the draft plan for Sacramento Ave. The event provided an opportunity for community members to learn more about the project and the inclusions to the forthcoming draft plan. Over 100 project website cards and stickers were distributed to attendees at the event.

Project team member Katie DeMaio engages bicyclists with project boards

Project team members in attendance included:

- The City of West Sacramento
- AIM Consulting
- GHD

Project Overview Sacramento Avenue is a major east-west commercial corridor through West Sacramento and provides a pivotal connection to the City of Sacramento, Interstate 5, and Interstate 80. The roadway serves diverse residential communities and provides access to outdoor recreation opportunities, local restaurants, grocery and commercial stores, schools, and churches. The Sacramento Avenue, Complete Street Plan, will include community-driven improvements to Sacramento Avenue between Harbor Boulevard and 3rd Street to provide safer and more comfortable transportation options for people of all ages and abilities while enhancing public spaces for community activity along the corridor. The Plan will support equitable and sustainable development along Sacramento Avenue and mitigate existing barriers for those who walk, bike, and take transit, including stressful intersection crossings and the lack of comfortable bicycle and sidewalk facilities. This phase of the planning process focuses on making recommendations to improve Sacramento Avenue, including improvements to streets, intersections,



GHD Project Manager, Todd Tregenza, talks to community members about draft plan alternatives

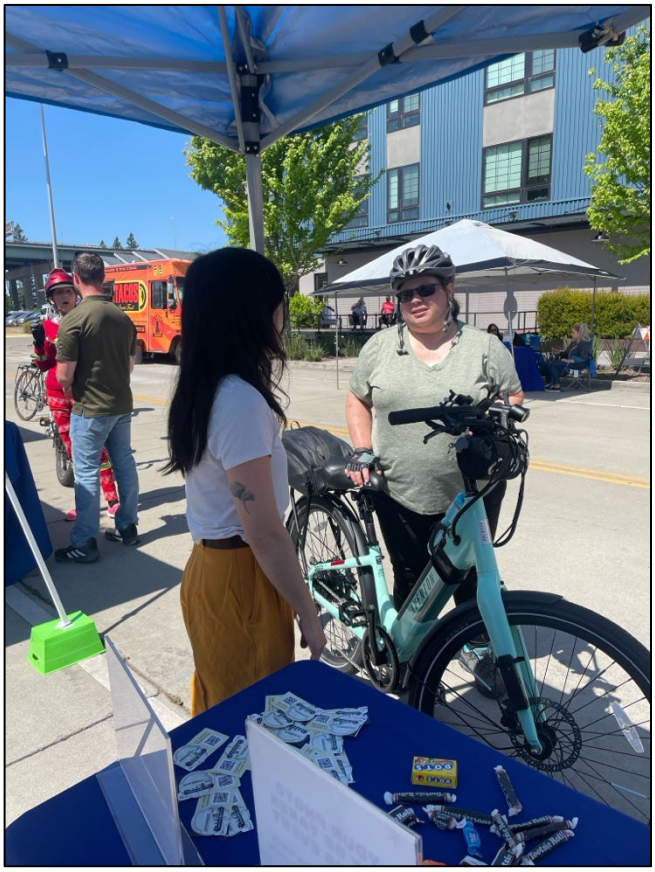
landscape, and building frontages using Complete Street planning and design elements.

Pop-Up Format

The pop-up format was designed to provide a comprehensive overview of the project. It featured a project map board, a draft plan inclusions board, and a previous outreach board. These boards were instrumental in educating community members about the project's progress, the proposed improvements, and the general project area. Project engineers and managers were on hand to explain the draft plan initiatives and project history. The pop-up event was centered around bicycling and bicycle safety, with project team members engaging with dozens of bicyclists about Sacramento Ave bicycle safety issues and improvements.

Next Steps

The next step for this project is to finalize the draft plan and release it to the public.




