APPENDIX 1.1:

APPROVED SCOPING AGREEMENT

This Page Intentionally Left Blank

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	Southwest corner of Cactus Avenue and Slover Avenue		
Project Description:	257,855 square foot warehouse building		
City:	County of San Bernardino		
Project Buildout Year:	2020	**Ambient Growth Rate per Year:**	2%
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name:	Cactus Avenue		
Xtn E/W Street Name:	Slover Avenue		
Thomas Guide Pg+Grid:		**County Supervisorial District:**	

	Engineer	**Developer**
Company:	Urban Crossroads, Inc.	Alere Property Group
Name:	Charlene So	Clark Neuhoff
Address:	260 E. Baker Street, Suite 200	100 Bayview Circle, Suite 310
City, State, Zip Code:	Costa Mesa, CA 92626	Newport Beach, CA 92660
Phone #:	(949) 336-5982	
Fax #:	(949) 660-1911	
Email:	cso@urbanxroads.com	

By: Charlene So

Print Name: Charlene So **4/10/2018**

Consultant/Developer's Representative **Date**

Reviewed By:

Print Name:

Traffic Division Representative **Date**

1. Traffic Distribution: Please insert or attach Figure(s) illustrating project trip distribution in percentages and volumes at the study intersections analyzed.

2. Trip Credit: Exact amount of credit subject to approval by Traffic Division.

Transportation Demand Management (TDM)	No	
Existing Active Land Use	No	
Previous Land Use	No	
Internal Trip Reduction	No	
Pass-by Trip Reduction	No	

3. Related Projects: Consultant should check with Planning in the San Bernardino County Department of Land Use Services and planning departments of adjoining Cities. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to Traffic Division for our review and approval before being incorporated in the study.

4. Freeway Analysis: The potential traffic impact on the following Freeway(s) must be considered.

Evaluation of I-10 Freeway east and west of Cedar Avenue (basic freeway segment, ramp merge/diverge junctions, and off-ramp queuing)

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tiguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at:
http://www.sanbag.ca.gov/planning/subr_congestion.html

5. Trip Generation

Trip Generation Rate(s) Source: ITE Trip Generation	**I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other:**	**Edition:**	10th

Land Use Code	**Land Use**	**Rate Based on**	**Qty**	***AVTE vs**	**ADT**	Weekday a.m. peak		Weekday p.m. peak		Weekend peak hour	
						In	Out	In	Out	In	Out
150	Warehouse (PCE)	I	257.855 TSF		587	44	13	17	47	-	-

* - Average Vehicle Trip Ends.
For ITE Land Uses provide number and name of Land Use. e.g. LU 814 - Variety Store

6. Study Intersections: At minimum, the study shall include the following intersections. The list is subject to change after related projects, trip generation and distribution are determined. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

Xtn #	% County	Thomas Guide Page+Grid	N-S/E-W Street Name	City	Signalized	CMP
1	50		Cedar Avenue & I-10 Westbound Ramps	Caltrans, County of San Bernardino	Yes	No
2	50		Cedar Avenue & I-10 Eastbound Ramps	Caltrans, County of San Bernardino	Yes	No
3	100		Cedar Avenue & Orange Street	County of San Bernardino	Yes	No
4	100		Cedar Avenue & Slover Avenue	County of San Bernardino	Yes	Yes
5	100		Larch Avenue & Slover Avenue	County of San Bernardino	Yes	No
6	100		Driveway 1 & Slover Avenue – Future	County of San Bernardino	No	No
7	100		Driveway 2 & Slover Avenue – Future	County of San Bernardino	No	No
8	50		Cactus Avenue & Slover Avenue	County of San Bernardino, Rialto	No	No
9	50		Cactus Avenue & Driveway 3 – Future	County of San Bernardino, Rialto	No	No
10	50		Cactus Avenue & Driveway 4 – Future	County of San Bernardino, Rialto	No	No

Cities to be consulted: City of Rialto, Caltrans

7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays.
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
• Traffic counts used for other traffic studies in the area shall **NOT** be reused again, unless 25% of the counts conducted for that particular traffic study are validated with new counts. The difference in volumes between the old and new counts at each corresponding movement should not be more than 10%.
• New traffic counts shall be checked to ensure the difference in volumes at corresponding approaches, if applicable, between two adjacent intersections is no more than 10% unless the difference can be justified.
• For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
• For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.

This analysis must follow the most current Traffic Impact Study Guidelines for the County as stated in the County's Road Planning and Design Standards.

8. Fees

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $3400 is required at the time that a land use application is filed with the Department of Land Use Services If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

9. Contact Information:

Please submit a signed copy of this scope for approval by the Traffic Division. Draft scopes may be sent electronically. Final scope with signature should be submitted in person or by US Mail to:

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
Email: epetre@dpw.sbcounty.gov (Ed Petre)

April 10, 2018

Mr. Jeremy Johnson
County of San Bernardino Public Works
825 East Third Street
San Bernardino, CA 92415

SUBJECT: SLOVER AND CACTUS WAREHOUSE TRAFFIC IMPACT ANALYSIS – SCOPING AGREEMENT (REVISED)

Dear Mr. Jeremy Johnson:

Urban Crossroads, Inc. is pleased to submit this scoping letter to County of San Bernardino Public Works regarding the Traffic Impact Analysis for the proposed Slover and Cactus Warehouse development ("Project"), which is located on the southwest corner of Cactus Avenue and Slover Avenue in unincorporated County of San Bernardino. It is our understanding that the Project is to consist a single 257,855 square foot warehouse building. This letter describes the draft proposed Project trip generation, trip distribution, and analysis methodology, which have been used to establish the proposed Project study area and analysis locations.

A preliminary site plan for the proposed Project is shown on Exhibit 1. Exhibit 2 depicts the location of the proposed Project in relation to the existing roadway network. It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2020. As indicated on Exhibit 2, access to the Project site will be provided to Slover Avenue via 2 driveways and Cactus Avenue via 2 driveways (all proposed to allow for full access).

TRIP GENERATION

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017) for warehousing (ITE Land Use Code 150) was used. Table 1 presents the trip generation rates and the resulting trip generation summary for the proposed Project in passenger car equivalent (PCE) and the trip generation for actual vehicles is shown on Table 2. As shown in Table 1, the Project is anticipated to generate a net total of 587 PCE trip-ends per day with 57 PCE AM peak hour trips and 64 PCE PM peak hour trips.

ITE Land Use Code 150 is proposed to be utilized to estimate the traffic for the Project. The Warehousing (ITE 150) is based on 29 to 47 sites surveyed, the majority of those sites are less than 500,000 square feet (the average being around 378,000 square feet). In comparison, the High-Cube Fulfillment Center Warehouse use (ITE 155) is based on 1 o 2 sites surveyed, all of which are greater than 500,000 square feet in size (the average being around 1,250,000 square feet). Furthermore, the High-Cube Fulfillment Center Warehouse use (ITE 155) has a high percentage and trip generation for passenger vehicles

(employees) and generally require more parking in comparison to a typical warehouse use, such as ITE 150. ITE 155 is not a suitable land use for the Project as currently designed.

TRIP DISTRIBUTION

The Project trip distribution patterns for passenger cars and trucks are graphically depicted on Exhibit 3 and Exhibit 4, respectively.

ANALYSIS SCENARIOS

Consistent with the County's TIA guidelines, intersection analysis will be provided for the following analysis scenarios:

- Existing (2018) Conditions
- Existing plus Project (E+P) Conditions
- Opening Year Cumulative (2020) Without Project Conditions
- Opening Year Cumulative (2020) With Project Conditions
- Horizon Year (2040) Cumulative Without Project Conditions
- Horizon Year (2040) Cumulative With Project Conditions

All study area intersections will be analyzed using the HCM (6^{th} Edition) methodology.

STUDY AREA

The traffic impact study area was defined in conformance with the requirements of the County's TIA guidelines, which state that the requirement to prepare a TIS will be based upon, but not limited to, one or more of the following criteria:

- If a project generates 100 or more trips without consideration of pass-by trips during any peak hour.
- If a project is located within 300 feet of the intersection of two streets designated as Collector or higher in the County's General Plan or the Department's Master Plan or impacted intersection as determined by the Traffic Division.
- If this project creates safety or operational concerns.

Exhibit 2 identifies the proposed study area intersections based on the aforementioned criteria.

LEVEL OF SERVICE (LOS) CRITERIA

Per the County of San Bernardino TIA Guidelines, the following LOS will be utilized for study area intersections located within the County: Require development to achieve a peak hour Level of Service (LOS) D or better at intersections where LOS E may be permitted. Therefore, any intersection operating at LOS E or F will be considered deficient for the purposes of this analysis.

THRESHOLDS OF SIGNIFICANCE – INTERSECTIONS

To determine whether the addition of project traffic at a signalized study intersection results in a significant project-related impact, the following thresholds of significance will be utilized:

- Any study intersection that is operating at a LOS 'A', 'B', 'C' or 'D' for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS 'E' or 'F' shall mitigate the impact to bring the intersection back to at least LOS 'D'.
- Any study intersection that is operating at a LOS 'E' or 'F' for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to project traffic being added.
- For scenarios which include the addition of Cumulative Project Traffic (i.e. shared impacts), study intersections shall be mitigated to LOS 'D' or better in the Valley and Mountain regions and LOS 'C' or better in the Desert regions of the County.

To determine whether the addition of project traffic at an unsignalized study intersection results in a significant project-related impact, the following thresholds of significance will be utilized:

- The addition of project related traffic causes the intersection to move from a LOS 'D' or better to a LOS 'E' or worse

  OR

- The project contributes additional traffic to an intersection that is already projected to operate at an LOS 'E' or 'F' with background traffic (per Section 10.5.2 b))

  AND

- One or both of the following conditions are met:
  - The project adds ten (10) or more trips to any approach
  - The intersection meets the peak hour traffic signal warrant after the addition of project traffic (per Section 10.5.2 c)).

The proposed significance thresholds will be applied at study area intersections for the purposes of determining project-related impacts.

EXISTING COUNT DATA

Traffic counts for the study area intersections will be collected during the following time frames:

- Morning (7:00a.m. to 9:00 a.m.)
- Afternoon/evening (4:00 p.m. to 6:00 p.m.)

24-hour tube count data will be collected for up to 2 study area roadway segments to determine an applicable peak-to-daily ratio for t study area.

FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the County of San Bernardino's Development Impact Fee (DIF) program will be identified as such. For improvements that do not appear to be in a pre-existing fee program, a fair share financial contribution based on the Project's fair share impact may be imposed in order to mitigate the Project's share of impacts in lieu of construction.

If the intersection is currently operating at deficient LOS under Existing traffic conditions, the Project's fair share cost of improvements would be determined based on the following equation, which is the ratio of Project traffic to total traffic:

Project Fair Share % = Project Traffic / (Project Traffic + Future Development Traffic) X 100%

SPECIAL ISSUES

The following special issue will also be addressed as part of the TIA:

- *Truck Turns:* Truck turning templates will be used to address how Project truck traffic (e.g., large trucks such as a WB-67) would enter and exit the Project site to determine radii at curb returns, radii of streets per Highway Design Manual, and widths/radii required for on-site maneuvering for two-way truck traffic at the Project driveways.
- *Site Access Evaluation:* The turn pocket lengths will be determined through peak hour traffic simulations developed using Synchro and SimTraffic software in an effort to identify the required storage capacity for turn lanes at each Project driveway. Ensure that driveways meet the County's minimum spacing requirement (County Standard 130) and there would be no queuing issues during the peak hours.

OPEN ITEMS – CUMULATIVE DEVELOPMENT PROJECTS

A list of cumulative projects is provided on Table 3 and shown on Exhibit 5 for neighboring agencies. However, we request that County staff provide a list of cumulative development projects within the

County's jurisdiction for inclusion in the traffic study, and associated mitigation measures where appropriate for recently approved, but not yet constructed development. It does not appear the County's Planning website includes a list of currently active projects within the County.

FEE PROGRAM

It is requested that the County provide a list of facilities that are included in the County's fee program.

SIGNAL TIMING

It is requested that the County of San Bernardino provide existing signal timing for intersections within their jurisdiction. If existing signal timing is not available, default values consistent with the most current CA MUTCD guidelines will be utilized.

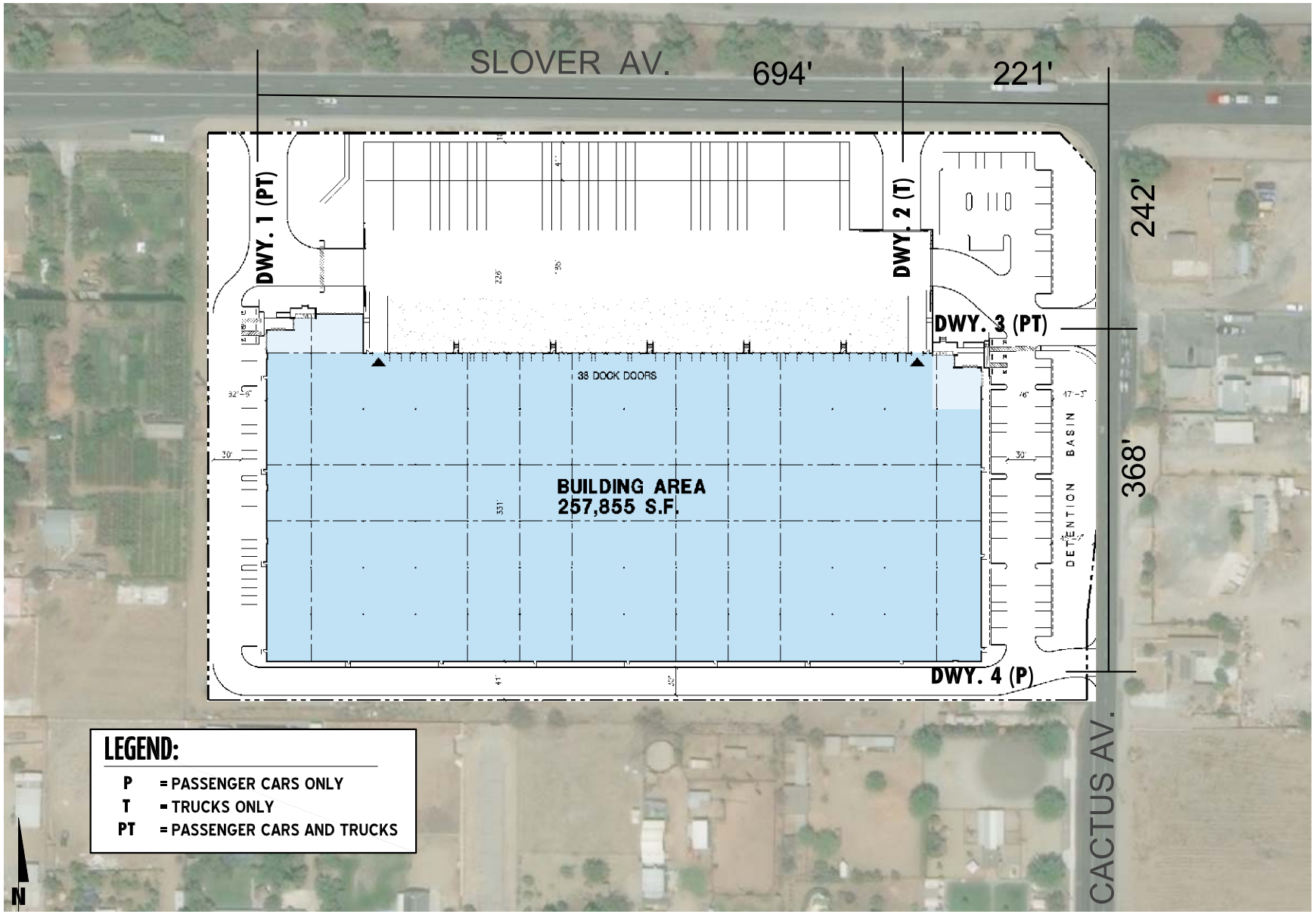
If you have any questions, please contact me directly at (949) 336-5982.

Respectfully submitted,

URBAN CROSSROADS, INC.

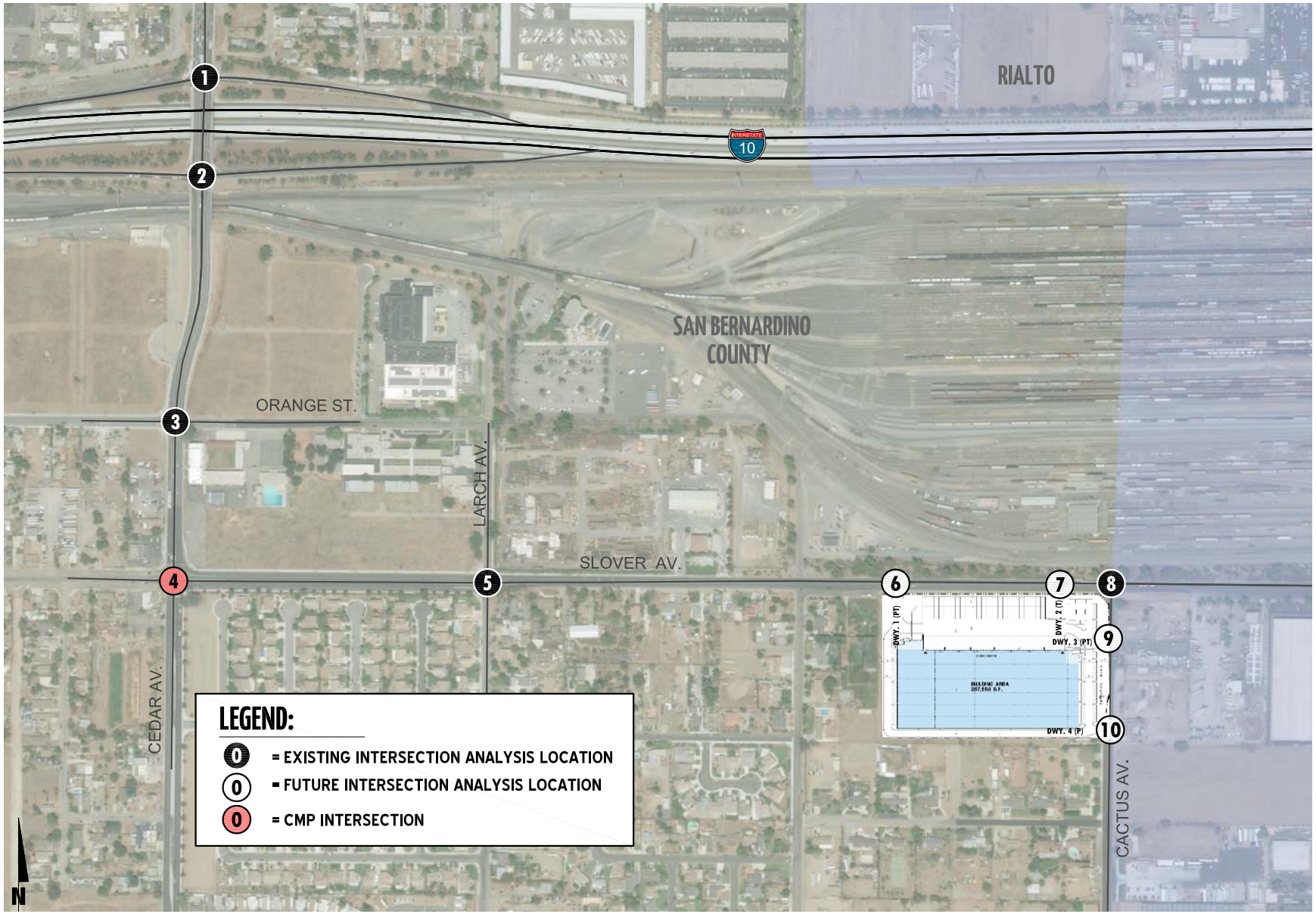
Charlene So, PE
Senior Associate

EXHIBIT 1: PRELIMINARY SITE PLAN



URBAN CROSSROADS

EXHIBIT 2: LOCATION MAP



11181 - locmap.dwg

EXHIBIT 3: PROJECT (PASSENGER CARS) TRIP DISTRIBUTION

EXHIBIT 4: PROJECT (TRUCKS) TRIP DISTRIBUTION

EXHIBIT 5: CUMULATIVE DEVELOPMENT PROJECTS LOCATION MAP

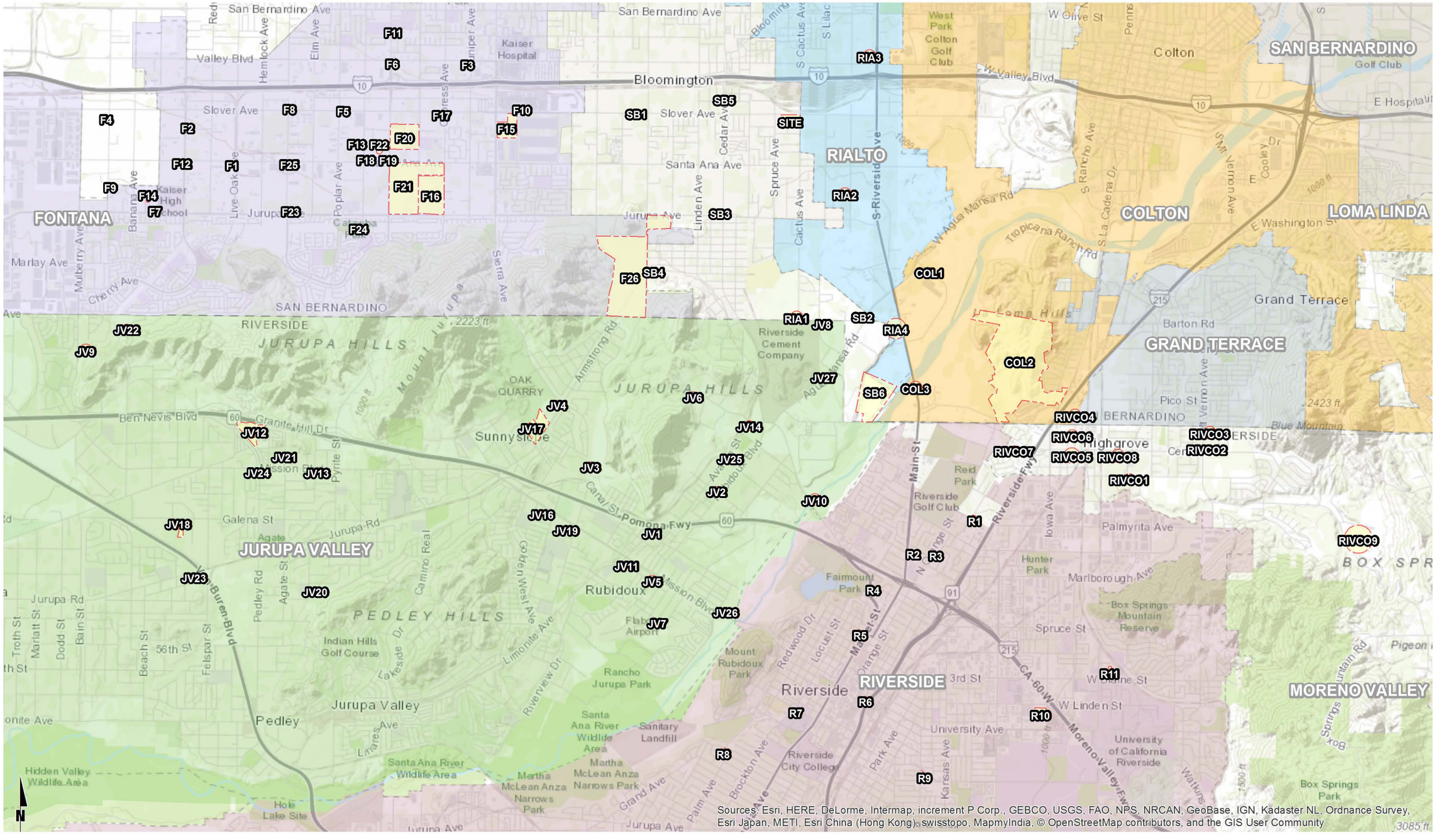


Table 1

Project Trip Generation Summary (PCE)