DRAFT RECOMMENDATIONS


NO HUMAN IS ILLEGAL

Draft Sacramento Avenue Complete Street Plan Public Comment & Response Log

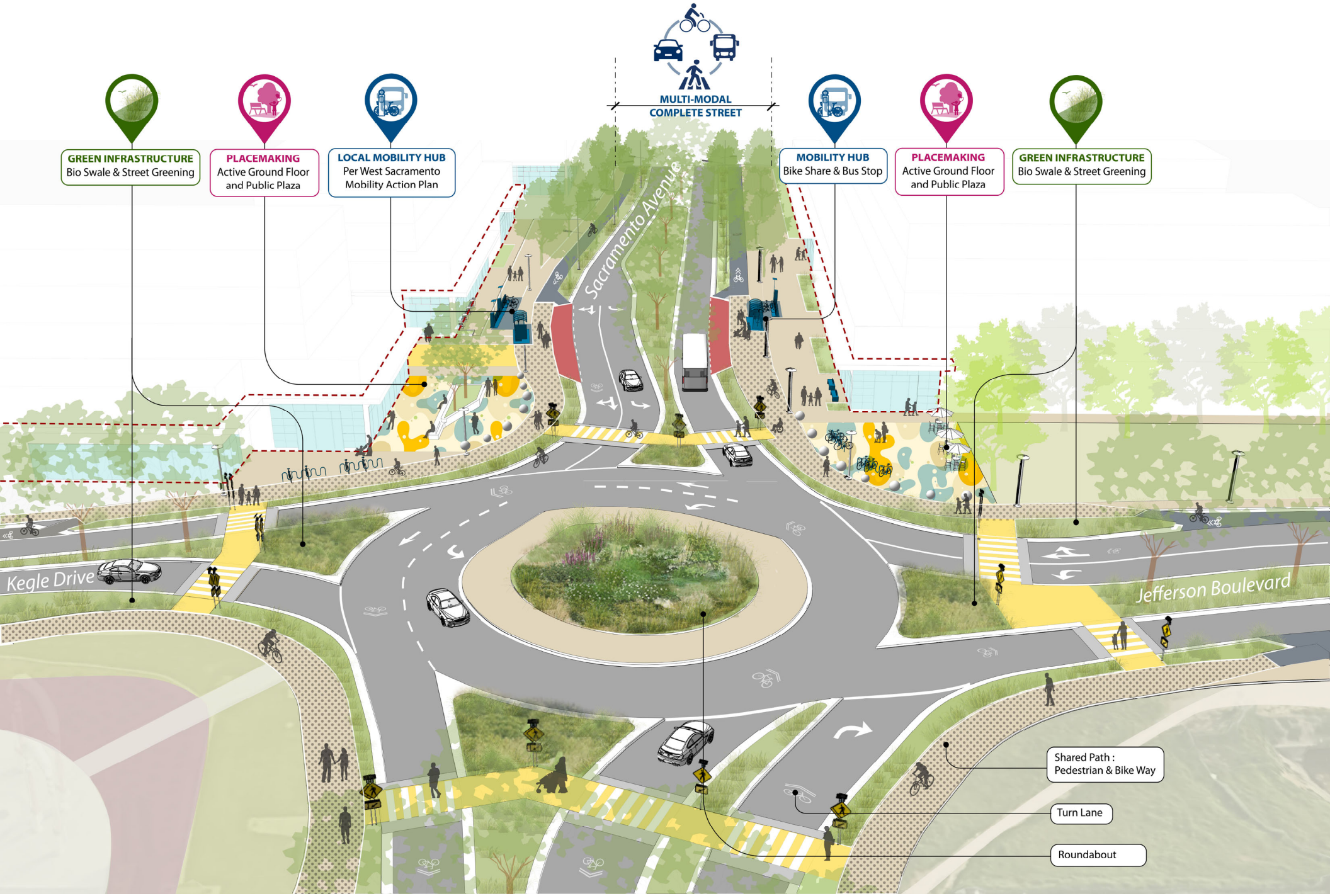
Comment Date	Community Member Name	Comment	Response to Comment
05/23/2024	Amalie Kruzer (Member of Public)	Some feedback on the Western Area (Zone 3) of the Sacramento Ave improvement project. I apologize for the length, I just have a lot to say about this spot as I actually think it's one of the more dangerous spots to bike in West Sacramento. I also apparently missed even hearing about all of the opportunities for earlier public comment, so here you go! When riding a bike going northbound on Jefferson Blvd towards Sacramento Ave and continuing straight onto Kegle, there is a big uphill area right where the bike lane crosses the car traffic turning right. The uphill area (caused by the train bridge needing to go overhead) slows you down almost to a halt right where you need to go fast to get out of the way of cars. I see that with the roundabout design this problem would still exist. In fact, because roundabouts encourage car traffic to continually flow, I think the problem might actually get worse. It's currently a very stressful place to try to cross. If you're turning right it's fine. But, if you need to go straight, you're pedaling as hard as you can to go uphill while simultaneously turning your head every second to make sure that a car hasn't appeared to run you over while you cross the lane. This is at the same time as hoping that you're not arriving at this point with bad timing when a whole bunch of cars came because they won't let you over and then you will have to stop in the bike lane and try to go uphill from a dead stop. And on top of that, imagine you're pulling a trailer with kids inside which makes you even slower! Since the cars just had a downhill road to accelerate on, the cars can be going very fast. On top of this, that bike lane that you're moving into in front of the light is always filled with road debris so you're trying not to go over it and pop your tires. I've tried various things to try to get around this area.	Thank you for your comment. The Sacramento Avenue Complete Street Plan proposes sidewalk-level separated bike lanes, where feasible, and shared bike-pedestrian paths at the roundabout intersections approaches. The proposed roundabout design at Jefferson Boulevard/Sacramento Avenue allows bicyclists options, depending on their level of confidence and comfort. Bicyclists have the option to continue in the roundabout with the flow of traffic or to "ramp-up" onto the shared bike-pedestrian path and cross and the designated crossing. Rectangular Rapid Flashing Beacon (RRFB) will accompany a pedestrian warning sign at the crossings to enhance visibility of bicyclists and pedestrians to drivers.