Land Use	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Rates (PCE)[1]									
Warehouse[3,4]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.00%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%) (PCE = 1.5)[5]			0.006	0.002	0.008	0.003	0.008	0.011	0.087
3-Axle Trucks (4.14%) (PCE = 2.0)[5]			0.010	0.004	0.014	0.004	0.012	0.016	0.144
4-Axle+ Trucks (12.52%) (PCE = 3.0)[5]			0.048	0.015	0.063	0.018	0.051	0.069	0.654

Project	Quantity	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary (PCE)									
Slover & Cactus Warehouse	257.855	TSF							
Passenger Cars:			27	8	35	11	29	39	359
Truck Trips:									
2-axle:			*2*	*0*	*2*	*1*	*2*	*3*	*22*
3-axle:			*3*	*1*	*4*	*1*	*3*	*4*	*37*
4+-axle:			*12*	*4*	*16*	*5*	*13*	*18*	*169*
- Net Truck Trips (PCE)			*17*	*5*	*22*	*6*	*18*	*25*	*228*
TOTAL NET TRIPS (PCE)[6]			***44***	***13***	***57***	***17***	***47***	***64***	***587***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Handbook, Third Edition (September 2017).

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).

Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks

[5] PCE rates are per San Bernardino County Transportation Authority (SBCTA).

[6] TOTAL NET TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

Table 2

Project Trip Generation Summary (Actual Vehicles)

Land Use	Units[2]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates (Actual Vehicles)[1]									
Warehouse[3,4]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.00%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%)			0.004	0.001	0.005	0.002	0.005	0.007	0.058
3-Axle Trucks (4.14%)			0.005	0.002	0.007	0.002	0.006	0.008	0.072
4-Axle+ Trucks (12.52%)			0.016	0.005	0.021	0.006	0.017	0.023	0.218

Project	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary (Actual Vehicles)									
Slover & Cactus Warehouse	257.855	TSF							
Passenger Cars:			27	8	35	11	29	39	359
Truck Trips:									
2-axle:			*1*	*0*	*1*	*1*	*1*	*2*	*15*
3-axle:			*1*	*1*	*2*	*1*	*2*	*2*	*19*
4+-axle:			*4*	*1*	*5*	*2*	*4*	*6*	*56*
- Net Truck Trips (Actual Vehicles)			*6*	*2*	*9*	*3*	*7*	*10*	*90*
TOTAL NET TRIPS (Actual Vehicles)[5]			***34***	***10***	***44***	***13***	***36***	***49***	***449***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Handbook, Third Edition (September 2017).

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).

Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks

[6] TOTAL NET TRIPS (Actual Vehicles) = Passenger Cars + Net Truck Trips (Actual Vehicles).

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
County of San Bernardino				
SB1	Slover Av. between Locust Av. and Laurel Av.	High-Cube Warehouse	344.000	TSF
SB2	West of Agua Mansa Rd. and North of El Rivino Rd.	High-Cube Warehouse	476.000	TSF
		Warehouse	30.000	TSF
SB3	NWC of Cedar Av. and Jurupa Av.	High-Cube Warehouse	677.000	TSF
SB4	Locust Av. and 7th St.	SFDR	198	DU
SB5	NEC and NWC of Cedar Av. and Orange St.	Warehouse	395.000	TSF
SB6	Holly Street Truck Terminal	Truck Terminal	450.000	TSF
City of Fontana				
F1	SAIA Truck Terminal (ASP 16-01)	Truck Terminal	50.000	TSF
F2	Questar Fueling Natural Gas Station (ASP 16-06)	Gas Station	6	VFP
F3	Fontana Skilled Nursing Facility (ASP 16-07)	Nursing Facility	59	Beds
F4	Santana Forming (ASP 16-12)	Welding and Steel Forming	11.200	TSF
F5	Industrial Repair Facility (ASP 16-13)	General Light Industrial	17.930	TSF
F6	Retail Center with Gas Station (ASP 16-18)	Shopping Center	18.800	TSF
		Gas Station	16	VFP
F7	ASP 16-20	Warehouse	40.000	TSF
F8	Beech and Slover Auto, LLC (ASP 16-21)	Car Sales	9.580	TSF
F9	ASP 16-35	Warehouse	6.740	TSF
F10	Starbucks (ASP 16-36)	Coffee/Donut Shop w/ Drive-thru	2.500	TSF
F11	DRP 16-05	SFDR	7	DU
F12	West Fontana Logistics Center (ASP 16-06)	Warehouse	136.650	TSF
F13	Light Industrial Building (DRP 16-13)	General Light Industrial	230.300	TSF
F14	Jurupa Commerce Park (DRP 16-14)	Warehouse	230.000	TSF
F15	Fontana South Walmart	Walmart	200.000	TSF
		Fuel Station	16	VFP
		Shopping Center	5.340	TSF
		Fast Food w/o Drive-Thru	5.340	TSF
F16	Citrus Commerce Center (NWC of Oleander and Jurupa)	High-Cube Warehouse	2171.449	TSF
F17	Arrow Recovery Group (TPM 14-18)	General Light Industrial	73.020	TSF
F18	NWC of Citrus and Santa Ana	High-Cube Warehouse	431.530	TSF
F19	SEC of Catawba and Santa Ana	High-Cube Warehouse	319.100	TSF
F20	Citrus Center	General Office	47.000	TSF
		Shopping Center	44.500	TSF
		Fast Food	8.658	TSF
F21	Southwest Industrial Park	General Light Industrial	6018.092	TSF
		Manufacturing	1113.002	TSF
		High-Cube Warehouse	12414.730	TSF
		Single Family	397.000	DU
		Church	103.670	TSF
		General Office	1584.670	TSF
		Office Park	3095.710	TSF
		Research & Development	1626.490	TSF
		Shopping Center	1638.790	TSF
F22	Seefried	High-Cube Warehouse	424.000	TSF
F23	CBREI	High-Cube Warehouse	444.000	TSF
F24	DCT Industrial	High-Cube Warehouse	971.000	TSF
F25	Daylight Transportation Truck Terminal	Truck Terminal	67.880	TSF

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
F26	West Valley Logistics Center	High-Cube Transload & Short-Term Storage	3183.100	TSF
		Warehouse	290.590	TSF
City of Rialto				
RIA1	Panattoni I-10 (Cactus Av. & El Rivino Rd.)	Warehouse	2,475.745	TSF
RIA2	CapRock III	Warehouse	582.000	TSF
RIA3	Newmark Merrill Companies	Discount Super Store	198.000	TSF
		Tire Store	9.861	TSF
		Retail	25.436	TSF
		Fast Food w/ Drive-Thru	5.484	TSF
RIA4	Kore Infrastructure	Biosolids Facility	288	TPD
City of Colton				
COL1	2036 Miguel Bustamante Pkwy.	Warehouse	124.588	TSF
	2053 Miguel Bustamante Pkwy.	Warehouse	174.996	TSF
COL2	Roquet Ranch	SFDR	754	DU
		Condo/Townhomes	244	DU
		Active Adult - Attached	52	DU
		Shopping Center	6.500	TSF
		Coffee Shop with Drive Thru	1.500	TSF
		Fast Food with Drive Thru	4.000	TSF
		Active Park	11.1	AC
		Passive Park	8.4	AC
COL3	2163 Riverside Av.	High Cube Warehouse	447.330	TSF
County of Riverside				
RIVCO1	TR28957	Single-Family Residential	36	DU
RIVCO2	TR32989	Single-Family Residential	29	DU
RIVCO3	TR32291	SFDR	69	DU
RIVCO4	CUP03718	Light Industrial	19.988	TSF
RIVCO5	PP24798	Retail	2.400	TSF
		Offices	3.405	TSF
		Laundromat	2.961	TSF
RIVCO6	PP25482	General Office	2.632	TSF
RIVCO7	Truck Sales Facility (PP25505)	Office	1.952	TSF
		Storage	6.000	TSF
RIVCO8	TR36668 (Bixby Highgrove)	Single-Family Residential	201	DU
RIVCO9	Spring Mountain Ranch (SP 323) (PM36448; TR29597; TR29598; TR29600; TR29741; TR30908; TR30909)	Single-Family Residential	1,518	DU
		Elementary School	750	STU
		Day Care Center	4.000	TSF
		Commercial Retail	104.000	TSF
City of Riverside				
R1	P06-0782 (Tract Map 34908) (1006 & 1008 Clark St.)	SFDR	15	DU
R2	P05-0269 & P08-0416 (Tract Map 33550) (3719 Strong St.)	SFDR	9	DU
R3	P06-1031 (Tract Map 31825) (1562 Orange St.)	SFDR	7	DU
R4	P13-0087 P13-0262 (2450 Market St.)	Senior Housing	67	DU
R5	P14-0183 (Centerpointe Apartments) (3105 Market St.)	Apartments	146	DU
R6	P09-0835 P10-0002 (3372 University Av.)	General Office	132.136	TSF
R7	P06-1237 (Jacobs Medical Office) (14th and Brockton Av.)	Medical Office	65.281	TSF
R8	P12-0799 & P12-0800 (Tract Map 36516)	SFDR	7	DU
R9	P09-0808 & P08-0809 (2340 14th St.)	Senior Housing	134	Beds
R10	P08-0980 & P09-0095 (3549 Iowa Av.)	Student Housing	114	Beds

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
R11	P09-0717 & P09-0718 (807 Blaine St.)	Apartments	55	DU
City of Jurupa Valley				
JV1	Avalon Court (Tentative Tract 33649)	SFDR	24	DU
JV2	Emerald Ridge South	SFDR	97	DU
		Condo/Townhomes	118	DU
JV3	Highland Park	SFDR	398	DU
JV4	Tentative Tract Map 33373 (KR Land)	SFDR	97	DU
JV5	Palm Communities	Apartment	49	DU
JV6	New Rio Vista Specific Plan 243	SFDR	579	DU
		Condo/Townhomes	290	DU
		Apartment	346	DU
		Active Park	22.2	AC
		School (K-8)	600	STU
JV7	Flabob-River Springs Charter School	7th-12th Grade School	200	STU
JV8	Inland Empire Cold Storage	Cold Storage Facility	40.800	TSF
JV9	Country Village Shopping Center	Shopping Center	140.894	TSF
JV10	Market Street Commercial	High Turnover Sit-down Restaurant	4.750	TSF
		Fast Food w/ Drive-thru	2.860	TSF
		Gas station w/ foot mart and car wash	16	VFP
JV11	Mission Plaza	Shopping Center	118.683	TSF
JV12	Pedley Crossing Shopping Center	Shopping Center	255.978	TSF
JV13	Mission Pyrite Plaza	Shopping Center	21.600	TSF
		High Turnover Sit-down Restaurant	3.000	TSF
		Gas/Service Station w/ Food and Car Wash	20	VFP
JV14	Rubidoux Commercial Development LLC	General Light Industrial	306.894	TSF
JV15	Pick-a-Part	Car Auction	50	AC
JV16	99-Cent Only Store	Free Standing Discount Store	18.012	TSF
JV17	Monarch at the Quarry (Armada Armstrong)	SFDR	86	DU
JV18	Galena Business Park Bldg.	General Light Industrial	47.500	TSF
JV19	Legend Shopping Center	Shopping Center	50.000	TSF
JV20	Stone Avenue (Tentative Tract 36702)	SFDR	17	DU
JV21	Veterans Neighborhood (Tentative Tract 36720)	SFDR	26	DU
JV22	Philadelphia Subdivision (Tentative Tract 37214)	SFDR	44	DU
JV23	Karaki-Western States	Gas/Service Station w/ Food and Car Wash	7.246	TSF
JV24	Boureston Medical Clinic	Medical Clinic	40.000	TSF
JV25	Emerald Ridge North	SFDR	184	DU
JV26	Northtown Housing Development Group	Apartments	68	DU
		Commercial Retail	31.375	TSF
JV27	Agua Mansa Commerce Park Specific Plan	High-Cube Warehouse	4277.000	TSF
		General Light Industrial	150.000	TSF
		Commercial Retail	25.000	TSF

[1] SFDR = Single Family Detached Residential

[2] DU = Dwelling Units; TSF = Thousand Square Feet; STU = Students; AC = Acres; TPD = Tons Per Day; VFP = Vehicle Fueling Positions

Charlene Hwang So

From: Gene Klatt <gklatt@rialtoca.gov>
Sent: Tuesday, March 06, 2018 9:34 AM
To: Charlene Hwang So
Subject: RE: JN:11181 Scoping Agreement Review
Attachments: Revised study with warrants and gap 2-26-18.pdf

Charlene,

Thank you for sending the information for consideration. Rialto would like to suggest that intersections east of the project site be considered as well. It looks like 40% of truck traffic is headed to Riverside at Slover and the I-10 with an equal amount of the passenger vehicles headed that way. I would suspect the interchange at Riverside Ave and the I-10 will see just about as much traffic as the Cedar interchange. Of course, the truck trip generation is different than what we use in Rialto and Rialto has not yet adopted the 10th Edition nor has the Transportation Commission reviewed the 5 different types of warehouse trip rates. We assume this is a "spec" building so the end user may not be known. Even with the lower rates, the impact will be felt at the intersections and the ramps. I believe you have seen the study that indicated Slover/Riverside was already impacted and it was suggested that it be split phase with dual eastbound left turn lanes. They never did show how that would work with the coordinated and interconnected signal timing along Riverside.

I have attached a focused study that was done for a facility just down the street on Cactus. Take a look at the warrants for traffic control at Cactus/Slover. Also, the study has some recent counts that could be checked against whatever you have collected or will collect. There is also a list of cumulative projects which may have some not included in your current search. The consultant did run warrants leaving out the cumulative projects and the warrants were not met. However, it is clear that increased traffic will likely cause the intersection to require some form of traffic control, perhaps with this project being added. It appears the driveways onto Slover will be the primary truck access driveways and there is no turning lanes, nor room for them so that could create problems.

Let me know if you have any other questions.

Gene R. Klatt
Consultant Engineer - Contract Staff
City of Rialto
gklatt@rialtoca.gov

From: Charlene Hwang So [mailto:cso@urbanxroads.com]
Sent: Monday, March 05, 2018 4:17 PM
To: Gene Klatt
Cc: CMS Administrator
Subject: JN:11181 Scoping Agreement Review
Importance: High

Hi Gene,

Attached is a scoping agreement for your review. The Project is located in unincorporated County of San Bernardino, however, we are asking the City of Rialto to provide any comments at this time prior to the traffic study being completed. Please let me know if you have any questions or comments. Thank you!

Regards,

CHARLENE SO, P.E.
Senior Associate

260 E. Baker Street, Suite 200
Costa Mesa, CA 92626
(949) 336-5982 Direct
(949) 861-0177 Cell
(949) 660-1994 Main
urbanxroads.com

Charlene Hwang So

From: MATHEW, JACOB K@DOT <Jacob.MATHEW@dot.ca.gov>
Sent: Monday, April 02, 2018 3:51 PM
To: Charlene Hwang So
Cc: CMS Administrator; Roberts, Mark B@DOT
Subject: Scoping Agreement for Cactus/Slover Warehouse

Hi,
Thank you for providing the California Department of Transportation (Caltrans) the opportunity to review and comment on the Scoping Agreement for Traffic Impact Analysis (TIA) for the Slover and Cactus Warehouse (Project), located at the southwest corner of Cactus Avenue and Slover Avenue in the County of San Bernardino. The project proposes a 257,855 square foot warehouse. The presented scope appears to be appropriate and adequate, however the following comments to be considered:

1) The analysis should consider HCM 6 methodology and include queuing analysis.
2) Mitigations must align with SCAG RTP and FTIP.

If you have any questions regarding this email, please do not hesitate to contact us.

Thanks,
Jacob K. Mathew
Caltrans - District 8
IGR, Community & Regional Planning
909-806-3928

From: Charlene Hwang So [mailto:cso@urbanxroads.com]
Sent: Thursday, March 29, 2018 11:21 AM
To: MATHEW, JACOB K@DOT <Jacob.MATHEW@dot.ca.gov>
Cc: CMS Administrator <cmsadmin@urbanxroads.com>
Subject: JN:11181 Scoping Agreement for Cactus/Slover
Importance: High

Hi Jacob,

We are working on a project in the County of San Bernardino and the County has asked us to share the scoping agreement with Caltrans to obtain any comments. Although not outline in this scope to the County, we are scoped with the Project Applicant to also prepare a freeway segment analysis along the I-10 Freeway both west and east of Cedar Avenue as well as an evaluation of the merge/diverge ramp junctions at the I-10/Cedar interchange. These analyses will be performed for all analysis scenarios outlined in the attached scoping agreement. Please let me know if you have any questions or comments.

Regards,

CHARLENE SO, P.E.
Senior Associate

URBAN CROSSROADS

260 E. Baker Street, Suite 200
Costa Mesa, CA 92626
(949) 336-5982 Direct
(949) 861-0177 Cell
(949) 660-1994 Main
urbanxroads.com

This Page Intentionally Left Blank

APPENDIX 1.2:

SITE ADJACENT QUEUING ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Intersection: 6: Driveway 1 & Slove Av./Slover Av.

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	12	30
Average Queue (ft)	1	5
95th Queue (ft)	8	22
Link Distance (ft)		279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Driveway 2 & Slover Av.

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	67	19	29
Average Queue (ft)	4	2	3
95th Queue (ft)	36	13	17
Link Distance (ft)	377		80
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Cactus Av. & Slover Av.

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (ft)	90	114	105	74	73	87
Average Queue (ft)	43	63	56	39	35	41
95th Queue (ft)	76	109	96	72	68	75
Link Distance (ft)	115	115		1151	1151	92
Upstream Blk Time (%)	0	1				1
Queuing Penalty (veh)	0	2				1
Storage Bay Dist (ft)			100			
Storage Blk Time (%)			2	0		
Queuing Penalty (veh)			2	0		

Intersection: 9: Cactus Av. & Driveway 3

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	17
Average Queue (ft)	3	1
95th Queue (ft)	18	12
Link Distance (ft)	121	176
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Cactus Av. & Driveway 4

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	16	6
Average Queue (ft)	1	0
95th Queue (ft)	8	4
Link Distance (ft)	452	1791
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 4

Intersection: 6: Driveway 1 & Slove Av./Slover Av.

Movement	WB	WB	WB	NB
Directions Served	L	T	T	LR
Maximum Queue (ft)	12	212	208	103
Average Queue (ft)	1	61	62	29
95th Queue (ft)	7	279	279	108
Link Distance (ft)		377	377	279
Upstream Blk Time (%)		10	10	0
Queuing Penalty (veh)		29	30	0
Storage Bay Dist (ft)	100			
Storage Blk Time (%)		14		
Queuing Penalty (veh)		0		

Intersection: 7: Driveway 2 & Slover Av.

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (ft)	35	71	6	51	54	43
Average Queue (ft)	3	9	0	15	15	8
95th Queue (ft)	25	47	5	80	82	32
Link Distance (ft)	377	377		115	115	80
Upstream Blk Time (%)				9	9	1
Queuing Penalty (veh)				26	27	0
Storage Bay Dist (ft)			100			
Storage Blk Time (%)				10		
Queuing Penalty (veh)				0		

Intersection: 8: Cactus Av. & Slover Av.