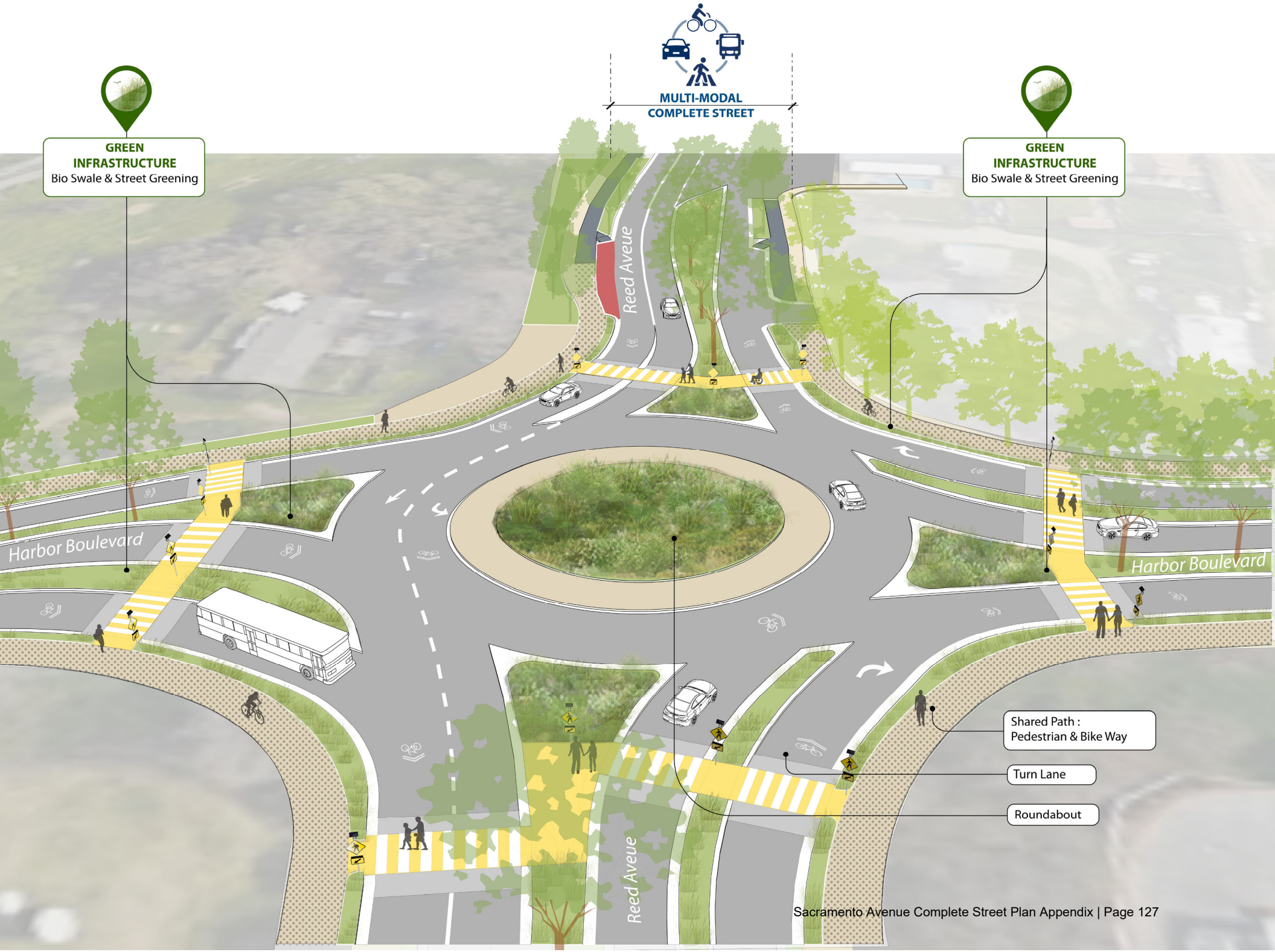
Comment Date	Community Member Name	Comment	Response to Comment
		Option 1: Riding my bike on the sidewalk up Jefferson. This is okay unless there's anyone on the narrow sidewalk at all (and there are frequently motorized wheelchairs) but then you have to cross Sacramento Ave with the crosswalk button. Option 2: Turn right on Sacramento Ave and then turn left onto a side street to get across into Bryte/Broderick area. As this requires getting over and turning left in front of 40mph traffic this isn't great either. Option 3: Just don't bike. Sadly this is largely what has happened. Currently it's also a little tricky going south across this intersection (basically you have to use the pedestrian crosswalk to get across) so I am happy to see that the roundabout would help with this. I saw in one of the post it note comments for this project that many cities are building bike lanes that are connected to the sidewalk instead of sharing the road with cars. (I downloaded the picture they added and attached it I loved it so much) (See picture included to the right). I think these are by far the best solution for bike lanes because they fill up with much less car road debris, I can go as slow as I need to uphill, and are just generally farther away from cars and safer. This is largely what Davis uses and they are so much better than the bike lanes right next to cars. I frequently bike with a trail-a-bike or a bike trailer with children. Having cars speed past within feet of my children and having them kick rocks into them isn't safe or pleasant. Have I done it before? Yes. Do I want to? No. So I end up riding on the sidewalk anyway. So from a practical standpoint if people are going to be riding on the sidewalk anyway, why not embrace it? The protected roadways with barriers don't work either because the streets are never swept where the bike lane is. And it's too huge of a hassle (trip ruining) if I get a flat tire. Road debris is seriously almost as bad as cars driving within inches of you. Again, sorry for this very long explanation. I would really like to bike more through this intersection but this area is such a pain that it's hard to. With the current roundabout diagram proposed I would probably just keep riding on the sidewalk up Sacramento Ave, but now I'll have to navigate crossing/weaving through two crosswalks where cars may or	

Comment Date	Community Member Name	Comment	Response to Comment
		may not stop in order to get across Sacramento Ave. And I don't have the option of pushing the crosswalk button either (but maybe the new design will have flashing pedestrian light buttons?). 	
6/5/24	Caitlin Mueller (Member of Public)	I am a resident of the Lighthouse neighborhood, and I just came across the complete street plan. I am so glad the city recognizes the need for improvements to Sacramento Ave. since my experience of the road is that it's old, worn, barren, hot, and very unfriendly. I greatly appreciate the depth of research and thought put into the plan as well as the community engagement. I read through most of the comments on the interactive project map and I agree with many of them based on my personal experience. I work as a landscape designer in the Sacramento area, so I especially look for the use of plants and trees. I appreciate that the plan encourages existing trees to be kept. A healthy decades old tree has tremendous value in terms of shade, beauty, a sense of place/community, and ecological benefit that cannot be quickly replaced. I understand the city has various	Thank you for your comment. One of the themes for the Sacramento Avenue Complete Street Plan is "Use natural, sustainable landscaping to improve comfort, aesthetics, and resiliency." The City will continue to consider green infrastructure and stormwater management opportunities through the development of this project in accordance with the City's Landscape Development Guidelines and Master Tree List.

Comment Date	Community Member Name	Comment	Response to Comment
		documents governing street trees, but it would be great if this plan emphasized trees more to ensure they don't get cut in future plans due to cost or utility conflicts or any other issues. While stormwater management is mentioned in the plan, this seems like a great opportunity to incorporate more stormwater management and green infrastructure features. Turning Sacramento Ave. into more of a "green street" would be great. Perhaps sections of the street could have vegetated swales/gutters. Various methods could be used to slow and reduce the flow of stormwater into the drain which would reduce the strain on the stormwater system. Perhaps there could be stormwater planters and sections of permeable pavers, San Mateo County put together a similar complete street plan but theirs focused more on the sustainable aspect. It has a ton of great information on sustainable streets that could be added to the Sacramento Ave. plan. Link to the site: https://ccag.ca.gov/countywide-sustainable-streets-master-plan/	
05/30/2024	Alexandra Schaal (member of the Public)	Good afternoon! I saw the post about the Sacramento Avenue street plan on the West Sacramento FB group. I live in the State streets area, but occasionally utilize Sacramento Ave by car. After reading some of the design approach, my main opinion revolves around pedestrian access. Most important to my household is the ability to walk and bike safely around town. We are pleased that sidewalks and bike lanes /paths are included. That said, we DO NOT like the "parking protected" bike lanes like downtown Sacramento has. They reduce visibility for both bikes and vehicles when coming to the corner of an intersection or driveway. I've had numerous close calls as a cyclist on 10 and K street for this reason. Additionally, people still manage to park in the bike lane or open their car doors into the bike lane without paying attention. I implore West Sacramento to avoid this type of bike lane. Thanks to the city of West Sacramento for working to improve pedestrian access in our city. And thank you for the opportunity to comment on plans.	Thank you for your comment. In general, the Sacramento Avenue Complete Street Plan proposes sidewalk-level, separated bikeways, where feasible. Parking-protected being lanes are being considered in the Eastern Segment, Segment 6 on C Street between 3rd Street and 4th Street. This concept will be further explored in a separate project, the North 5th Street Connectivity and Complete Street Project, which will align C Street with the upcoming I Street Bridge projects. The City has not yet initiated the North 5th Street Connectivity and Complete Street Project. Please contact the City's Capital Projects Department for more information at 916-617-4980 or cp@cityofwestsacramento.org.

Appendix E: Detailed Concepts


MULTI-MODAL
COMPLETE STREET
GREEN INFRASTRUCTURE
Bio Swale & Street Greening
PLACEMAKING
Active Ground Floor
and Public Plaza
LOCAL MOBILITY HUB
Per West Sacramento
Mobility Action Plan
MOBILITY HUB
Bike Share & Bus Stop
PLACEMAKING
Active Ground Floor
and Public Plaza
GREEN INFRASTRUCTURE
Bio Swale & Street Greening
Sacramento Avenue
Kegle Drive
Jefferson Boulevard
Shared Path :
Pedestrian & Bike Way
Turn Lane
Roundabout