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (ft)	128	127	118	412	428	104
Average Queue (ft)	67	82	53	93	92	81
95th Queue (ft)	122	134	105	384	373	114
Link Distance (ft)	115	115		1151	1151	92
Upstream Blk Time (%)	1	3		0	0	15
Queuing Penalty (veh)	4	10		0	0	50
Storage Bay Dist (ft)			100			
Storage Blk Time (%)			2	10		
Queuing Penalty (veh)			4	10		

Intersection: 9: Cactus Av. & Driveway 3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	46	132	9
Average Queue (ft)	14	37	0
95th Queue (ft)	44	128	6
Link Distance (ft)	121	176	92
Upstream Blk Time (%)		8	
Queuing Penalty (veh)		26	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Cactus Av. & Driveway 4

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	35	471
Average Queue (ft)	4	63
95th Queue (ft)	22	428
Link Distance (ft)	452	1791
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 216

APPENDIX 3.1:

EXISTING TRAFFIC COUNTS – MARCH AND APRIL 2018

This Page Intentionally Left Blank

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Mar 27, 18

LOCATION: Bloomington
NORTH & SOUTH: Cedar
EAST & WEST: I-10 WB Ramps

PROJECT #: SC1657
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

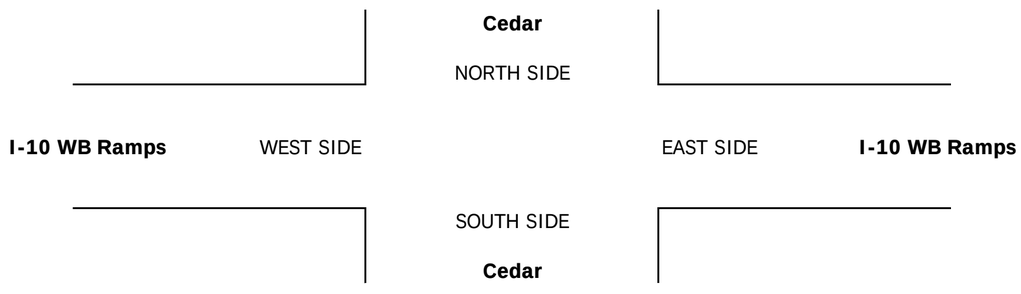
NB PM queue

AM
PM
MD
OTHER
OTHER

▲ N
◄ W E ►
S ▼

☑ Add U-Turns to Left Turns

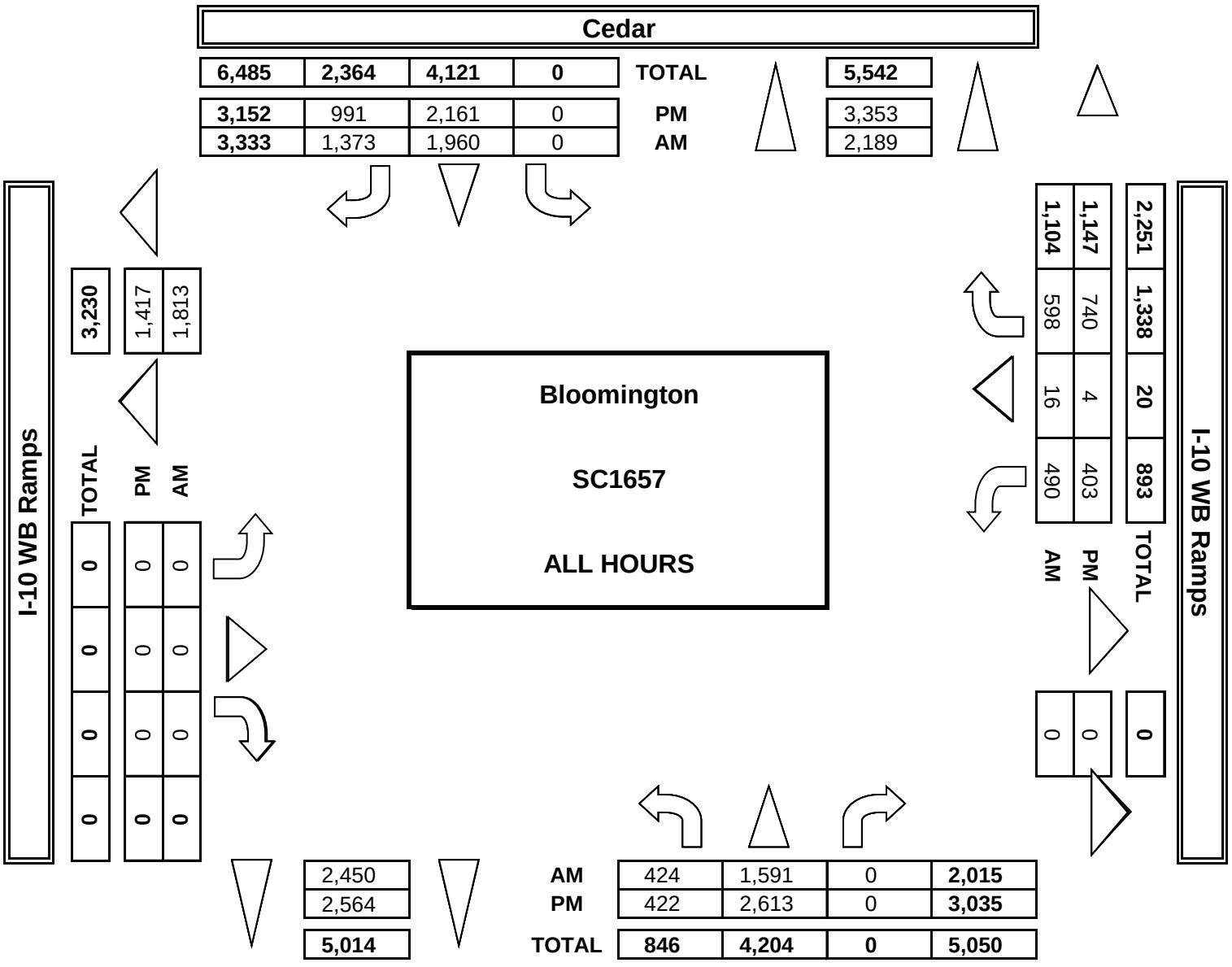
		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 WB Ramps			WESTBOUND I-10 WB Ramps				U-TURNS					RTOR			
	LANES:	NL 1	NT 2	NR X	SL X	ST 3	SR 1	EL X	ET X	ER X	WL 0.3	WT 0.3	WR 1.3	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL	NRR 0	SRR 0	ERR 0	WRR 0
AM	7:00 AM	52	210	0	0	188	193	0	0	0	70	2	88	803	0	0	0	0	0	0	61	0	35
	7:15 AM	49	220	0	0	284	205	0	0	0	68	12	73	911	0	0	0	0	0	0	64	0	41
	7:30 AM	59	195	0	0	333	204	0	0	0	41	1	58	891	0	0	0	0	0	0	61	0	31
	7:45 AM	41	221	0	0	254	159	0	0	0	62	0	86	823	0	0	0	0	0	0	53	0	27
	8:00 AM	55	197	0	0	244	171	0	0	0	84	0	73	824	0	0	0	0	0	0	65	0	34
	8:15 AM	60	193	0	0	240	152	0	0	0	74	0	59	778	0	0	0	0	0	0	46	0	29
	8:30 AM	57	188	0	0	211	138	0	0	0	36	1	67	698	0	0	0	0	0	0	39	0	27
	8:45 AM	51	167	0	0	206	151	0	0	0	55	0	94	724	0	0	0	0	0	0	46	0	44
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	424	1,591	0	0	1,960	1,373	0	0	0	490	16	598	6,452	0	0	0	0	0	0	435	0	268
	APPROACH %	21%	79%	0%	0%	59%	41%	0%	0%	0%	44%	1%	54%										
	APP/DEPART	2,015	/	2,189	3,333	/	2,450	0	/	0	1,104	/	1,813	0									
	BEGIN PEAK HR		7:15 AM																				
	VOLUMES	204	833	0	0	1,115	739	0	0	0	255	13	290	3,449						0	243	0	133
	APPROACH %	20%	80%	0%	0%	60%	40%	0%	0%	0%	46%	2%	52%										
	PEAK HR FACTOR		0.964			0.863			0.000			0.889		0.946									
	APP/DEPART	1,037	/	1,123	1,854	/	1,370	0	/	0	558	/	956	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	58	346	0	0	264	144	0	0	0	41	0	106	959	0	0	0	0	0	0	44	0	3
	4:15 PM	53	325	0	0	269	117	0	0	0	52	0	94	910	0	0	0	0	0	0	45	0	9
	4:30 PM	48	314	0	0	285	143	0	0	0	38	2	96	926	0	0	0	0	0	0	52	0	5
	4:45 PM	53	350	0	0	267	113	0	0	0	57	0	86	926	0	0	0	0	0	0	50	0	1
	5:00 PM	59	326	0	0	244	135	0	0	0	61	1	90	916	0	0	0	0	0	0	41	0	0
	5:15 PM	68	328	0	0	292	125	0	0	0	44	1	104	962	0	0	0	0	0	0	45	0	0
	5:30 PM	35	302	0	0	284	105	0	0	0	62	0	80	868	0	0	0	0	0	0	52	0	2
	5:45 PM	48	322	0	0	256	109	0	0	0	48	0	84	867	0	0	0	0	0	0	51	0	1
	VOLUMES	422	2,613	0	0	2,161	991	0	0	0	403	4	740	7,334	0	0	0	0	0	0	380	0	21
	APPROACH %	14%	86%	0%	0%	69%	31%	0%	0%	0%	35%	0%	65%										
	APP/DEPART	3,035	/	3,353	3,152	/	2,564	0	/	0	1,147	/	1,417	0									
	BEGIN PEAK HR		4:30 PM																				
	VOLUMES	228	1,318	0	0	1,088	516	0	0	0	200	4	376	3,730						0	188	0	6
	APPROACH %	15%	85%	0%	0%	68%	32%	0%	0%	0%	34%	1%	65%										
	PEAK HR FACTOR		0.959			0.937			0.000			0.954		0.969									
	APP/DEPART	1,546	/	1,694	1,604	/	1,288	0	/	0	580	/	748	0									

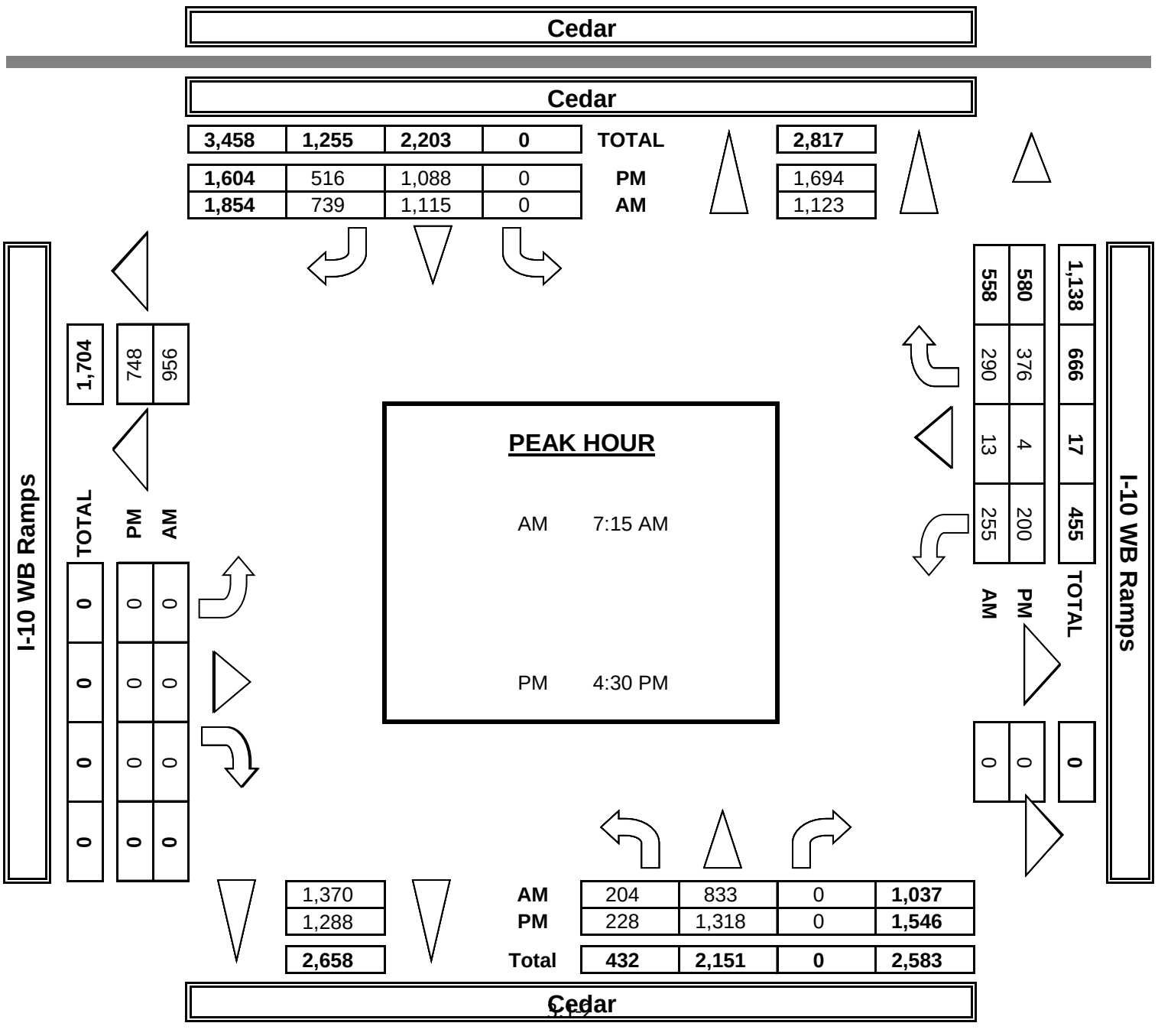


		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	ES	WS	SS	NS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	2	0	0	1	3	1	0	0	1	2	1	0	0	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	4:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	5:00 PM	2	2	0	0	4	2	1	0	0	3	0	1	0	0	1
	5:15 PM	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	2	4	0	0	6	1	4	0	0	5	1	0	0	0	1
	TOTAL	9	7	0	1	17	7	6	0	1	14	2	1	0	0	3

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	1
	EAST & WEST:	I-10 WB Ramps	CONTROL:	SIGNAL

CLASS 1: PASSENGER VEHICLES

NOTES:

AM
PM
MD
OTHER
OTHER

▲
◄ W N E ►
S
▼

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		Cedar			Cedar			I-10 WB Ramps			I-10 WB Ramps												
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:	1	2	X	X	3	1	X	X	X	0.3	0.3	1.3							0	0	0	0
AM	7:00 AM	44	176	0	0	168	177	0	0	0	65	1	80	711	0	0	0	0	0	0	55	0	31
	7:15 AM	38	193	0	0	248	189	0	0	0	63	12	67	810	0	0	0	0	0	0	61	0	38
	7:30 AM	40	164	0	0	304	184	0	0	0	37	1	52	782	0	0	0	0	0	0	55	0	27
	7:45 AM	34	182	0	0	233	145	0	0	0	53	0	75	722	0	0	0	0	0	0	47	0	25
	8:00 AM	43	171	0	0	211	158	0	0	0	66	0	66	715	0	0	0	0	0	0	63	0	32
	8:15 AM	42	167	0	0	217	138	0	0	0	60	0	54	678	0	0	0	0	0	0	45	0	26
	8:30 AM	43	158	0	0	196	121	0	0	0	30	0	59	607	0	0	0	0	0	0	37	0	25
	8:45 AM	38	132	0	0	191	131	0	0	0	44	0	82	618	0	0	0	0	0	0	42	0	40
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	322	1,343	0	0	1,768	1,243	0	0	0	418	14	535	5,643	0	0	0	0	0	0	405	0	244
	APPROACH %	19%	81%	0%	0%	59%	41%	0%	0%	0%	43%	1%	55%										
	APP/DEPART	1,665	/	1,878	3,011	/	2,186	0	/	0	967	/	1,579	0									
	BEGIN PEAK HR		7:15 AM																				
	VOLUMES	155	710	0	0	996	676	0	0	0	219	13	260	3,029						0	226	0	122
	APPROACH %	18%	82%	0%	0%	60%	40%	0%	0%	0%	45%	3%	53%										
	PEAK HR FACTOR		0.936			0.857			0.000			0.866		0.935									
	APP/DEPART	865	/	970	1,672	/	1,215	0	/	0	492	/	844	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	50	320	0	0	240	130	0	0	0	35	0	96	871	0	0	0	0	0	0	40	0	3
	4:15 PM	47	298	0	0	257	113	0	0	0	44	0	89	848	0	0	0	0	0	0	43	0	9
	4:30 PM	40	295	0	0	269	133	0	0	0	35	2	87	861	0	0	0	0	0	0	50	0	5
	4:45 PM	48	316	0	0	250	105	0	0	0	49	0	78	846	0	0	0	0	0	0	50	0	1
	5:00 PM	53	308	0	0	224	125	0	0	0	53	1	84	848	0	0	0	0	0	0	38	0	0
	5:15 PM	59	311	0	0	274	118	0	0	0	41	1	99	903	0	0	0	0	0	0	43	0	0
	5:30 PM	31	278	0	0	267	98	0	0	0	54	0	75	803	0	0	0	0	0	0	49	0	1
	5:45 PM	40	297	0	0	243	105	0	0	0	46	0	76	807	0	0	0	0	0	0	49	0	1
	VOLUMES	368	2,423	0	0	2,024	927	0	0	0	357	4	684	6,787	0	0	0	0	0	0	362	0	20
	APPROACH %	13%	87%	0%	0%	69%	31%	0%	0%	0%	34%	0%	65%										
	APP/DEPART	2,791	/	3,107	2,951	/	2,381	0	/	0	1,045	/	1,299	0									
	BEGIN PEAK HR		4:30 PM																				
	VOLUMES	200	1,230	0	0	1,017	481	0	0	0	178	4	348	3,458						0	181	0	6
	APPROACH %	14%	86%	0%	0%	68%	32%	0%	0%	0%	34%	1%	66%										
	PEAK HR FACTOR		0.966			0.932			0.000			0.940		0.957									
	APP/DEPART	1,430	/	1,578	1,498	/	1,195	0	/	0	530	/	685	0									

Cedar

NORTH SIDE

I-10 WB Ramps WEST SIDE

EAST SIDE **I-10 WB Ramps**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	1
	EAST & WEST:	I-10 WB Ramps	CONTROL:	SIGNAL

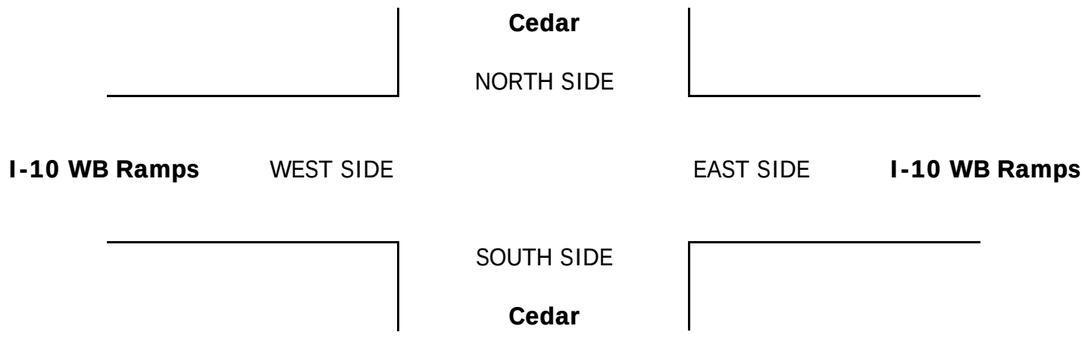
CLASS 2:	NOTES:
2-AXLE WORK VEHICLES/ TRUCKS	

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 WB Ramps			WESTBOUND I-10 WB Ramps			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	X	X	3	1	X	X	X	0.3	0.3	1.3	
7:00 AM	5	23	0	0	15	8	0	0	0	1	1	5	58
7:15 AM	5	19	0	0	30	12	0	0	0	1	0	3	70
7:30 AM	6	27	0	0	16	11	0	0	0	3	0	4	67
7:45 AM	5	23	0	0	15	8	0	0	0	1	0	4	56
8:00 AM	4	14	0	0	25	4	0	0	0	1	0	4	52
8:15 AM	10	10	0	0	15	8	0	0	0	5	0	5	53
8:30 AM	7	15	0	0	9	9	0	0	0	2	1	1	44
8:45 AM	5	25	0	0	12	9	0	0	0	2	0	8	61
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	47	156	0	0	137	69	0	0	0	16	2	34	461
APPROACH %	23%	77%	0%	0%	67%	33%	0%	0%	0%	31%	4%	65%	
APP/DEPART	203	/	190	206	/	153	0	/	0	52	/	118	0
BEGIN PEAK HR		7:00 AM											
VOLUMES	21	92	0	0	76	39	0	0	0	6	1	16	251
APPROACH %	19%	81%	0%	0%	66%	34%	0%	0%	0%	26%	4%	70%	
PEAK HR FACTOR		0.856			0.685			0.000			0.821		0.896
APP/DEPART	113	/	108	115	/	82	0	/	0	23	/	61	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	4	19	0	0	13	8	0	0	0	2	0	4	50
4:15 PM	2	23	0	0	5	3	0	0	0	4	0	3	40
4:30 PM	3	14	0	0	13	3	0	0	0	1	0	6	40
4:45 PM	1	22	0	0	6	2	0	0	0	4	0	5	40
5:00 PM	2	14	0	0	14	7	0	0	0	5	0	5	47
5:15 PM	4	15	0	0	12	5	0	0	0	1	0	1	38
5:30 PM	0	17	0	0	7	3	0	0	0	4	0	1	32
5:45 PM	5	13	0	0	7	1	0	0	0	1	0	3	30
VOLUMES	21	137	0	0	77	32	0	0	0	22	0	28	317
APPROACH %	13%	87%	0%	0%	71%	29%	0%	0%	0%	44%	0%	56%	
APP/DEPART	158	/	165	109	/	99	0	/	0	50	/	53	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	10	78	0	0	37	16	0	0	0	11	0	18	170
APPROACH %	11%	89%	0%	0%	70%	30%	0%	0%	0%	38%	0%	62%	
PEAK HR FACTOR		0.880			0.631			0.000			0.806		0.850
APP/DEPART	88	/	96	53	/	48	0	/	0	29	/	26	0