MULTI-MODAL
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Bio Swale & Street Greening
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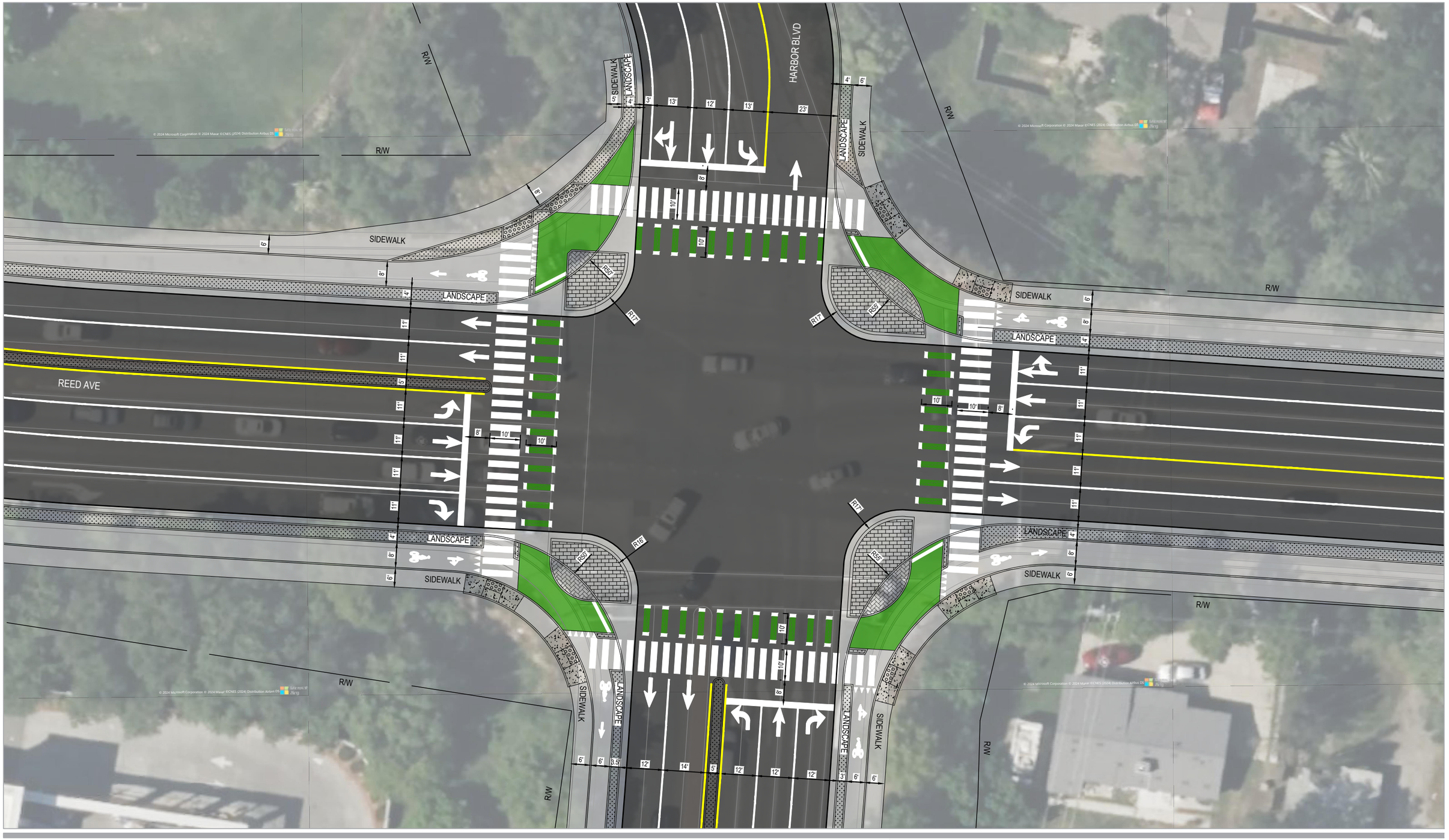
Harbor Boulevard
Harbor Boulevard
Reed Aveue
Shared Path :
Pedestrian & Bike Way
Turn Lane
Roundabout



30 0 30

1 inch = 30 ft.

GHD

CITY OF WEST SACRAMENTO
COMPLETE STREET CORRIDOR IMPROVEMENTS

REED AVE & HARBOR BLVD

Project No. **12587734**
Report No. **000**
Date **JUNE 2024**

FIGURE A

Source:

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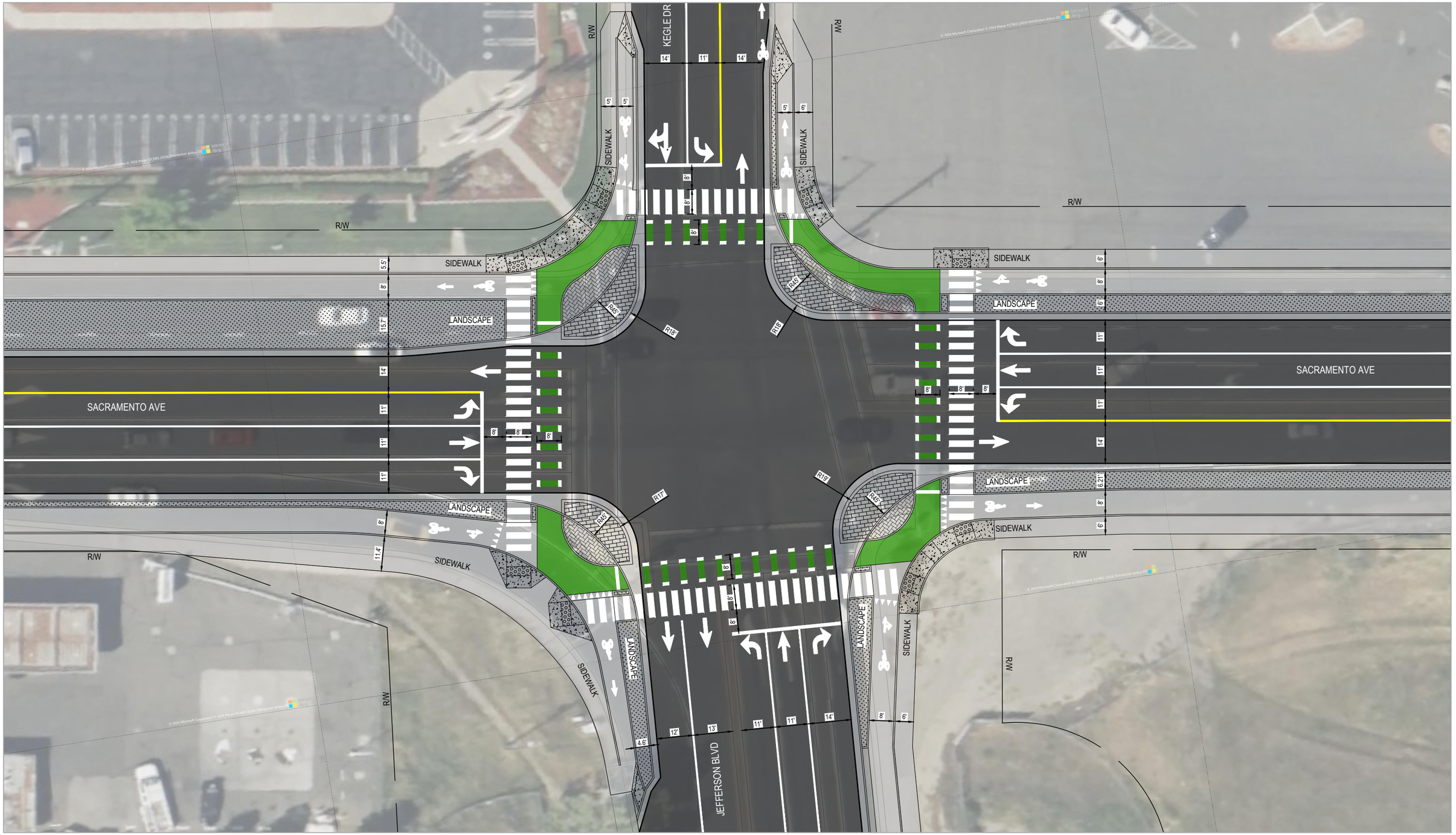

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GHD

CITY OF WEST SACRAMENTO
COMPLETE STREET CORRIDOR IMPROVEMENTS

SACRAMENTO AVE & JEFFERSON BLVD

Project No. 12587734
Report No. 000
Date JUNE 2024

FIGURE B

Source:

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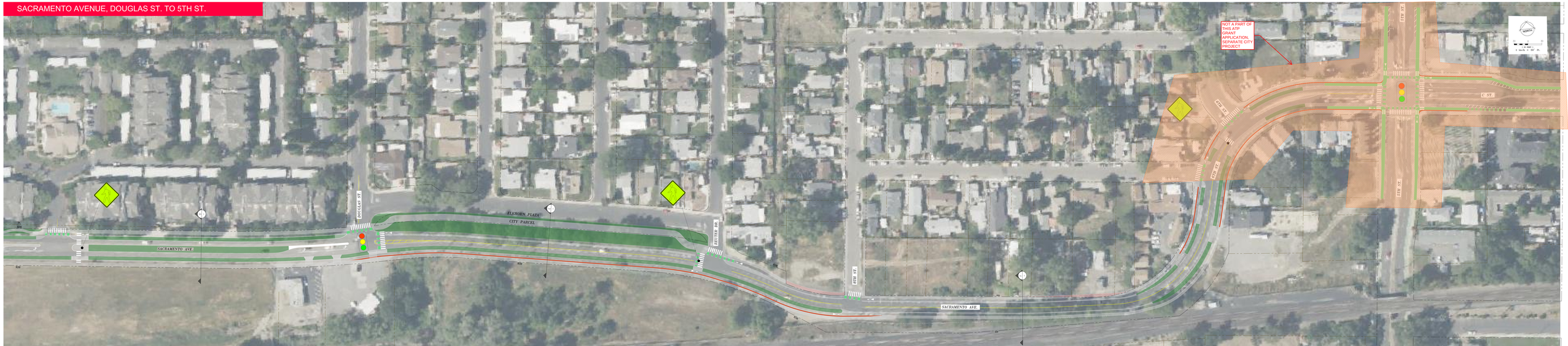
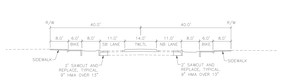
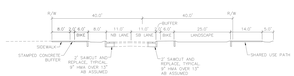
SACRAMENTO AVENUE, HARBOR BLVD. TO BRYTE AVE.