U-TURNS					RTOR			
NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
					0	0	0	0
0	0	0	0	0	0	3	0	3
0	0	0	0	0	0	2	0	3
0	0	0	0	0	0	3	0	4
0	0	0	0	0	0	3	0	1
0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	1	0	3
0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	2	0	4
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	15	0	20
					0	11	0	11
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	3	0	0
0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	12	0	0
					0	4	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION:	Bloomington	PROJECT #:	SC1657
	NORTH & SOUTH:	Cedar	LOCATION #:	1
	EAST & WEST:	I-10 WB Ramps	CONTROL:	SIGNAL

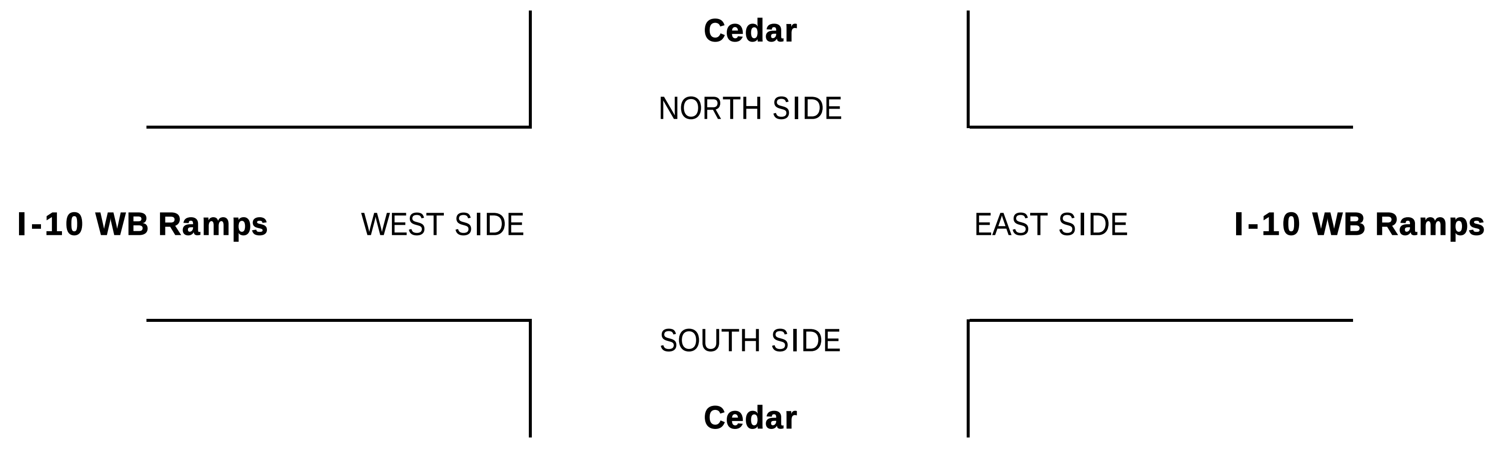
CLASS 3:
3-AXLE
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 WB Ramps			WESTBOUND I-10 WB Ramps				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:	1	2	X	X	3	1	X	X	X	0.3	0.3	1.3							0	0	0	0
AM	7:00 AM	2	1	0	0	1	1	0	0	0	1	0	0	6	0	0	0	0	0	0	1	0	0
	7:15 AM	0	4	0	0	2	0	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0	0
	7:30 AM	6	0	0	0	5	4	0	0	0	0	0	1	16	0	0	0	0	0	0	3	0	0
	7:45 AM	0	4	0	0	1	1	0	0	0	0	0	3	9	0	0	0	0	0	0	0	0	1
	8:00 AM	1	5	0	0	4	2	0	0	0	1	0	1	14	0	0	0	0	0	0	0	0	0
	8:15 AM	3	3	0	0	0	0	0	0	0	2	0	0	8	0	0	0	0	0	0	0	0	0
	8:30 AM	5	1	0	0	2	4	0	0	0	1	0	1	14	0	0	0	0	0	0	1	0	0
	8:45 AM	3	6	0	0	0	1	0	0	0	6	0	1	17	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	20	24	0	0	15	13	0	0	0	12	0	7	91	0	0	0	0	0	0	5	0	1
	APPROACH %	45%	55%	0%	0%	54%	46%	0%	0%	0%	63%	0%	37%										
	APP/DEPART	44	/	31	28	/	27	0	/	0	19	/	33	0									
	BEGIN PEAK HR		8:00 AM																				
	VOLUMES	12	15	0	0	6	7	0	0	0	10	0	3	53						0	1	0	0
	APPROACH %	44%	56%	0%	0%	46%	54%	0%	0%	0%	77%	0%	23%										
	PEAK HR FACTOR		0.750			0.542			0.000			0.464		0.779									
	APP/DEPART	27	/	18	13	/	16	0	/	0	13	/	19	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	1	0	0	0	2	3	0	0	0	0	0	3	9	0	0	0	0	0	0	1	0	0
	4:15 PM	2	0	0	0	3	1	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0	0
	4:30 PM	2	1	0	0	0	2	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0
	4:45 PM	2	3	0	0	1	3	0	0	0	0	0	1	10	0	0	0	0	0	0	0	0	0
	5:00 PM	2	0	0	0	2	1	0	0	0	2	0	0	7	0	0	0	0	0	0	0	0	0
	5:15 PM	1	0	0	0	1	1	0	0	0	1	0	0	4	0	0	0	0	0	0	0	0	0
	5:30 PM	0	2	0	0	6	1	0	0	0	0	0	2	11	0	0	0	0	0	0	1	0	1
	5:45 PM	0	2	0	0	1	1	0	0	0	1	0	1	6	0	0	0	0	0	0	0	0	0
	VOLUMES	10	8	0	0	16	13	0	0	0	5	0	8	60	0	0	0	0	0	0	2	0	1
	APPROACH %	56%	44%	0%	0%	55%	45%	0%	0%	0%	38%	0%	62%										
	APP/DEPART	18	/	16	29	/	21	0	/	0	13	/	23	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	5	5	0	0	10	6	0	0	0	3	0	3	32						0	1	0	1
	APPROACH %	50%	50%	0%	0%	63%	38%	0%	0%	0%	50%	0%	50%										
	PEAK HR FACTOR		0.500			0.571			0.000			0.500		0.727									
	APP/DEPART	10	/	8	16	/	13	0	/	0	6	/	11	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	1
	EAST & WEST:	I-10 WB Ramps	CONTROL:	SIGNAL

CLASS 4: 4 OR MORE AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 WB Ramps			WESTBOUND I-10 WB Ramps			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	X	X	3	1	X	X	X	0.3	0.3	1.3	

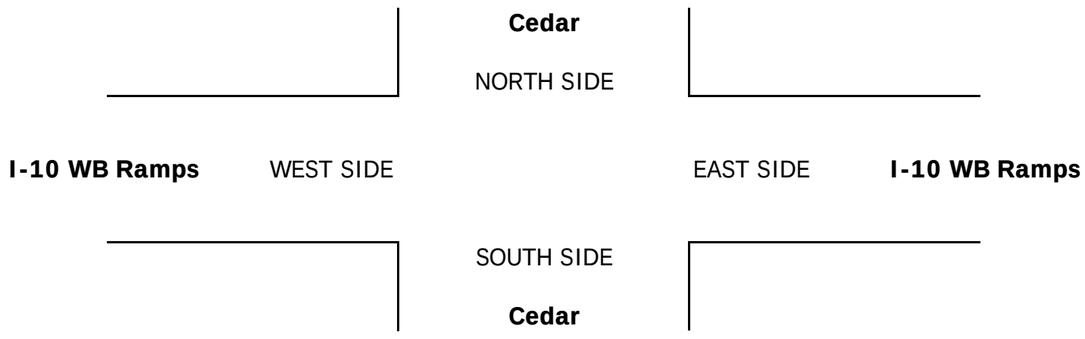
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	1	10	0	0	4	7	0	0	0	2	0	2	26	0	0	0	0	0	0	2	0	1
	7:15 AM	5	3	0	0	4	4	0	0	0	2	0	3	21	0	0	0	0	0	0	1	0	0
	7:30 AM	7	4	0	0	7	5	0	0	0	1	0	1	25	0	0	0	0	0	0	0	0	0
	7:45 AM	2	9	0	0	4	4	0	0	0	8	0	4	31	0	0	0	0	0	0	2	0	0
	8:00 AM	7	5	0	0	4	7	0	0	0	16	0	2	41	0	0	0	0	0	0	2	0	0
	8:15 AM	5	10	0	0	7	6	0	0	0	7	0	0	35	0	0	0	0	0	0	0	0	0
	8:30 AM	1	13	0	0	2	4	0	0	0	3	0	6	29	0	0	0	0	0	0	0	0	2
	8:45 AM	4	4	0	0	1	10	0	0	0	3	0	3	25	0	0	0	0	0	0	2	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	32	58	0	0	33	47	0	0	0	42	0	21	233	0	0	0	0	0	0	9	0	3
	APPROACH %	36%	64%	0%	0%	41%	59%	0%	0%	0%	67%	0%	33%										
	APP/DEPART	90	/	79	80	/	75	0	/	0	63	/	79	0									
	BEGIN PEAK HR		7:45 AM																				
	VOLUMES	15	37	0	0	17	21	0	0	0	34	0	12	136						0	4	0	2
	APPROACH %	29%	71%	0%	0%	45%	55%	0%	0%	0%	74%	0%	26%										
	PEAK HR FACTOR		0.867			0.731			0.000			0.639		0.829									
	APP/DEPART	52	/	49	38	/	51	0	/	0	46	/	36	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	3	6	0	0	9	2	0	0	0	4	0	3	27	0	0	0	0	0	0	0	0	0
	4:15 PM	2	3	0	0	4	0	0	0	0	2	0	2	13	0	0	0	0	0	0	0	0	0
	4:30 PM	3	4	0	0	3	4	0	0	0	2	0	2	18	0	0	0	0	0	0	1	0	0
	4:45 PM	2	9	0	0	8	2	0	0	0	4	0	2	27	0	0	0	0	0	0	0	0	0
	5:00 PM	2	4	0	0	4	2	0	0	0	1	0	1	14	0	0	0	0	0	0	0	0	0
	5:15 PM	3	1	0	0	4	1	0	0	0	1	0	4	14	0	0	0	0	0	0	0	0	0
	5:30 PM	4	5	0	0	3	3	0	0	0	4	0	2	21	0	0	0	0	0	0	0	0	0
	5:45 PM	3	10	0	0	4	2	0	0	0	0	0	4	23	0	0	0	0	0	0	1	0	0
	VOLUMES	22	42	0	0	39	16	0	0	0	18	0	20	157	0	0	0	0	0	0	2	0	0
	APPROACH %	34%	66%	0%	0%	71%	29%	0%	0%	0%	47%	0%	53%										
	APP/DEPART	64	/	62	55	/	57	0	/	0	38	/	38	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	10	22	0	0	24	8	0	0	0	12	0	9	85						0	1	0	0
	APPROACH %	31%	69%	0%	0%	75%	25%	0%	0%	0%	57%	0%	43%										
	PEAK HR FACTOR		0.727			0.727			0.000			0.750		0.787									
	APP/DEPART	32	/	31	32	/	36	0	/	0	21	/	18	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION:	Bloomington	PROJECT #:	SC1657
	NORTH & SOUTH:	Cedar	LOCATION #:	1
	EAST & WEST:	I-10 WB Ramps	CONTROL:	SIGNAL

CLASS 5:	**NOTES:**	AM PM MD OTHER OTHER	▲ N ◄ W E ► S ▼
RV			

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		Cedar			Cedar			I-10 WB Ramps			I-10 WB Ramps			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	X	X	3	1	X	X	X	0.3	0.3	1.3	
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	1	0	0	0	0	0	0	1
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	1	/	0	0	/	0	0	/	1	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	0	0	0	0	1	0	0	0	0	0	0	1
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.000			0.250			0.000			0.000		0.250
	APP/DEPART	0	/	0	1	/	0	0	/	0	0	/	1	0

	U-TURNS					RTOR			
	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	0	0	0	0		0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	0	0
VOLUMES						0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	1	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	1	0	0
VOLUMES						0	1	0	0

Cedar

NORTH SIDE

I-10 WB Ramps WEST SIDE EAST SIDE **I-10 WB Ramps**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	1
	EAST & WEST:	I-10 WB Ramps	CONTROL:	SIGNAL

CLASS 6:	NOTES:
BUSES	

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 WB Ramps			WESTBOUND I-10 WB Ramps			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	X	X	3	1	X	X	X	0.3	0.3	1.3	

U-TURNS

NB	SB	EB	WB	TTL

RTOR

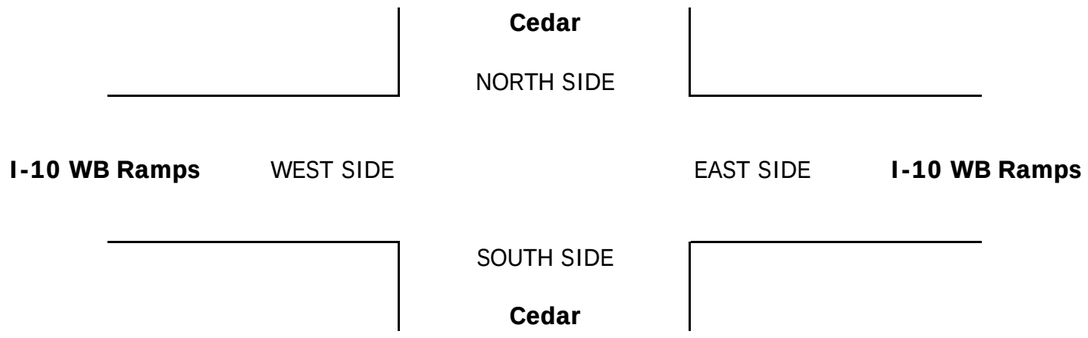
NRR	SRR	ERR	WRR
0	0	0	0

AM

7:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	2	0 0 0 0 0 / 0 0 0 0
7:15 AM	1	1	0	0	0	0	0	0	0	1	0	0	3	0 0 0 0 0 / 0 0 0 0
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0 0 0 0 0 / 0 0 0 0
7:45 AM	0	3	0	0	1	1	0	0	0	0	0	0	5	0 0 0 0 0 / 0 1 0 0
8:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	0 0 0 0 0 / 0 0 0 0
8:15 AM	0	3	0	0	1	0	0	0	0	0	0	0	4	0 0 0 0 0 / 0 0 0 0
8:30 AM	1	1	0	0	2	0	0	0	0	0	0	0	4	0 0 0 0 0 / 0 0 0 0
8:45 AM	1	0	0	0	2	0	0	0	0	0	0	0	3	0 0 0 0 0 / 0 0 0 0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
VOLUMES	3	10	0	0	7	1	0	0	0	2	0	1	24	0 0 0 0 0 / 0 1 0 0
APPROACH %	23%	77%	0%	0%	88%	13%	0%	0%	0%	67%	0%	33%		
APP/DEPART	13	/	11	8	/	9	0	/	0	3	/	4	0	
BEGIN PEAK HR		7:45 AM												
VOLUMES	1	9	0	0	4	1	0	0	0	0	0	0	15	0 1 0 0
APPROACH %	10%	90%	0%	0%	80%	20%	0%	0%	0%	0%	0%	0%		
PEAK HR FACTOR		0.833			0.625			0.000			0.000		0.750	
APP/DEPART	10	/	9	5	/	4	0	/	0	0	/	2	0	

PM

03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0 0 0 0 0 / 0 0 0 0
4:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	2	0 0 0 0 0 / 0 0 0 0
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0 0 0 0 0 / 0 1 0 0
4:45 PM	0	0	0	0	2	1	0	0	0	0	0	0	3	0 0 0 0 0 / 0 0 0 0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0 0 0 / 0 0 0 0
5:15 PM	1	1	0	0	1	0	0	0	0	0	0	0	3	0 0 0 0 0 / 0 0 0 0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0 0 0 0 0 / 0 0 0 0
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0 0 0 0 0 / 0 0 0 0
VOLUMES	1	3	0	0	5	2	0	0	0	1	0	0	12	0 0 0 0 0 / 0 1 0 0
APPROACH %	25%	75%	0%	0%	71%	29%	0%	0%	0%	100%	0%	0%		
APP/DEPART	4	/	3	7	/	6	0	/	0	1	/	3	0	
BEGIN PEAK HR		4:00 PM												
VOLUMES	1	1	0	0	4	1	0	0	0	0	0	0	7	0 0 0 0 0 / 0 0 0 0
APPROACH %	50%	50%	0%	0%	80%	20%	0%	0%	0%	0%	0%	0%		
PEAK HR FACTOR		0.250			0.417			0.000			0.000		0.583	
APP/DEPART	2	/	1	5	/	4	0	/	0	0	/	2	0	



INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Mar 27, 18

LOCATION: Bloomington
NORTH & SOUTH: Cedar
EAST & WEST: I-10 EB Ramps

PROJECT #: SC1657
LOCATION #: 2
CONTROL: SIGNAL

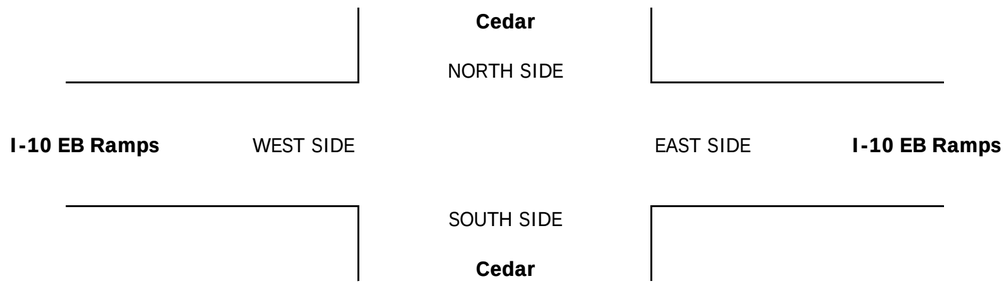
NOTES:

AM / PM / MD / OTHER / OTHER

▲ N
◄ W E ►
S ▼

☑ Add U-Turns to Left Turns

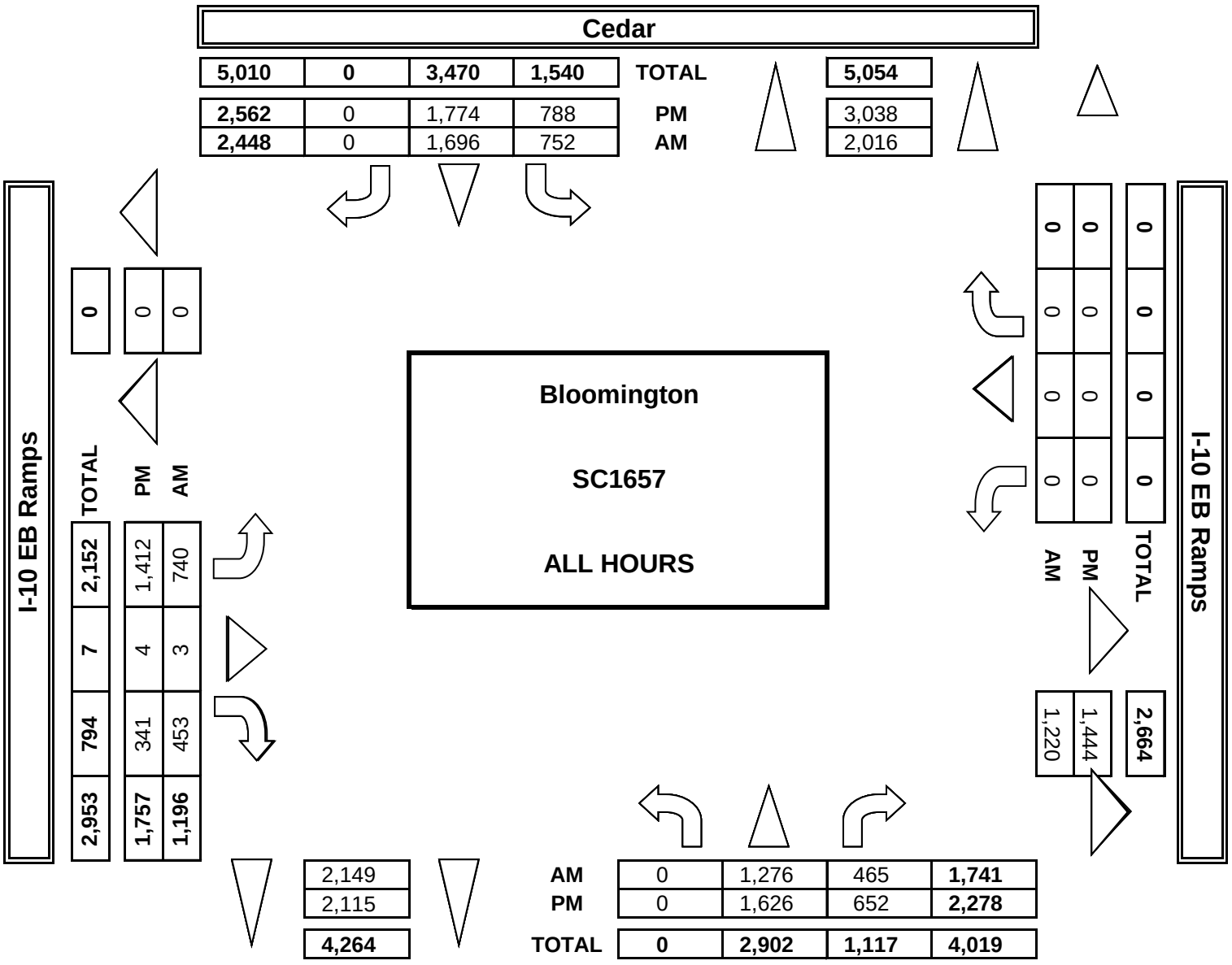
		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 EB Ramps			WESTBOUND I-10 EB Ramps				U-TURNS					RTOR			
	LANES:	NL X	NT 3	NR 1	SL 1	ST 2	SR X	EL 1,3	ET 0.3	ER 0.3	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL	NRR 0	SRR 0	ERR 0	WRR 0
AM	7:00 AM	0	158	50	67	190	0	104	0	54	0	0	0	623	0	0	0	0	0	15	0	10	0
	7:15 AM	0	162	55	99	253	0	108	2	64	0	0	0	743	0	0	0	0	0	17	0	12	0
	7:30 AM	0	161	68	133	241	0	93	0	62	0	0	0	758	0	0	0	0	0	16	0	20	0
	7:45 AM	0	169	71	76	240	0	93	0	60	0	0	0	709	0	0	0	0	0	24	0	14	0
	8:00 AM	0	163	55	90	238	0	89	1	56	0	0	0	692	0	0	0	0	0	16	0	10	0
	8:15 AM	0	165	51	102	212	0	88	0	63	0	0	0	681	0	0	0	0	0	9	0	18	0
	8:30 AM	0	161	58	90	156	0	84	0	51	0	0	0	600	0	0	0	0	0	5	0	19	0
	8:45 AM	0	137	57	95	166	0	81	0	43	0	0	0	579	0	0	0	0	0	7	0	10	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	1,276	465	752	1,696	0	740	3	453	0	0	0	5,385	0	0	0	0	0	109	0	113	0
	APPROACH %	0%	73%	27%	31%	69%	0%	62%	0%	38%	0%	0%	0%										
	APP/DEPART	1,741	/	2,016	2,448	/	2,149	1,196	/	1,220	0	/	0	0									
	BEGIN PEAK HR		7:15 AM																				
	VOLUMES	0	655	249	398	972	0	383	3	242	0	0	0	2,902						73	0	56	0
	APPROACH %	0%	72%	28%	29%	71%	0%	61%	0%	39%	0%	0%	0%										
	PEAK HR FACTOR		0.942			0.916			0.902			0.000		0.957									
	APP/DEPART	904	/	1,038	1,370	/	1,214	628	/	650	0	/	0	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	232	73	106	199	0	173	0	52	0	0	0	835	0	0	0	0	0	25	0	8	0
	4:15 PM	0	202	95	99	222	0	176	0	62	0	0	0	856	0	0	0	0	0	25	0	9	0
	4:30 PM	0	196	65	115	208	0	166	0	48	0	0	0	798	0	0	0	0	0	5	0	4	0
	4:45 PM	0	220	118	97	227	0	183	1	35	0	0	0	881	0	0	0	0	0	29	0	1	0
	5:00 PM	0	208	99	79	224	0	177	1	37	0	0	0	825	0	0	0	0	0	39	0	2	0
	5:15 PM	0	206	73	98	238	0	190	0	34	0	0	0	839	0	0	0	0	0	26	0	1	0
	5:30 PM	0	171	60	104	242	0	166	2	39	0	0	0	784	0	0	0	0	0	18	0	9	0
	5:45 PM	0	191	69	90	214	0	181	0	34	0	0	0	779	0	0	0	0	0	30	0	4	0
	VOLUMES	0	1,626	652	788	1,774	0	1,412	4	341	0	0	0	6,597	0	0	0	0	0	197	0	38	0
	APPROACH %	0%	71%	29%	31%	69%	0%	80%	0%	19%	0%	0%	0%										
	APP/DEPART	2,278	/	3,038	2,562	/	2,115	1,757	/	1,444	0	/	0	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	850	351	417	856	0	698	1	197	0	0	0	3,370						84	0	22	0
	APPROACH %	0%	71%	29%	33%	67%	0%	78%	0%	22%	0%	0%	0%										
	PEAK HR FACTOR		0.888			0.982			0.941			0.000		0.956									
	APP/DEPART	1,201	/	1,548	1,273	/	1,053	896	/	769	0	/	0	0									

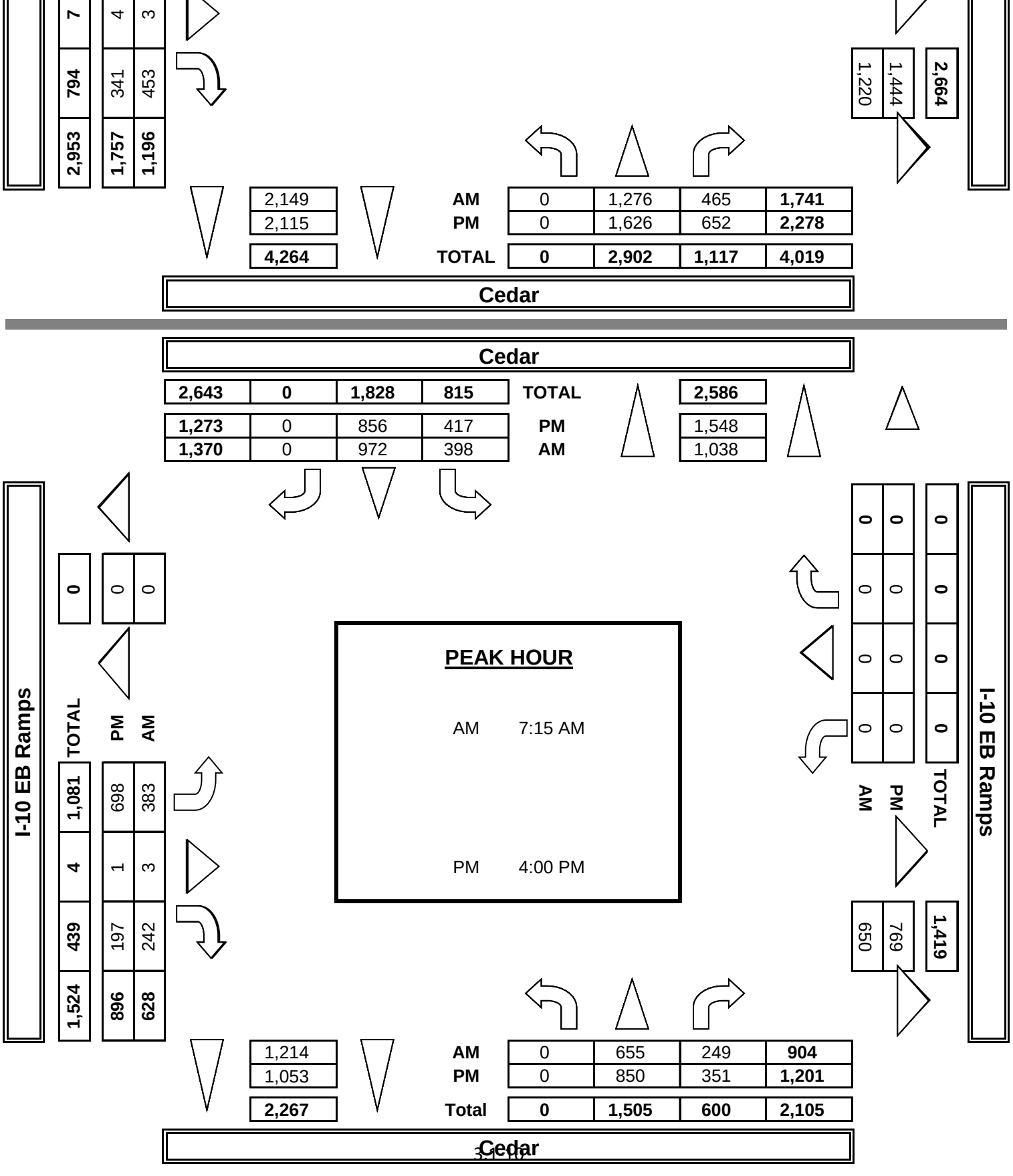


		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	ES	WS	SS	NS	TOTAL
AM	7:00 AM	0	5	0	0	5	0	5	0	0	5	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	5	0	0	5	0	5	0	0	5	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	2	3	0	2	7	2	1	0	2	5	0	2	0	0	2
	5:15 PM	4	0	0	0	4	3	0	0	0	3	1	0	0	0	1
	5:30 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	5:45 PM	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0
	TOTAL	8	7	0	4	19	6	5	0	4	15	2	2	0	0	4

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION:	Bloomington	PROJECT #:	SC1657
	NORTH & SOUTH:	Cedar	LOCATION #:	2
	EAST & WEST:	I-10 EB Ramps	CONTROL:	SIGNAL

CLASS 1: PASSENGER VEHICLES	**NOTES:**	AM PM MD OTHER OTHER	▲ N ◄ W E ► S ▼

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
			Cedar			Cedar			I-10 EB Ramps			I-10 EB Ramps		
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	X	3	1	1	2	X	1,3	0.3	0.3	X	X	X	
AM	7:00 AM	0	135	42	59	171	0	85	0	44	0	0	0	536
	7:15 AM	0	138	44	86	226	0	94	2	55	0	0	0	645
	7:30 AM	0	131	56	122	219	0	74	0	51	0	0	0	653
	7:45 AM	0	143	63	67	219	0	73	0	48	0	0	0	613
	8:00 AM	0	142	43	78	199	0	72	0	41	0	0	0	575
	8:15 AM	0	134	44	87	190	0	76	0	46	0	0	0	577
	8:30 AM	0	130	41	84	141	0	70	0	34	0	0	0	500
	8:45 AM	0	108	45	86	149	0	62	0	32	0	0	0	482
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	1,061	378	669	1,514	0	606	2	351	0	0	0	4,581
	APPROACH %	0%	74%	26%	31%	69%	0%	63%	0%	37%	0%	0%	0%	
	APP/DEPART	1,439	/	1,667	2,183	/	1,865	959	/	1,049	0	/	0	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	0	554	206	353	863	0	313	2	195	0	0	0	2,486
	APPROACH %	0%	73%	27%	29%	71%	0%	61%	0%	38%	0%	0%	0%	
	PEAK HR FACTOR		0.922			0.891			0.844			0.000		0.952
	APP/DEPART	760	/	867	1,216	/	1,058	510	/	561	0	/	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	213	66	96	179	0	158	0	41	0	0	0	753
	4:15 PM	0	185	87	89	212	0	160	0	41	0	0	0	774
	4:30 PM	0	182	56	112	192	0	153	0	32	0	0	0	727
	4:45 PM	0	199	107	89	210	0	165	1	29	0	0	0	800
	5:00 PM	0	194	92	74	200	0	169	0	27	0	0	0	756
	5:15 PM	0	188	62	88	227	0	182	0	27	0	0	0	774
	5:30 PM	0	153	55	100	221	0	156	2	25	0	0	0	712
	5:45 PM	0	174	64	87	202	0	165	0	28	0	0	0	720
	VOLUMES	0	1,488	589	735	1,643	0	1,308	3	250	0	0	0	6,016
	APPROACH %	0%	72%	28%	31%	69%	0%	84%	0%	16%	0%	0%	0%	
	APP/DEPART	2,077	/	2,796	2,378	/	1,893	1,561	/	1,327	0	/	0	0
	BEGIN PEAK HR		4:15 PM											
	VOLUMES	0	763	317	363	829	0	669	1	115	0	0	0	3,057
	APPROACH %	0%	71%	29%	30%	70%	0%	85%	0%	15%	0%	0%	0%	
	PEAK HR FACTOR		0.882			0.946			0.939			0.000		0.955
	APP/DEPART	1,080	/	1,432	1,192	/	944	785	/	681	0	/	0	0

	U-TURNS					RTOR			
	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
LANES:						0	0	0	0
7:00 AM	0	0	0	0	0	12	0	9	0
7:15 AM	0	0	0	0	0	13	0	11	0
7:30 AM	0	0	0	0	0	12	0	16	0
7:45 AM	0	0	0	0	0	23	0	12	0
8:00 AM	0	0	0	0	0	12	0	7	0
8:15 AM	0	0	0	0	0	9	0	14	0
8:30 AM	0	0	0	0	0	5	0	14	0
8:45 AM	0	0	0	0	0	6	0	7	0
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	92	0	90	0
VOLUMES (BEGIN PEAK HR 7:15 AM)						60	0	46	0
03:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	23	0	7	0
4:15 PM	0	0	0	0	0	21	0	7	0
4:30 PM	0	0	0	0	0	4	0	3	0
4:45 PM	0	0	0	0	0	26	0	1	0
5:00 PM	0	0	0	0	0	35	0	2	0
5:15 PM	0	0	0	0	0	21	0	0	0
5:30 PM	0	0	0	0	0	17	0	8	0
5:45 PM	0	0	0	0	0	27	0	3	0
VOLUMES	0	0	0	0	0	174	0	31	0
VOLUMES (BEGIN PEAK HR 4:15 PM)						86	0	6	0

Cedar

NORTH SIDE

I-10 EB Ramps WEST SIDE

EAST SIDE **I-10 EB Ramps**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	2
	EAST & WEST:	I-10 EB Ramps	CONTROL:	SIGNAL

CLASS 2:	NOTES:
2-AXLE WORK VEHICLES/ TRUCKS	

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 EB Ramps			WESTBOUND I-10 EB Ramps			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	3	1	1	2	X	1,3	0.3	0.3	X	X	X	

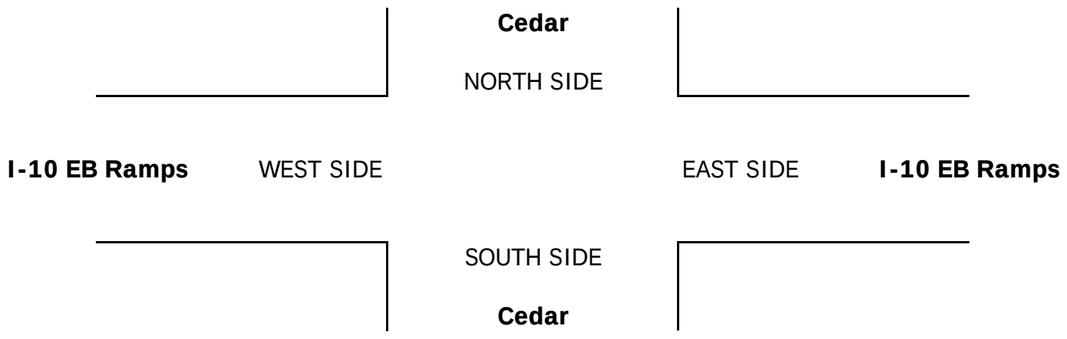
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	17	4	5	12	0	11	0	4	0	0	0	53	0	0	0	0	0	3	0	1	0
	7:15 AM	0	13	8	12	19	0	11	0	7	0	0	0	70	0	0	0	0	0	3	0	1	0
	7:30 AM	0	20	3	4	15	0	13	0	5	0	0	0	60	0	0	0	0	0	1	0	1	0
	7:45 AM	0	18	4	6	10	0	10	0	7	0	0	0	55	0	0	0	0	0	1	0	1	0
	8:00 AM	0	10	6	7	19	0	8	1	6	0	0	0	57	0	0	0	0	0	0	0	2	0
	8:15 AM	0	14	1	10	10	0	5	0	6	0	0	0	46	0	0	0	0	0	0	0	2	0
	8:30 AM	0	18	11	5	6	0	4	0	7	0	0	0	51	0	0	0	0	0	0	0	1	0
	8:45 AM	0	20	7	6	8	0	10	0	4	0	0	0	55	0	0	0	0	0	1	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	130	44	55	99	0	72	1	46	0	0	0	447	0	0	0	0	0	9	0	9	0
	APPROACH %	0%	75%	25%	36%	64%	0%	61%	1%	39%	0%	0%	0%										
	APP/DEPART	174	/	202	154	/	145	119	/	100	0	/	0	0									
	BEGIN PEAK HR		7:15 AM																				
	VOLUMES	0	61	21	29	63	0	42	1	25	0	0	0	242						5	0	5	0
	APPROACH %	0%	74%	26%	32%	68%	0%	62%	1%	37%	0%	0%	0%										
	PEAK HR FACTOR		0.891			0.742			0.944			0.000		0.864									
	APP/DEPART	82	/	103	92	/	88	68	/	51	0	/	0	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	11	5	7	8	0	12	0	4	0	0	0	47	0	0	0	0	0	2	0	0	0
	4:15 PM	0	11	5	4	5	0	14	0	8	0	0	0	47	0	0	0	0	0	3	0	0	0
	4:30 PM	0	9	8	2	12	0	8	0	9	0	0	0	48	0	0	0	0	0	1	0	0	0
	4:45 PM	0	15	8	4	6	0	8	0	3	0	0	0	44	0	0	0	0	0	2	0	0	0
	5:00 PM	0	10	6	4	16	0	6	0	4	0	0	0	46	0	0	0	0	0	3	0	0	0
	5:15 PM	0	12	4	7	6	0	7	0	5	0	0	0	41	0	0	0	0	0	1	0	1	0
	5:30 PM	0	10	1	4	7	0	7	0	3	0	0	0	32	0	0	0	0	0	1	0	0	0
	5:45 PM	0	8	2	2	6	0	10	0	4	0	0	0	32	0	0	0	0	0	2	0	0	0
	VOLUMES	0	86	39	34	66	0	72	0	40	0	0	0	337	0	0	0	0	0	15	0	1	0
	APPROACH %	0%	69%	31%	34%	66%	0%	64%	0%	36%	0%	0%	0%										
	APP/DEPART	125	/	158	100	/	106	112	/	73	0	/	0	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	46	26	17	31	0	42	0	24	0	0	0	186						8	0	0	0
	APPROACH %	0%	64%	36%	35%	65%	0%	64%	0%	36%	0%	0%	0%										
	PEAK HR FACTOR		0.783			0.800			0.750			0.000		0.969									
	APP/DEPART	72	/	88	48	/	55	66	/	43	0	/	0	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	2
	EAST & WEST:	I-10 EB Ramps	CONTROL:	SIGNAL

CLASS 3: 3-AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 EB Ramps			WESTBOUND I-10 EB Ramps			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	3	1	1	2	X	1,3	0.3	0.3	X	X	X	

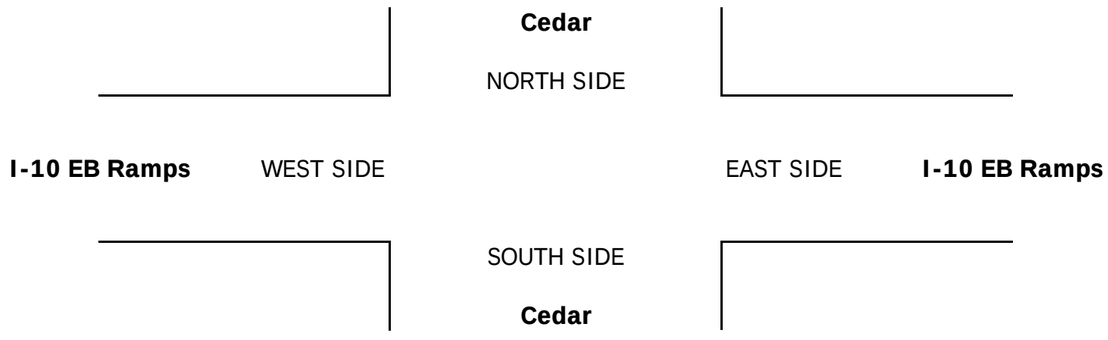
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	1	1	1	1	0	2	0	1	0	0	0	7	0	0	0	0	0	0	0	0	0
	7:15 AM	0	3	1	0	3	0	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0
	7:30 AM	0	4	3	4	1	0	1	0	1	0	0	0	14	0	0	0	0	0	1	0	0	0
	7:45 AM	0	2	0	0	1	0	2	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0
	8:00 AM	0	3	1	0	5	0	3	0	3	0	0	0	15	0	0	0	0	0	1	0	1	0
	8:15 AM	0	5	2	2	0	0	1	0	4	0	0	0	14	0	0	0	0	0	0	0	0	0
	8:30 AM	0	4	3	0	3	0	2	0	3	0	0	0	15	0	0	0	0	0	0	0	2	0
	8:45 AM	0	4	1	1	5	0	5	0	2	0	0	0	18	0	0	0	0	0	0	0	1	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	26	12	8	19	0	17	0	15	0	0	0	97	0	0	0	0	0	2	0	4	0
	APPROACH %	0%	68%	32%	30%	70%	0%	53%	0%	47%	0%	0%	0%										
	APP/DEPART	38	/	43	27	/	34	32	/	20	0	/	0	0									
	BEGIN PEAK HR		8:00 AM																				
	VOLUMES	0	16	7	3	13	0	11	0	12	0	0	0	62						1	0	4	0
	APPROACH %	0%	70%	30%	19%	81%	0%	48%	0%	52%	0%	0%	0%										
	PEAK HR FACTOR		0.821			0.667			0.821			0.000		0.861									
	APP/DEPART	23	/	27	16	/	25	23	/	10	0	/	0	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	1	0	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
	4:15 PM	0	2	0	3	1	0	0	0	5	0	0	0	11	0	0	0	0	0	0	0	1	0
	4:30 PM	0	1	1	0	0	0	2	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0
	4:45 PM	0	3	1	0	1	0	2	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	4	0	0	1	2	0	0	0	7	0	0	0	0	0	0	0	0	0
	5:15 PM	0	1	2	0	2	0	0	0	1	0	0	0	6	0	0	0	0	0	2	0	0	0
	5:30 PM	0	2	2	0	6	0	0	0	3	0	0	0	13	0	0	0	0	0	0	0	1	0
	5:45 PM	0	1	0	0	2	0	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
	VOLUMES	0	11	6	3	18	0	5	1	13	0	0	0	57	0	0	0	0	0	2	0	2	0
	APPROACH %	0%	65%	35%	14%	86%	0%	26%	5%	68%	0%	0%	0%										
	APP/DEPART	17	/	16	21	/	31	19	/	10	0	/	0	0									
	BEGIN PEAK HR		4:45 PM																				
	VOLUMES	0	6	5	0	13	0	2	1	6	0	0	0	33						2	0	1	0
	APPROACH %	0%	55%	45%	0%	100%	0%	22%	11%	67%	0%	0%	0%										
	PEAK HR FACTOR		0.688			0.542			0.750			0.000		0.635									
	APP/DEPART	11	/	8	13	/	19	9	/	6	0	/	0	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	2
	EAST & WEST:	I-10 EB Ramps	CONTROL:	SIGNAL

CLASS 4: 4 OR MORE AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 EB Ramps			WESTBOUND I-10 EB Ramps			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	3	1	1	2	X	1,3	0.3	0.3	X	X	X	

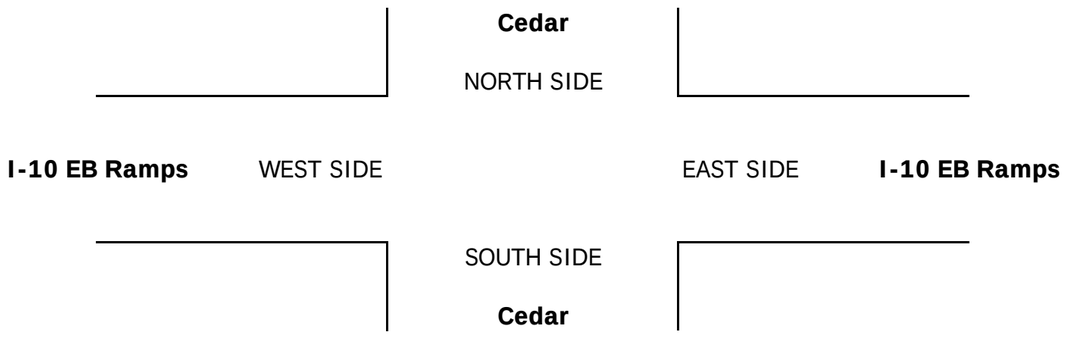
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	5	3	2	4	0	6	0	5	0	0	0	25	0	0	0	0	0	0	0	0	0
	7:15 AM	0	6	2	1	5	0	2	0	2	0	0	0	18	0	0	0	0	0	1	0	0	0
	7:30 AM	0	6	6	2	6	0	5	0	4	0	0	0	29	0	0	0	0	0	2	0	2	0
	7:45 AM	0	5	4	3	9	0	6	0	4	0	0	0	31	0	0	0	0	0	0	0	1	0
	8:00 AM	0	7	5	5	15	0	5	0	6	0	0	0	43	0	0	0	0	0	3	0	0	0
	8:15 AM	0	9	4	3	11	0	6	0	7	0	0	0	40	0	0	0	0	0	0	0	2	0
	8:30 AM	0	7	3	1	4	0	8	0	7	0	0	0	30	0	0	0	0	0	0	0	2	0
	8:45 AM	0	4	4	1	3	0	4	0	5	0	0	0	21	0	0	0	0	0	0	0	2	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	49	31	18	57	0	42	0	40	0	0	0	237	0	0	0	0	0	6	0	9	0
	APPROACH %	0%	61%	39%	24%	76%	0%	51%	0%	49%	0%	0%	0%										
	APP/DEPART	80	/	91	75	/	97	82	/	49	0	/	0	0									
	BEGIN PEAK HR		7:45 AM																				
	VOLUMES	0	28	16	12	39	0	25	0	24	0	0	0	144						3	0	5	0
	APPROACH %	0%	64%	36%	24%	76%	0%	51%	0%	49%	0%	0%	0%										
	PEAK HR FACTOR		0.846			0.638			0.817			0.000		0.837									
	APP/DEPART	44	/	53	51	/	63	49	/	28	0	/	0	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	6	2	3	10	0	3	0	7	0	0	0	31	0	0	0	0	0	0	0	1	0
	4:15 PM	0	3	3	3	3	0	2	0	8	0	0	0	22	0	0	0	0	0	1	0	1	0
	4:30 PM	0	4	0	1	4	0	3	0	5	0	0	0	17	0	0	0	0	0	0	0	1	0
	4:45 PM	0	3	2	3	9	0	8	0	3	0	0	0	28	0	0	0	0	0	1	0	0	0
	5:00 PM	0	4	1	1	4	0	2	0	4	0	0	0	16	0	0	0	0	0	1	0	0	0
	5:15 PM	0	3	5	2	3	0	1	0	1	0	0	0	15	0	0	0	0	0	2	0	0	0
	5:30 PM	0	6	2	0	7	0	3	0	8	0	0	0	26	0	0	0	0	0	0	0	0	0
	5:45 PM	0	8	2	1	3	0	5	0	2	0	0	0	21	0	0	0	0	0	0	0	1	0
	VOLUMES	0	37	17	14	43	0	27	0	38	0	0	0	176	0	0	0	0	0	5	0	4	0
	APPROACH %	0%	69%	31%	25%	75%	0%	42%	0%	58%	0%	0%	0%										
	APP/DEPART	54	/	64	57	/	81	65	/	31	0	/	0	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	16	7	10	26	0	16	0	23	0	0	0	98						2	0	3	0
	APPROACH %	0%	70%	30%	28%	72%	0%	41%	0%	59%	0%	0%	0%										
	PEAK HR FACTOR		0.719			0.692			0.886			0.000		0.790									
	APP/DEPART	23	/	32	36	/	49	39	/	17	0	/	0	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	2
	EAST & WEST:	I-10 EB Ramps	CONTROL:	SIGNAL

CLASS 5:	NOTES:
RV	

AM / PM / MD / OTHER / OTHER

▲ N ▼ S ◄ W E ►

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 EB Ramps			WESTBOUND I-10 EB Ramps			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	3	1	1	2	X	1,3	0.3	0.3	X	X	X	

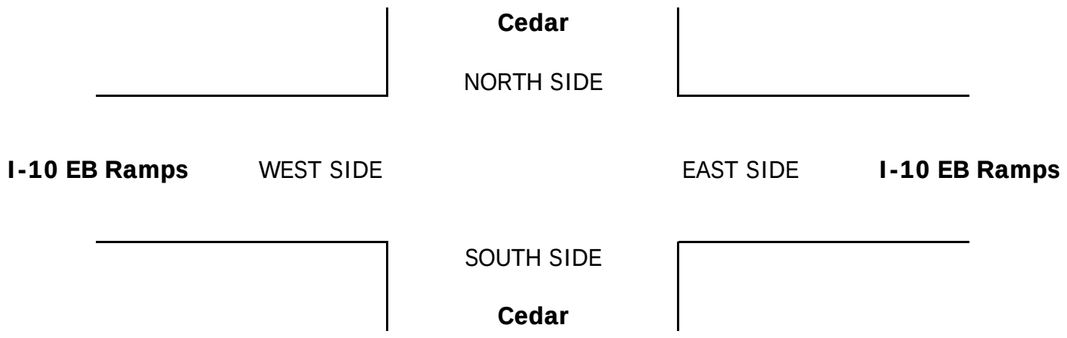
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									
	BEGIN PEAK HR	7:00 AM																					
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0						0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000									
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									
	BEGIN PEAK HR	3:00 PM																					
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0						0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000									
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION:	Bloomington		PROJECT #:	SC1657
	NORTH & SOUTH:	Cedar		LOCATION #:	2
	EAST & WEST:	I-10 EB Ramps		CONTROL:	SIGNAL

CLASS 6:	**NOTES:**
BUSES	

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND I-10 EB Ramps			WESTBOUND I-10 EB Ramps			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	X	3	1	1	2	X	1,3	0.3	0.3	X	X	X	
AM	7:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
	7:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
	7:30 AM	0	0	0	1	0	0	0	0	1	0	0	0	2
	7:45 AM	0	1	0	0	1	0	2	0	0	0	0	0	4
	8:00 AM	0	1	0	0	0	0	1	0	0	0	0	0	2
	8:15 AM	0	3	0	0	1	0	0	0	0	0	0	0	4
	8:30 AM	0	2	0	0	2	0	0	0	0	0	0	0	4
	8:45 AM	0	1	0	1	1	0	0	0	0	0	0	0	3
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	10	0	2	7	0	3	0	1	0	0	0	23
	APPROACH %	0%	100%	0%	22%	78%	0%	75%	0%	25%	0%	0%	0%	
	APP/DEPART	10	/	13	9	/	8	4	/	2	0	/	0	0
	BEGIN PEAK HR		7:45 AM											
	VOLUMES	0	7	0	0	4	0	3	0	0	0	0	0	14
	APPROACH %	0%	100%	0%	0%	100%	0%	100%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.583			0.500			0.375			0.000		0.875
	APP/DEPART	7	/	10	4	/	4	3	/	0	0	/	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
	4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	2
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	2	0	1	0	0	0	0	0	0	0	0	3
	5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	5:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	2
	VOLUMES	0	4	1	2	4	0	0	0	0	0	0	0	11
	APPROACH %	0%	80%	20%	33%	67%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	5	/	4	6	/	4	0	/	3	0	/	0	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	2	1	1	2	0	0	0	0	0	0	0	6
	APPROACH %	0%	67%	33%	33%	67%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.375			0.375			0.000			0.000		0.500
	APP/DEPART	3	/	2	3	/	2	0	/	2	0	/	0	0

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
1	0	0	0
1	0	0	0

Cedar

NORTH SIDE

I-10 EB Ramps WEST SIDE

EAST SIDE **I-10 EB Ramps**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Mar 27, 18

LOCATION: Bloomington
NORTH & SOUTH: Cedar
EAST & WEST: Slover

PROJECT #: SC1657
LOCATION #: 3
CONTROL: SIGNAL

NOTES:

PM NB queue

AM
PM
MD
OTHER
OTHER

N ▲ S ▼ W ◄ E ►

☑ Add U-Turns to Left Turns

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Slover			WESTBOUND Slover			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 1	WR 1	TOTAL
AM	7:00 AM	17	140	0	10	157	36	20	12	6	1	19	15	433
	7:15 AM	15	139	1	14	207	23	32	13	8	5	31	11	499
	7:30 AM	18	146	2	22	210	18	32	20	9	2	27	19	525
	7:45 AM	20	146	3	23	156	23	27	14	9	3	29	14	467
	8:00 AM	15	126	2	18	162	24	34	9	6	0	26	18	440
	8:15 AM	10	147	0	9	170	24	22	17	6	0	17	25	447
	8:30 AM	20	133	2	19	128	18	32	14	10	4	18	16	414
	8:45 AM	12	125	0	15	123	28	28	17	6	4	19	16	393
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	127	1,102	10	130	1,313	194	227	116	60	19	186	134	3,618
	APPROACH %	10%	89%	1%	8%	80%	12%	56%	29%	15%	6%	55%	40%	
	APP/DEPART	1,239	/	1,461	1,637	/	1,392	403	/	256	339	/	509	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	68	557	8	77	735	88	125	56	32	10	113	62	1,931
	APPROACH %	11%	88%	1%	9%	82%	10%	59%	26%	15%	5%	61%	34%	
	PEAK HR FACTOR		0.936			0.900			0.873			0.964		0.920
	APP/DEPART	633	/	743	900	/	777	213	/	141	185	/	270	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	11	183	6	23	174	21	40	56	31	5	33	25	608
	4:15 PM	15	198	3	25	182	11	36	67	29	4	37	21	628
	4:30 PM	15	189	10	24	171	10	52	53	18	12	22	12	588
	4:45 PM	19	169	9	24	172	20	60	75	26	2	40	26	642
	5:00 PM	18	135	6	19	174	25	59	60	39	3	42	21	601
	5:15 PM	21	204	8	17	197	19	44	58	35	5	37	19	664
	5:30 PM	13	127	2	22	158	8	41	66	35	5	27	17	521
	5:45 PM	20	161	10	9	180	15	36	83	27	12	41	14	608
	VOLUMES	132	1,366	54	163	1,408	129	368	518	240	48	279	155	4,860
	APPROACH %	9%	88%	3%	10%	83%	8%	33%	46%	21%	10%	58%	32%	
	APP/DEPART	1,552	/	1,886	1,700	/	1,698	1,126	/	735	482	/	541	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	73	697	33	84	714	74	215	246	118	22	141	78	2,495
	APPROACH %	9%	87%	4%	10%	82%	8%	37%	42%	20%	9%	59%	32%	
	PEAK HR FACTOR		0.862			0.936			0.899			0.886		0.939
	APP/DEPART	803	/	989	872	/	855	579	/	363	241	/	288	0

U-TURNS					
	NB	SB	EB	WB	TTL
	0	0	0	0	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	1	0	1
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	1	0	1
8:45 AM	0	0	0	0	0
9:00 AM	0	0	0	0	0
9:15 AM	0	0	0	0	0
9:30 AM	0	0	0	0	0
9:45 AM	0	0	0	0	0
VOLUMES	0	0	2	0	2
03:00 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0
3:30 PM	0	0	0	0	0
3:45 PM	0	0	0	0	0
4:00 PM	1	0	0	0	1
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	1	0	0	0	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	1	0	1
5:30 PM	0	0	1	0	1
5:45 PM	0	0	1	0	1
VOLUMES	2	0	3	0	5

RTOR				
	NRR	SRR	ERR	WRR
	0	0	0	0
7:00 AM	0	10	5	5
7:15 AM	0	0	2	3
7:30 AM	0	1	4	6
7:45 AM	0	0	3	5
8:00 AM	0	2	3	6
8:15 AM	0	4	0	10
8:30 AM	0	1	2	10
8:45 AM	0	6	3	4
9:00 AM	0	0	0	0
9:15 AM	0	0	0	0
9:30 AM	0	0	0	0
9:45 AM	0	0	0	0
VOLUMES	0	24	22	49
	0	3	12	20
03:00 PM	0	0	0	0
3:15 PM	0	0	0	0
3:30 PM	0	0	0	0
3:45 PM	0	0	0	0
4:00 PM	0	2	10	9
4:15 PM	0	1	8	11
4:30 PM	2	0	9	4
4:45 PM	0	2	6	9
5:00 PM	0	0	11	11
5:15 PM	0	1	20	8
5:30 PM	0	0	3	3
5:45 PM	1	0	9	3
VOLUMES	3	6	76	58
	2	3	46	32

Cedar

NORTH SIDE

Slover WEST SIDE EAST SIDE **Slover**

SOUTH SIDE

Cedar

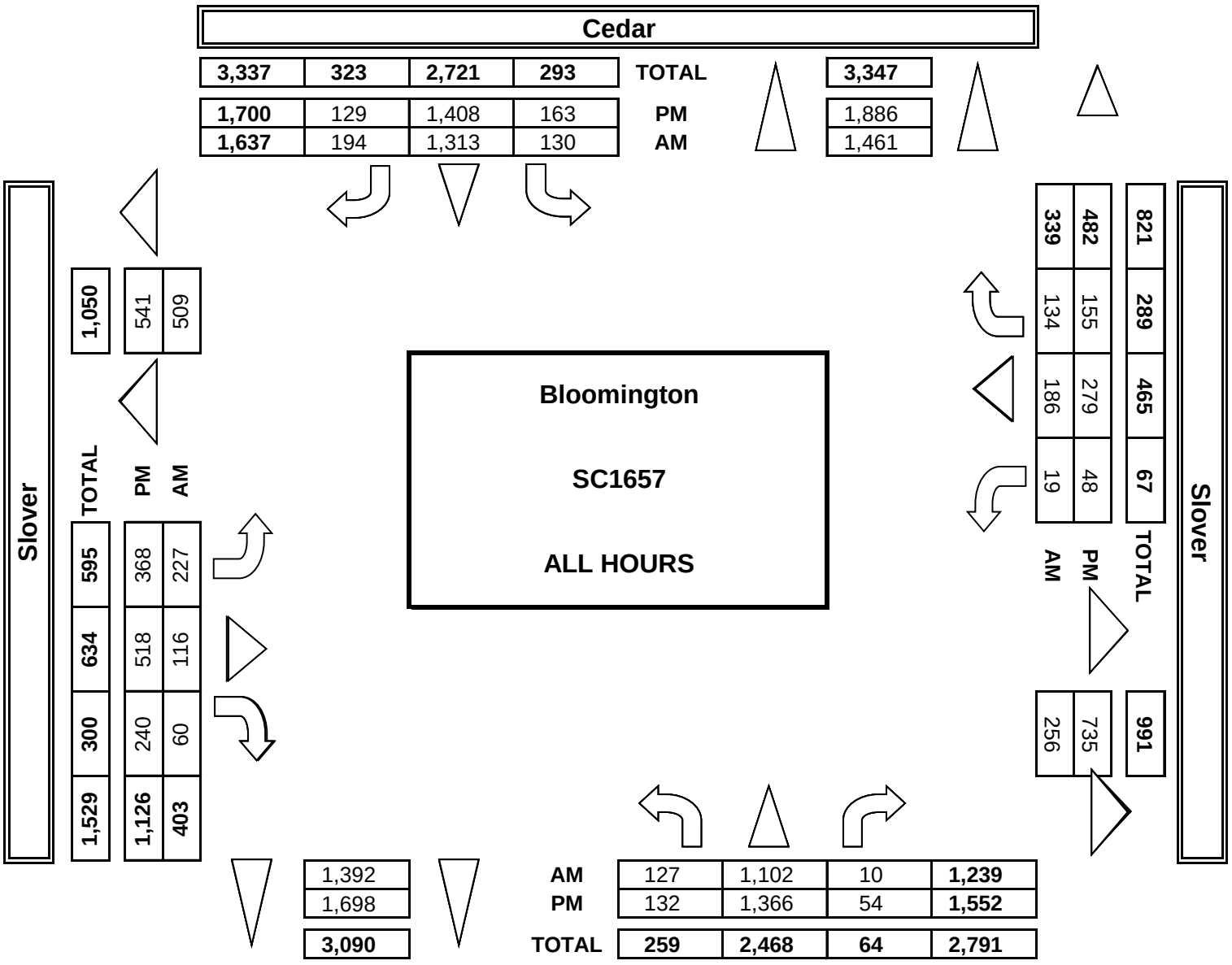
		ALL PED AND BIKE				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL
AM	7:00 AM	0	0	0	0	0
	7:15 AM	0	0	0	0	0
	7:30 AM	1	0	0	0	1
	7:45 AM	0	0	1	0	1
	8:00 AM	0	0	0	0	0
	8:15 AM	0	0	0	0	0
	8:30 AM	0	0	0	0	0
	8:45 AM	0	0	0	0	0
	9:00 AM	0	0	0	0	0
	9:15 AM	0	0	0	0	0
	9:30 AM	0	0	0	0	0
	9:45 AM	0	0	0	0	0
	TOTAL	1	0	1	0	2
PM	3:00 PM	0	0	0	0	0
	3:15 PM	0	0	0	0	0
	3:30 PM	0	0	0	0	0
	3:45 PM	0	0	0	0	0
	4:00 PM	0	1	1	0	2
	4:15 PM	0	0	0	1	1
	4:30 PM	0	0	0	0	0
	4:45 PM	0	4	3	2	9
	5:00 PM	0	1	1	0	2
	5:15 PM	1	0	0	0	1
	5:30 PM	1	0	0	0	1
	5:45 PM	2	0	0	0	2
	TOTAL	4	6	5	3	18

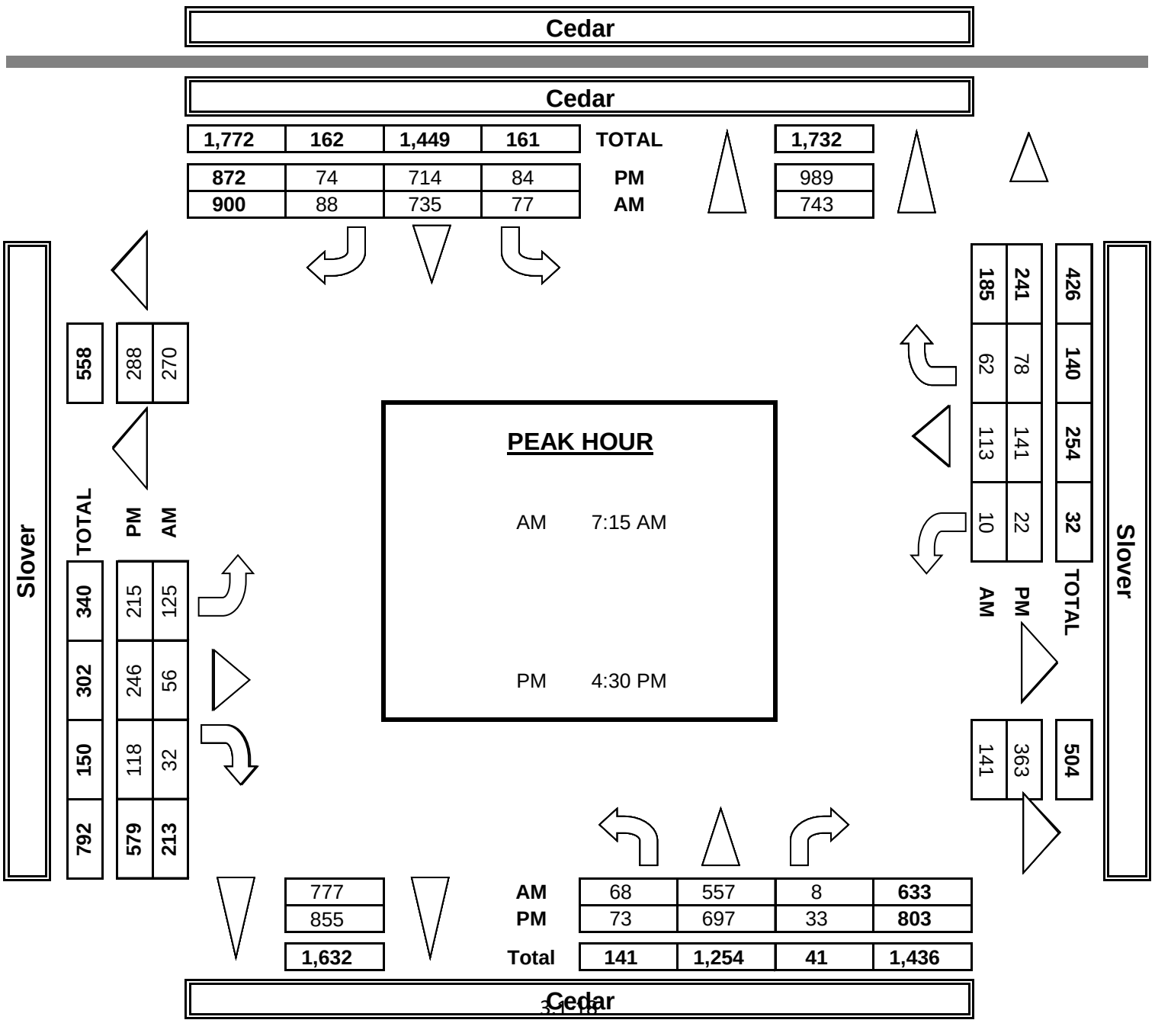
PEDESTRIAN CROSSINGS				
E SIDE	W SIDE	S SIDE	N SIDE	TOTAL
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	1	0	2
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	1	0	2
0	0	0	0	0
0	0	0	0	0
0	4	3	0	7
0	0	0	0	0
1	0	0	0	1
1	0	0	0	1
1	0	0	0	1
3	5	4	0	12