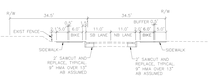
SACRAMENTO AVENUE, TODHUNTER AVE. TO JEFFERSON BLVD.

SACRAMENTO AVENUE, DOUGLAS ST. TO 5TH ST.









Appendix F: Cost Estimates

Draft Preliminary/Planning Level Estimate

Sacramento Avenue Complete Streets Corridor Improvement Plan
City of West Sacramento
GHD Project No. 12587734

5/1/2024

Item No.	Item Description	Unit of Measure	Estimated Quantity	Item Price (in figures)	Total (in figures)
Segment 1 - Harbor Boulevard to Solano Street					
1	Roundabout at Harbor Boulevard	LS	1	$5,500,000.00	$5,500,000.00
2	Right-of-Way Acquisition	SQFT	19300	$75.00	$1,447,500.00
3	Class IV Bikeway HMA (One-Way)	LNMI	1.00	$475,000.00	$475,000.00
4	Class IV Bikeway Concrete Curbs	LMMI	1.00	$60,000.00	$60,000.00
5	Bus Pad	EA	2	$55,000.00	$110,000.00
6	Curb Ramp	EA	20	$20,000.00	$400,000.00
7	Curb and Gutter	LF	3200	$60.00	$192,000.00
8	Sidewalk	SQFT	19100	$20.00	$382,000.00
9	Rectangular Rapid Flashing Beacon (RRFB)	EA	1	$50,000.00	$50,000.00
10	Median Curb	LF	5800	$50.00	$290,000.00
11	Median (Stamped Concrete)	SQFT	1500	$30.00	$45,000.00
12	Roadway Paving - HMA	TON	3800	$200.00	$760,000.00
13	Roadway Paving - Subgrade	CY	2900	$200.00	$580,000.00
14	Landscaping	SQFT	21200	$12.00	$254,400.00
15	Street Lighting	EA	28	$20,000.00	$560,000.00
16	Undergrounding Overhead Utilities	LF	1584	$900.00	$1,425,600.00
	Subtotal (Construction Costs)				**$12,531,500.00**
Segment 2 - Solano Street to Todhunter Avenue					
17	Signal Modifications at Bryte and Todhunter	EA	2	$600,000.00	$1,200,000.00
18	Class IV Bikeway HMA & Subgrade (One-Way)	LNMI	0.60	$475,000.00	$285,000.00
19	Class IV Bikeway HMA & Subgrade (Two-Way)	LNMI	0.20	$600,000.00	$120,000.00
20	Class IV Bikeway Concrete Curbs	LMMI	0.80	$60,000.00	$48,000.00
21	Bus Pad	EA	3	$55,000.00	$165,000.00
22	Curb Ramp	EA	44	$20,000.00	$880,000.00
23	Curb and Gutter	LF	3700	$60.00	$222,000.00
24	Sidewalk	SQFT	22200	$20.00	$444,000.00
25	Rectangular Rapid Flashing Beacon (RRFB)	EA	1	$50,000.00	$50,000.00
26	Median Curb	LF	3300	$50.00	$165,000.00
27	Median (Stamped Concrete)	SQFT	1600	$30.00	$48,000.00
28	Roadway Paving - HMA	TON	7000	$200.00	$1,400,000.00
29	Roadway Paving - Subgrade	CY	5300	$200.00	$1,060,000.00
30	Landscaping	SQFT	31100	$12.00	$373,200.00
31	Street Lighting	EA	32	$20,000.00	$640,000.00
32	Undergrounding Overhead Utilities	LF	1848	$900.00	$1,663,200.00
	Subtotal (Construction Costs)				**$8,763,400.00**
Segment 3 - Todhunter Avenue to Jefferson Boulevard/Kegle Drive					
33	Roundabout at Jefferson Boulevard/Kegle Drive	LS	1	$5,500,000.00	$5,500,000.00
34	Right-of-Way Acquisition	SQFT	8500	$75.00	$637,500.00
35	Class IV Bikeway HMA & Subgrade (One-Way)	LNMI	0.80	$475,000.00	$380,000.00
36	Class IV Bikeway Concrete Curbs	LNMI	0.80	$60,000.00	$48,000.00
37	Bus Pad	EA	1	$55,000.00	$55,000.00
38	Curb Ramp	EA	12	$20,000.00	$240,000.00
39	Curb and Gutter	LF	3700	$60.00	$222,000.00
40	Sidewalk	SQFT	22200	$20.00	$444,000.00
41	Rectangular Rapid Flashing Beacon (RRFB)	EA	1	$50,000.00	$50,000.00
42	Median Curb	LF	3400	$50.00	$170,000.00
43	Median (Stamped Concrete)	SQFT	5000	$30.00	$150,000.00
44	Roadway Paving - HMA	TON	3800	$200.00	$760,000.00
45	Roadway Paving - Subgrade	CY	24300	$200.00	$4,860,000.00
46	Landscaping	SQFT	42300	$12.00	$507,600.00
47	Street Lighting	EA	28	$20,000.00	$560,000.00
48	Undergrounding Overhead Utilities	LF	1848	$900.00	$1,663,200.00
	Subtotal (Construction Costs)				**$16,247,300.00**
Segment 4 - Jefferson Boulevard/Kegle Drive to Douglas Street					
49	Class IV Bikeway HMA & Subgrade (One-Way)	LNMI	0.70	$475,000.00	$332,500.00
50	Class IV Bikeway Concrete Curbs	LNMI	0.70	$60,000.00	$42,000.00