BICYCLE CROSSINGS				
ES	WS	SS	NS	TOTAL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	1	1
0	0	0	0	0
0	0	0	2	2
0	1	1	0	2
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
1	1	1	3	6

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	3
	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 1: PASSENGER VEHICLES

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

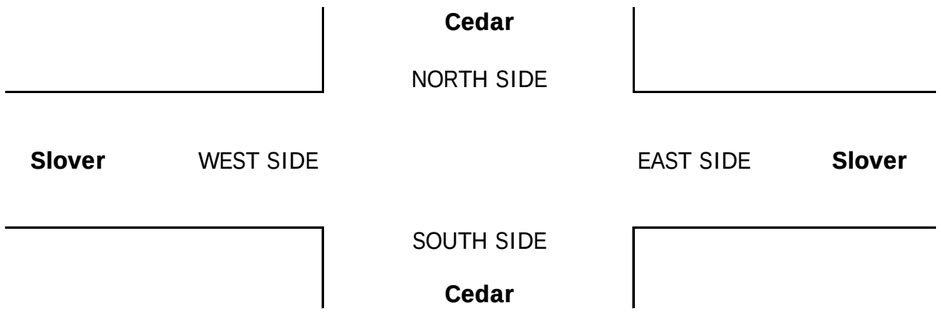
	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Slover			WESTBOUND Slover			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
7:00 AM	14	123	0	8	133	33	20	9	5	1	17	13	376
7:15 AM	14	120	0	8	182	21	26	10	6	4	28	8	427
7:30 AM	16	130	2	16	186	16	26	14	6	2	26	10	450
7:45 AM	18	125	2	20	136	21	26	11	8	2	24	8	401
8:00 AM	15	116	2	16	131	20	30	4	5	0	22	13	374
8:15 AM	10	125	0	6	145	19	19	13	4	0	12	18	371
8:30 AM	18	103	1	8	109	15	27	7	9	3	14	12	326
8:45 AM	12	102	0	5	107	22	22	10	4	2	14	12	312
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
AM VOLUMES	117	944	7	87	1,129	167	196	78	47	14	157	94	3,037
AM APPROACH %	11%	88%	1%	6%	82%	12%	61%	24%	15%	5%	59%	35%	
AM APP/DEPART	1,068	/	1,232	1,383	/	1,190	321	/	172	265	/	443	0
AM BEGIN PEAK HR		7:00 AM											
AM PEAK HR VOLUMES	62	498	4	52	637	91	97	44	25	9	95	39	1,654
AM PEAK HR APPROACH %	11%	88%	1%	7%	82%	12%	58%	26%	15%	6%	66%	27%	
AM PEAK HR FACTOR		0.953			0.894			0.908			0.894		0.919
AM PEAK HR APP/DEPART	564	/	634	780	/	671	167	/	100	143	/	249	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	10	171	4	14	159	17	36	42	27	5	29	22	536
4:15 PM	14	183	3	19	163	8	33	58	28	3	28	18	558
4:30 PM	12	180	8	13	159	9	48	41	18	11	17	9	525
4:45 PM	17	153	6	19	159	17	57	64	25	2	37	22	578
5:00 PM	16	126	5	13	159	18	56	51	35	2	33	18	532
5:15 PM	19	188	8	11	186	17	41	52	30	5	28	17	602
5:30 PM	11	116	1	13	143	7	38	62	32	5	25	13	466
5:45 PM	16	152	9	8	171	12	34	71	24	12	36	12	557
PM VOLUMES	115	1,269	44	110	1,299	105	343	441	219	45	233	131	4,354
PM APPROACH %	8%	89%	3%	7%	86%	7%	34%	44%	22%	11%	57%	32%	
PM APP/DEPART	1,428	/	1,740	1,514	/	1,565	1,003	/	595	409	/	454	0
PM BEGIN PEAK HR		4:30 PM											
PM PEAK HR VOLUMES	63	647	27	56	663	61	201	208	108	20	115	66	2,237
PM PEAK HR APPROACH %	9%	88%	4%	7%	85%	8%	39%	40%	21%	10%	57%	33%	
PM PEAK HR FACTOR		0.858			0.911			0.887			0.824		0.929
PM PEAK HR APP/DEPART	738	/	914	780	/	792	518	/	291	201	/	240	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	2	0	2
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	1	0	1
0	0	1	0	1
0	0	1	0	1
2	0	3	0	5

RTOR

NRR	SRR	ERR	WRR
0	0	0	0
0	10	4	5
0	0	1	3
0	0	2	3
0	0	2	4
0	2	3	4
0	4	0	7
0	1	2	9
0	6	3	2
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	23	17	37
0	10	9	15
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	2	10	8
0	0	8	11
2	0	9	3
0	1	6	8
0	0	11	9
0	1	18	8
0	0	3	2
1	0	8	3
3	4	73	52
2	2	44	28



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Bloomington		PROJECT #:	SC1657
3/27/18	NORTH & SOUTH:	Cedar		LOCATION #:	3
TUESDAY	EAST & WEST:	Slover		CONTROL:	SIGNAL

CLASS 2:
2-AXLE
WORK
VEHICLES/
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		Cedar			Cedar			Slover			Slover												
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:	1	2	0	1	2	0	1	2	0	1	1	1							0	0	0	0
AM	7:00 AM	1	5	0	1	12	2	0	1	0	0	1	1	24	0	0	0	0	0	0	0	0	0
	7:15 AM	1	7	0	5	18	0	6	1	2	1	3	1	45	0	0	0	0	0	0	0	1	0
	7:30 AM	0	10	0	3	11	2	1	3	1	0	0	1	32	0	0	0	0	0	0	1	1	0
	7:45 AM	1	15	0	1	8	1	0	1	1	1	3	2	34	0	0	0	0	0	0	0	1	1
	8:00 AM	0	5	0	1	10	1	2	3	0	0	2	1	25	0	0	0	0	0	0	0	0	0
	8:15 AM	0	9	0	1	13	1	1	3	2	0	2	2	34	0	0	0	0	0	0	0	0	1
	8:30 AM	1	14	0	2	7	2	3	3	0	1	3	1	37	0	0	0	0	0	0	0	0	0
	8:45 AM	0	12	0	2	10	1	6	3	2	2	2	3	43	0	0	0	0	0	0	0	0	1
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	4	77	0	16	89	10	19	18	8	5	16	12	274	0	0	0	0	0	0	1	3	3
	APPROACH %	5%	95%	0%	14%	77%	9%	42%	40%	18%	15%	48%	36%										
	APP/DEPART	81	/	108	115	/	102	45	/	34	33	/	30	0									
	BEGIN PEAK HR		8:00 AM																				
	VOLUMES	1	40	0	6	40	5	12	12	4	3	9	7	139						0	0	0	2
	APPROACH %	2%	98%	0%	12%	78%	10%	43%	43%	14%	16%	47%	37%										
	PEAK HR FACTOR		0.683			0.850			0.636			0.679		0.808									
	APP/DEPART	41	/	59	51	/	47	28	/	18	19	/	15	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	1	7	1	2	4	1	4	3	2	0	1	0	26	0	0	0	0	0	0	0	0	0
	4:15 PM	1	8	0	2	9	2	1	4	0	0	4	0	31	0	0	0	0	0	0	1	0	0
	4:30 PM	0	8	1	3	8	0	4	3	0	1	2	0	30	0	0	0	0	0	0	0	0	0
	4:45 PM	1	11	0	1	6	1	3	3	1	0	2	0	29	0	0	0	0	0	0	0	0	0
	5:00 PM	1	6	1	3	9	2	2	5	3	0	4	0	36	0	0	0	0	0	0	0	0	0
	5:15 PM	0	10	0	3	8	0	2	1	2	0	2	0	28	0	0	0	0	0	0	0	2	0
	5:30 PM	2	6	0	2	7	0	0	1	2	0	1	0	21	0	0	0	0	0	0	0	0	0
	5:45 PM	2	4	0	1	3	1	1	8	2	0	1	2	25	0	0	0	0	0	0	0	0	0
	VOLUMES	8	60	3	17	54	7	17	28	12	1	17	2	226	0	0	0	0	0	0	1	2	0
	APPROACH %	11%	85%	4%	22%	69%	9%	30%	49%	21%	5%	85%	10%										
	APP/DEPART	71	/	79	78	/	67	57	/	48	20	/	32	0									
	BEGIN PEAK HR		4:15 PM																				
	VOLUMES	3	33	2	9	32	5	10	15	4	1	12	0	126						0	1	0	0
	APPROACH %	8%	87%	5%	20%	70%	11%	34%	52%	14%	8%	92%	0%										
	PEAK HR FACTOR		0.792			0.821			0.725			0.813		0.875									
	APP/DEPART	38	/	43	46	/	37	29	/	26	13	/	20	0									

Cedar

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION:	Bloomington	PROJECT #:	SC1657
	NORTH & SOUTH:	Cedar	LOCATION #:	3
	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 3:
3-AXLE
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Slover			WESTBOUND Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
AM	7:00 AM	0	5	0	0	4	1	0	2	1	0	0	0	13
	7:15 AM	0	6	0	1	3	1	0	2	0	0	0	0	13
	7:30 AM	1	2	0	0	6	0	2	3	0	0	1	3	18
	7:45 AM	1	0	0	0	3	0	0	2	0	0	2	1	9
	8:00 AM	0	2	0	0	7	2	1	2	1	0	1	1	17
	8:15 AM	0	4	0	0	5	2	0	1	0	0	2	1	15
	8:30 AM	1	7	0	3	3	1	0	3	1	0	0	2	21
	8:45 AM	0	3	0	1	4	4	0	3	0	0	2	1	18
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	3	29	0	5	35	11	3	18	3	0	8	9	124
	APPROACH %	9%	91%	0%	10%	69%	22%	13%	75%	13%	0%	47%	53%	
	APP/DEPART	32	/	41	51	/	38	24	/	23	17	/	22	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	1	16	0	4	19	9	1	9	2	0	5	5	71
	APPROACH %	6%	94%	0%	13%	59%	28%	8%	75%	17%	0%	50%	50%	
	PEAK HR FACTOR		0.531			0.889			0.750			0.833		0.845
	APP/DEPART	17	/	22	32	/	21	12	/	13	10	/	15	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	1	0	1	3	1	0	2	0	0	2	0	10
	4:15 PM	0	4	0	1	4	1	1	1	0	0	3	1	16
	4:30 PM	1	1	0	3	0	0	0	0	0	0	0	0	5
	4:45 PM	0	1	2	0	1	0	0	0	0	0	1	3	8
	5:00 PM	0	2	0	0	4	3	1	3	0	1	4	0	18
	5:15 PM	0	1	0	2	1	1	1	3	0	0	3	2	14
	5:30 PM	0	2	0	2	5	0	1	1	0	0	0	1	12
	5:45 PM	0	2	1	0	3	1	0	1	1	0	0	0	9
	VOLUMES	1	14	3	9	21	7	4	11	1	1	13	7	92
	APPROACH %	6%	78%	17%	24%	57%	19%	25%	69%	6%	5%	62%	33%	
	APP/DEPART	18	/	25	37	/	23	16	/	23	21	/	21	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	0	7	1	4	13	5	3	8	1	1	7	3	53
	APPROACH %	0%	88%	13%	18%	59%	23%	25%	67%	8%	9%	64%	27%	
	PEAK HR FACTOR		0.667			0.786			0.750			0.550		0.736
	APP/DEPART	8	/	13	22	/	15	12	/	13	11	/	12	0

	U-TURNS					RTOR			
	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
						0	0	0	0
7:00 AM	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	1	3
VOLUMES (PEAK HR)						0	0	0	1
03:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	1	0
VOLUMES	0	0	0	0	0	0	0	1	0
VOLUMES (PEAK HR)						0	0	1	0

Cedar

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	3
	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 4: 4 OR MORE AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Slover			WESTBOUND Slover			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	1	1	

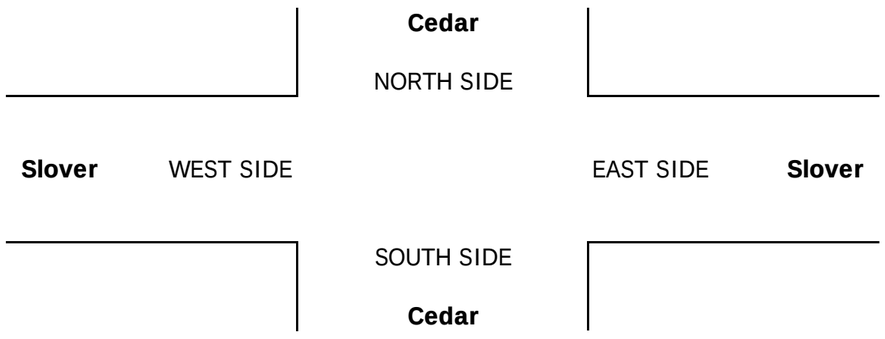
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	2	7	0	1	6	0	0	0	0	0	1	1	18	0	0	0	0	0	0	0	0	0
	7:15 AM	0	4	1	0	4	1	0	0	0	0	0	1	11	0	0	0	0	0	0	0	0	0
	7:30 AM	1	4	0	3	5	0	3	0	2	0	0	5	23	0	0	0	0	0	0	0	0	0
	7:45 AM	0	4	1	2	8	0	1	0	0	0	0	3	19	0	0	0	0	0	0	0	1	1
	8:00 AM	0	2	0	1	14	1	1	0	0	0	1	3	23	0	0	0	0	0	0	0	0	0
	8:15 AM	0	9	0	2	7	2	0	0	0	0	1	3	24	0	0	0	0	0	0	0	0	2
	8:30 AM	0	8	1	6	6	0	1	1	0	0	1	1	25	0	0	0	0	0	0	0	0	1
	8:45 AM	0	7	0	7	2	0	0	1	0	0	1	0	18	0	0	0	0	0	0	0	0	1
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	3	45	3	22	52	4	6	2	2	0	5	17	161	0	0	0	0	0	0	0	1	5
	APPROACH %	6%	88%	6%	28%	67%	5%	60%	20%	20%	0%	23%	77%										
	APP/DEPART	51	/	68	78	/	54	10	/	27	22	/	12	0									
	BEGIN PEAK HR		7:45 AM																				
	VOLUMES	0	23	2	11	35	3	3	1	0	0	3	10	91						0	0	0	4
	APPROACH %	0%	92%	8%	22%	71%	6%	75%	25%	0%	0%	23%	77%										
	PEAK HR FACTOR		0.694			0.766			0.500			0.813		0.910									
	APP/DEPART	25	/	36	49	/	35	4	/	14	13	/	6	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	4	1	6	8	2	0	9	1	0	1	3	35	0	0	0	0	0	0	0	0	1
	4:15 PM	0	3	0	3	5	0	1	4	1	1	2	1	21	0	0	0	0	0	0	0	0	0
	4:30 PM	1	0	1	5	4	1	0	9	0	0	3	3	27	0	0	0	0	0	0	0	0	1
	4:45 PM	1	4	1	4	6	1	0	8	0	0	0	1	26	0	0	0	0	0	0	0	0	1
	5:00 PM	1	1	0	3	2	2	0	1	1	0	1	2	14	0	0	0	0	0	0	0	0	1
	5:15 PM	2	4	0	1	2	1	0	2	3	0	4	0	19	0	0	0	0	0	0	0	0	0
	5:30 PM	0	2	1	5	2	1	2	2	1	0	1	3	20	0	0	0	0	0	0	0	0	1
	5:45 PM	2	3	0	0	3	0	1	3	0	0	4	0	16	0	0	0	0	0	0	0	0	0
	VOLUMES	7	21	4	27	32	8	4	38	7	1	16	13	178	0	0	0	0	0	0	0	0	5
	APPROACH %	22%	66%	13%	40%	48%	12%	8%	78%	14%	3%	53%	43%										
	APP/DEPART	32	/	38	67	/	40	49	/	69	30	/	31	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	2	11	3	18	23	4	1	30	2	1	6	8	109						0	0	0	3
	APPROACH %	13%	69%	19%	40%	51%	9%	3%	91%	6%	7%	40%	53%										
	PEAK HR FACTOR		0.667			0.703			0.825			0.625		0.779									
	APP/DEPART	16	/	20	45	/	26	33	/	51	15	/	12	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Bloomington Cedar Slover	PROJECT #: LOCATION #: CONTROL:	SC1657 3 SIGNAL

CLASS 5: RV

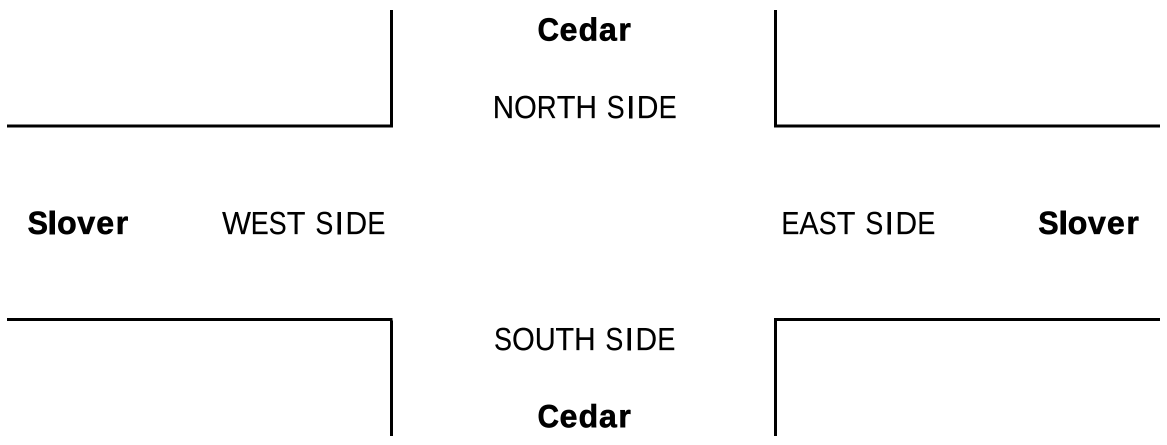
NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Slover			WESTBOUND Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
	BEGIN PEAK HR		3:00 PM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0

		U-TURNS					RTOR			
		NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:						0	0	0	0
AM	7:00 AM	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0
	VOLUMES (PEAK HR)						0	0	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0
	VOLUMES (PEAK HR)						0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Bloomington	PROJECT #:	SC1657
3/27/18	NORTH & SOUTH:	Cedar	LOCATION #:	3
TUESDAY	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 6:	NOTES:	AM		▲	
BUSES		PM		N	
		MD	◄ W		E ►
		OTHER		S	
		OTHER		▼	

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		Cedar			Cedar			Slover			Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
AM	7:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
	7:15 AM	0	2	0	0	0	0	0	0	0	0	0	1	3
	7:30 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
	7:45 AM	0	2	0	0	1	1	0	0	0	0	0	0	4
	8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
	8:15 AM	0	0	0	0	0	0	2	0	0	0	0	1	3
	8:30 AM	0	1	0	0	3	0	1	0	0	0	0	0	5
	8:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	2
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	7	0	0	8	2	3	0	0	0	0	2	22
	APPROACH %	0%	100%	0%	0%	80%	20%	100%	0%	0%	0%	0%	100%	
	APP/DEPART	7	/	12	10	/	8	3	/	0	2	/	2	0
	BEGIN PEAK HR		7:45 AM											
	VOLUMES	0	4	0	0	4	1	3	0	0	0	0	1	13
	APPROACH %	0%	100%	0%	0%	80%	20%	100%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR		0.500			0.417			0.375			0.250		0.650
	APP/DEPART	4	/	8	5	/	4	3	/	0	1	/	1	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
	4:15 PM	0	0	0	0	1	0	0	0	0	0	0	1	2
	4:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
	4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
	5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
	5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
	5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
	VOLUMES	1	2	0	0	2	2	0	0	1	0	0	2	10
	APPROACH %	33%	67%	0%	0%	50%	50%	0%	0%	100%	0%	0%	100%	
	APP/DEPART	3	/	4	4	/	3	1	/	0	2	/	3	0
	BEGIN PEAK HR		4:00 PM											
	VOLUMES	0	2	0	0	1	1	0	0	0	0	0	1	5
	APPROACH %	0%	100%	0%	0%	50%	50%	0%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR		0.500			0.500			0.000			0.250		0.625
	APP/DEPART	2	/	3	2	/	1	0	/	0	1	/	1	0

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	1
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	0
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	1
0	0	0	1