Draft Preliminary/Planning Level Estimate

Sacramento Avenue Complete Streets Corridor Improvement Plan
City of West Sacramento
GHD Project No. 12587734

5/1/2024

Item No.	Item Description	Unit of Measure	Estimated Quantity	Item Price (in figures)	Total (in figures)
51	Bus Pad	EA	1	$55,000.00	$55,000.00
52	Curb Ramp	EA	24	$20,000.00	$480,000.00
53	Curb and Gutter	LF	3700	$60.00	$222,000.00
54	Sidewalk	SQFT	22200	$20.00	$444,000.00
55	Rectangular Rapid Flashing Beacon (RRFB)	EA	2	$50,000.00	$100,000.00
56	Median Curb	LF	3200	$50.00	$160,000.00
57	Median (Stamped Concrete)	SQFT	4000	$30.00	$120,000.00
58	Roadway Paving - HMA	TON	2400	$200.00	$480,000.00
59	Roadway Paving - Subgrade	CY	1800	$200.00	$360,000.00
60	Landscaping	SQFT	23900	$12.00	$286,800.00
61	Street Lighting	EA	28	$20,000.00	$560,000.00
62	Undergrounding Overhead Utilities	LF	1848	$900.00	$1,663,200.00
	Subtotal (Construction Costs)				**$5,305,500.00**
Segment 5 - Douglas Street to California Street					
63	Class IV Bikeway HMA & Subgrade (One-Way)	LNMI	0.70	$475,000.00	$332,500.00
64	Class IV Bikeway Concrete Curbs	LNMI	0.70	$60,000.00	$42,000.00
65	Class I Path HMA & Subgrade	LNMI	0.15	$410,000.00	$61,500.00
66	Class II Bike Lane - HMA & Subgrade	LNMI	0.15	$360,000.00	$54,000.00
67	Curb Ramp	EA	12	$20,000.00	$240,000.00
68	Curb and Gutter	LF	4300	$60.00	$258,000.00
69	Sidewalk	SQFT	25400	$20.00	$508,000.00
70	Rectangular Rapid Flashing Beacon (RRFB)	EA	1	$50,000.00	$50,000.00
71	Roadway Paving - HMA	TON	3400	$200.00	$680,000.00
72	Roadway Paving - Subgrade	CY	2500	$200.00	$500,000.00
73	Landscaping	SQFT	28600	$12.00	$343,200.00
74	Street Lighting	EA	30	$20,000.00	$600,000.00
75	Undergrounding Overhead Utilities	LF	2112	$900.00	$1,900,800.00
	Subtotal (Construction Costs)				**$5,570,000.00**
Segment 6 - California Street to 2nd Street					
76	Protected Intersection at C St/5th St	LS	1	$1,000,000.00	$1,000,000.00
77	Class IV Bikeway HMA & Subgrade (One-Way)	LNMI	0.10	$475,000.00	$47,500.00
78	Class IV Bikeway Concrete Curbs	LNMI	0.10	$60,000.00	$6,000.00
79	Curb Ramp	EA	10	$20,000.00	$200,000.00
80	Curb and Gutter	LF	900	$60.00	$54,000.00
81	Sidewalk	SQFT	5400	$20.00	$108,000.00
82	Rectangular Rapid Flashing Beacon (RRFB)	EA	1	$50,000.00	$50,000.00
83	Median Curb	LF	1300	$50.00	$65,000.00
84	Median (Stamped Concrete)	SQFT	4500	$30.00	$135,000.00
85	Roadway Paving - HMA	TON	4400	$200.00	$880,000.00
86	Roadway Paving - Subgrade	CY	3300	$200.00	$660,000.00
87	Landscaping	SQFT	2100	$12.00	$25,200.00
88	Street Lighting	EA	22	$20,000.00	$440,000.00
89	Undergrounding Overhead Utilities	LF	1320	$900.00	$1,188,000.00
	Subtotal (Construction Costs)				**$4,858,700.00**

Total Construction Costs Without Undergrounding			
	Subtotal Construction		$43,772,400.00
	Construction Cost Estimating Contingency	30%	$13,131,720.00
	Total Construction Costs		$56,904,120.00
	Construction Budget (Rounded)		**$56,905,000.00**
Total Construction Costs with Undergrounding			
	Subtotal Construction		$53,276,400.00
	Construction Cost Estimating Contingency	30%	$15,982,920.00
	Total Construction Costs with Undergrounding		$69,259,320.00
	Construction Budget (Rounded)		**$69,260,000.00**