Cedar

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Apr 3, 18

LOCATION: Bloomington
NORTH & SOUTH: Cedar
EAST & WEST: Orange

PROJECT #: SC1657
LOCATION #: 4
CONTROL: SIGNAL

NOTES:

NB PM queue

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
E ►
S ▼

☑ Add U-Turns to Left Turns

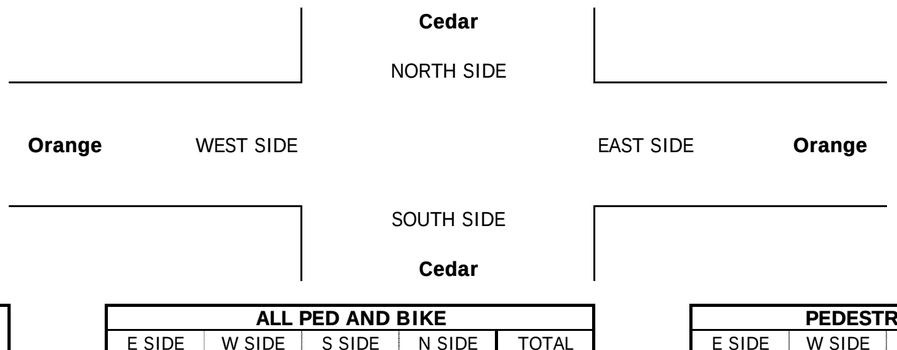
		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Orange			WESTBOUND Orange			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 1	EL 1	ET 0.5	ER 0.5	WL 0	WT 1	WR 0	TOTAL
AM	7:00 AM	1	231	0	20	218	160	76	0	2	0	0	21	729
	7:15 AM	0	259	1	31	256	109	80	3	2	0	1	24	766
	7:30 AM	0	269	5	26	271	74	70	3	4	1	0	24	747
	7:45 AM	0	224	1	23	254	80	35	0	2	0	0	19	638
	8:00 AM	2	186	1	29	228	80	34	1	4	0	0	17	582
	8:15 AM	0	186	0	25	193	64	24	0	1	2	1	15	511
	8:30 AM	0	182	1	25	164	29	35	1	2	1	1	25	466
	8:45 AM	0	179	7	25	167	29	20	2	2	0	1	12	444
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	3	1,716	16	204	1,751	625	374	10	19	4	4	157	4,883
	APPROACH %	0%	99%	1%	8%	68%	24%	93%	2%	5%	2%	2%	95%	
	APP/DEPART	1,735	/	2,248	2,580	/	1,774	403	/	229	165	/	632	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	1	983	7	100	999	423	261	6	10	1	1	88	2,880
	APPROACH %	0%	99%	1%	7%	66%	28%	94%	2%	4%	1%	1%	98%	
	PEAK HR FACTOR		0.904			0.956			0.815			0.900		0.940
	APP/DEPART	991	/	1,333	1,522	/	1,010	277	/	112	90	/	425	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	214	0	12	225	56	21	17	4	1	1	54	605
	4:15 PM	2	197	0	10	224	56	38	7	1	0	0	40	575
	4:30 PM	1	199	1	14	201	39	34	5	2	1	1	63	561
	4:45 PM	1	215	0	8	177	50	43	18	3	1	0	74	590
	5:00 PM	1	142	1	9	196	37	49	16	2	3	0	60	516
	5:15 PM	3	169	3	24	189	45	34	9	7	0	2	36	521
	5:30 PM	0	188	2	15	199	49	23	12	5	2	3	50	548
	5:45 PM	1	218	1	11	184	43	35	16	5	1	1	40	556
	VOLUMES	9	1,542	8	103	1,595	375	277	100	29	9	8	417	4,472
	APPROACH %	1%	99%	1%	5%	77%	18%	68%	25%	7%	2%	2%	96%	
	APP/DEPART	1,559	/	2,236	2,073	/	1,633	406	/	211	434	/	392	0
	BEGIN PEAK HR		4:00 PM											
	VOLUMES	4	825	1	44	827	201	136	47	10	3	2	231	2,331
	APPROACH %	0%	99%	0%	4%	77%	19%	70%	24%	5%	1%	1%	98%	
	PEAK HR FACTOR		0.961			0.915			0.754			0.787		0.963
	APP/DEPART	830	/	1,192	1,072	/	840	193	/	92	236	/	207	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

RTOR

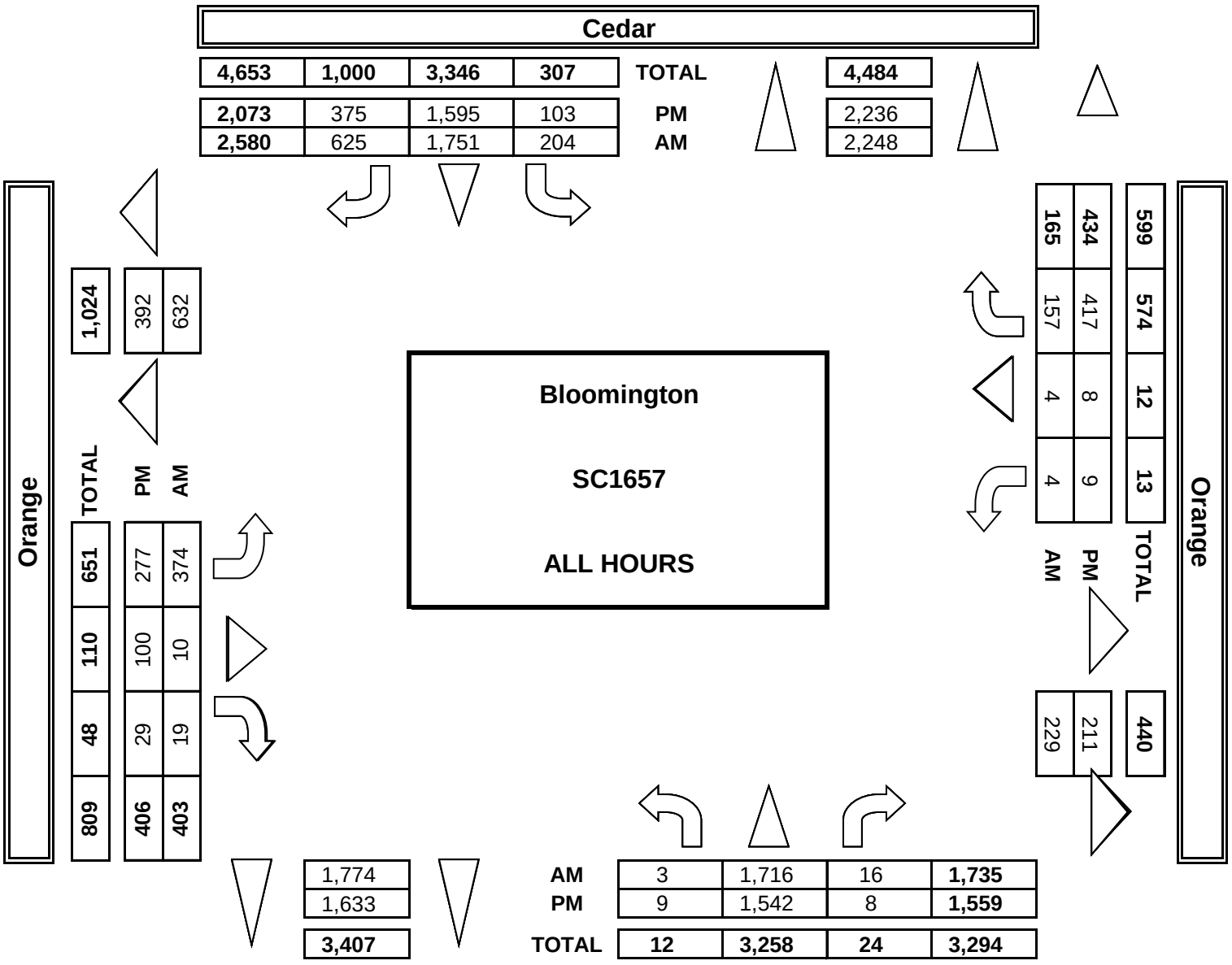
NRR	SRR	ERR	WRR
0	0	0	0
0	48	0	15
0	49	0	8
1	36	1	12
0	21	1	13
0	15	4	9
0	13	1	10
0	10	0	13
0	5	2	7
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	197	9	87
1	154	2	48
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	28	2	13
0	23	0	12
0	17	0	22
0	23	1	16
0	8	1	11
0	22	4	13
0	21	0	11
0	20	3	8
0	162	11	106
0	91	3	63

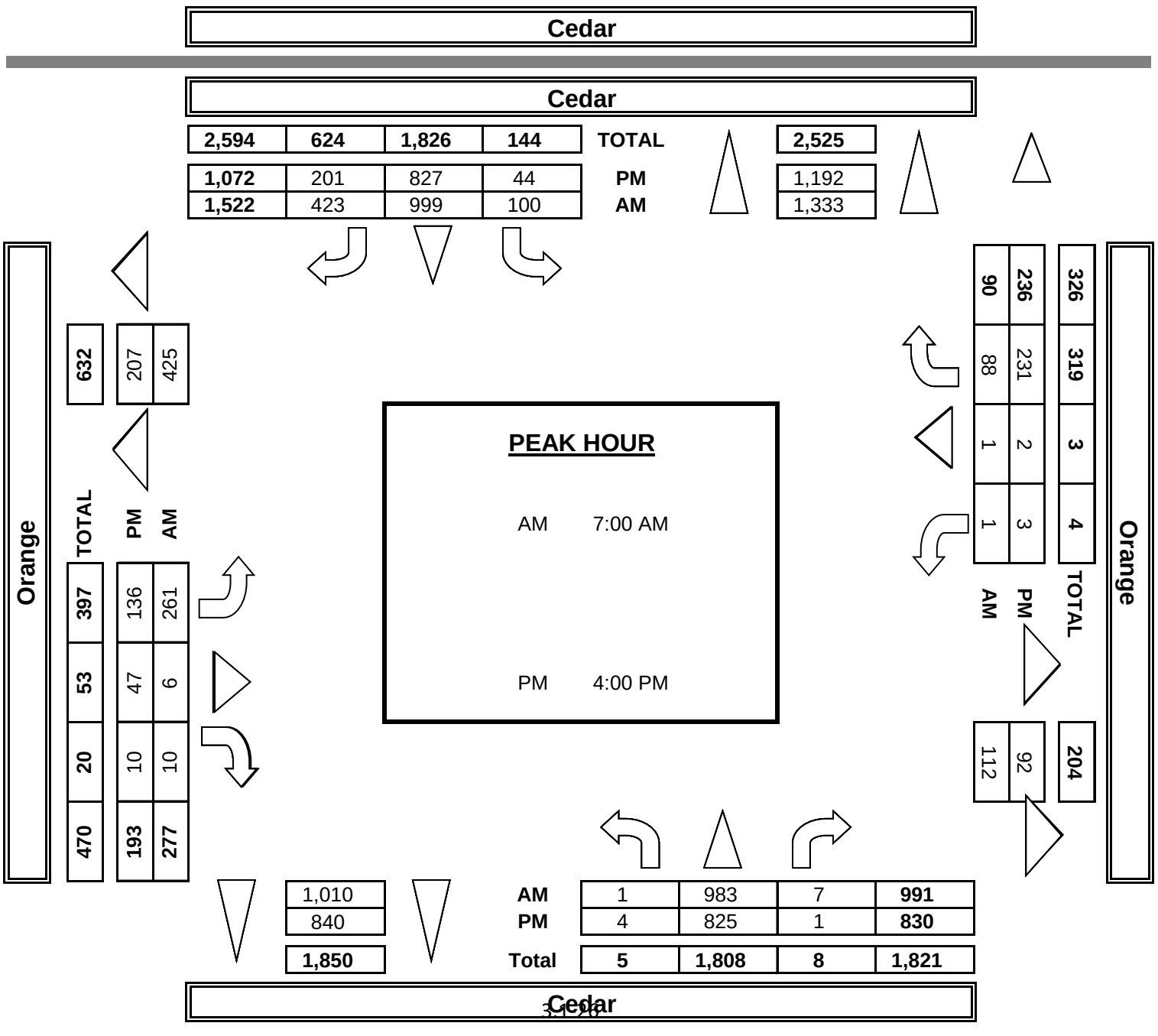


		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	ES	WS	SS	NS	TOTAL
AM	7:00 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	1	0	1	2	0	0	0	0	0	0	1	0	1	2
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	2	1	1	1	5	2	0	1	0	3	0	1	0	1	2
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	1	1	1	0	3	1	1	1	0	3	0	0	0	0	0
	4:30 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	4:45 PM	3	1	1	0	5	2	1	1	0	4	1	0	0	0	1
	5:00 PM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
	5:15 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	5:30 PM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
	5:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	TOTAL	8	5	2	0	15	4	4	2	0	10	4	1	0	0	5

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
4/3/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	4
	EAST & WEST:	Orange	CONTROL:	SIGNAL

CLASS 1:	NOTES:
PASSENGER VEHICLES	

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Orange			WESTBOUND Orange			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 1	EL 1	ET 0.5	ER 0.5	WL 0	WT 1	WR 0	TOTAL

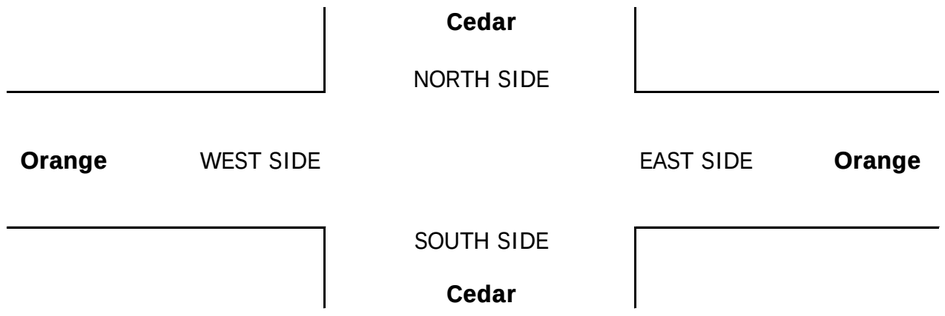
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	1	200	0	17	191	154	69	0	1	0	0	20	653	0	0	0	0	0	0	46	0	15
	7:15 AM	0	226	1	29	236	104	73	3	1	0	1	22	696	0	0	0	0	0	0	45	0	7
	7:30 AM	0	230	5	25	235	68	62	3	2	1	0	23	654	0	0	0	0	0	1	34	0	12
	7:45 AM	0	194	1	19	222	75	31	0	0	0	0	19	561	0	1	0	0	1	0	21	0	13
	8:00 AM	1	151	1	29	190	70	23	1	2	0	0	16	484	0	0	0	0	0	0	14	2	9
	8:15 AM	0	154	0	23	165	55	17	0	0	2	1	13	430	0	0	0	0	0	0	13	0	9
	8:30 AM	0	155	1	25	135	24	29	1	0	1	1	24	396	0	0	0	0	0	0	7	0	13
	8:45 AM	0	137	6	21	137	24	15	2	1	0	1	11	355	0	0	0	0	0	0	5	1	7
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	2	1,447	15	188	1,511	574	319	10	7	4	4	148	4,229	0	1	0	0	1	1	185	3	85
	APPROACH %	0%	99%	1%	8%	66%	25%	95%	3%	2%	3%	3%	95%										
	APP/DEPART	1,464	/	1,915	2,273	/	1,522	336	/	212	156	/	580	0										
	BEGIN PEAK HR		7:00 AM																				
	VOLUMES	1	850	7	89	884	401	235	6	4	1	1	84	2,564						1	146	0	47
	APPROACH %	0%	99%	1%	6%	64%	29%	96%	2%	2%	1%	1%	98%										
	PEAK HR FACTOR		0.913			0.932			0.795			0.896		0.921									
	APP/DEPART	858	/	1,170	1,375	/	889	245	/	102	86	/	403	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	184	0	12	193	53	16	15	4	1	1	53	532	0	0	0	0	0	0	27	2	13
	4:15 PM	1	181	0	8	190	42	32	6	1	0	0	30	491	0	0	0	0	0	0	20	0	10
	4:30 PM	1	179	1	13	177	31	27	5	2	1	1	58	496	0	0	0	0	0	0	14	0	19
	4:45 PM	1	193	0	8	160	45	39	18	3	1	0	70	538	0	0	0	0	0	0	22	1	16
	5:00 PM	1	134	1	7	170	30	44	16	1	3	0	59	466	0	0	0	0	0	0	5	0	11
	5:15 PM	3	156	3	23	164	41	29	9	7	0	2	35	472	0	0	0	0	0	0	21	4	13
	5:30 PM	0	174	2	13	173	44	18	12	4	1	3	45	489	0	0	0	0	0	0	21	0	8
	5:45 PM	0	202	1	11	166	37	30	16	3	1	1	38	506	0	0	0	0	0	0	15	3	8
	VOLUMES	7	1,403	8	95	1,393	323	235	97	25	8	8	388	3,990	0	0	0	0	0	0	145	10	98
	APPROACH %	0%	99%	1%	5%	77%	18%	66%	27%	7%	2%	2%	96%										
	APP/DEPART	1,418	/	2,026	1,811	/	1,426	357	/	200	404	/	338	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	3	737	1	41	720	171	114	44	10	3	2	211	2,057						0	83	3	58
	APPROACH %	0%	99%	0%	4%	77%	18%	68%	26%	6%	1%	1%	98%										
	PEAK HR FACTOR		0.955			0.903			0.700			0.761		0.956									
	APP/DEPART	741	/	1,062	932	/	733	168	/	86	216	/	176	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
4/3/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	4
	EAST & WEST:	Orange	CONTROL:	SIGNAL

CLASS 2:	NOTES:
2-AXLE WORK VEHICLES/ TRUCKS	

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Orange			WESTBOUND Orange			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	

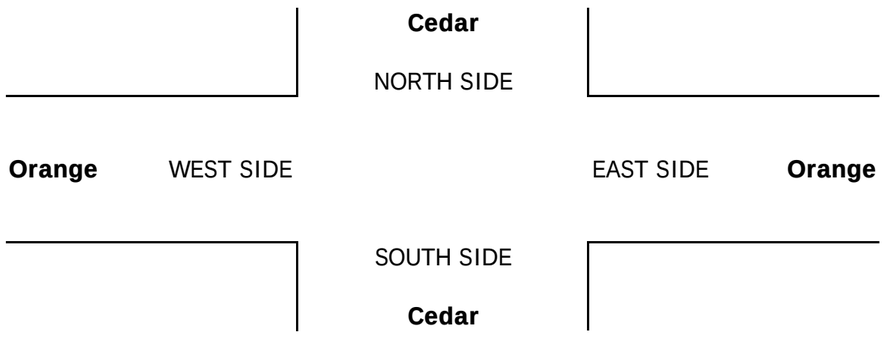
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	13	0	2	16	2	6	0	0	0	0	1	40	0	0	0	0	0	0	0	0	0
	7:15 AM	0	16	0	2	10	1	2	0	1	0	0	2	34	0	0	0	0	0	0	1	0	1
	7:30 AM	0	15	0	1	15	3	2	0	0	0	0	1	37	0	0	0	0	0	0	0	0	0
	7:45 AM	0	12	0	3	15	2	1	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0
	8:00 AM	0	16	0	0	20	4	4	0	0	0	0	1	45	0	0	0	0	0	0	1	0	0
	8:15 AM	0	10	0	1	17	1	3	0	0	0	0	2	34	0	0	0	0	0	0	0	0	1
	8:30 AM	0	12	0	0	12	1	1	0	0	0	0	1	27	0	0	0	0	0	0	0	0	0
	8:45 AM	0	20	0	2	14	4	0	0	0	0	0	1	41	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	114	0	11	119	18	19	0	1	0	0	9	291	0	0	0	0	0	0	2	0	2
	APPROACH %	0%	100%	0%	7%	80%	12%	95%	0%	5%	0%	0%	100%										
	APP/DEPART	114	/	142	148	/	120	20	/	11	9	/	18	0									
	BEGIN PEAK HR		7:15 AM																				
	VOLUMES	0	53	0	5	67	10	10	0	0	0	0	4	149						0	1	0	1
	APPROACH %	0%	100%	0%	6%	82%	12%	100%	0%	0%	0%	0%	100%										
	PEAK HR FACTOR		0.828			0.854			0.625			0.500		0.828									
	APP/DEPART	53	/	67	82	/	67	10	/	5	4	/	10	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	20	0	0	16	2	3	2	0	0	0	1	44	0	0	0	0	0	0	1	0	0
	4:15 PM	0	9	0	2	17	3	3	1	0	0	0	8	43	0	0	0	0	0	0	1	0	2
	4:30 PM	0	14	0	1	7	3	7	0	0	0	0	5	37	0	0	0	0	0	0	1	0	3
	4:45 PM	0	6	0	0	10	1	2	0	0	0	0	4	23	0	0	0	0	0	0	0	0	0
	5:00 PM	0	6	0	2	13	2	3	0	0	0	0	1	27	0	0	0	0	0	0	2	0	0
	5:15 PM	0	7	0	1	8	1	4	0	0	0	0	1	22	0	0	0	0	0	0	1	0	0
	5:30 PM	0	7	0	2	10	2	3	0	0	1	0	3	28	0	0	0	0	0	0	0	0	2
	5:45 PM	0	8	0	0	11	2	3	0	1	0	0	1	26	0	0	0	0	0	0	2	0	0
	VOLUMES	0	77	0	8	92	16	28	3	1	1	0	24	250	0	0	0	0	0	0	8	0	7
	APPROACH %	0%	100%	0%	7%	79%	14%	88%	9%	3%	4%	0%	96%										
	APP/DEPART	77	/	129	116	/	94	32	/	11	25	/	16	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	49	0	3	50	9	15	3	0	0	0	18	147						0	3	0	5
	APPROACH %	0%	100%	0%	5%	81%	15%	83%	17%	0%	0%	0%	100%										
	PEAK HR FACTOR		0.613			0.705			0.643			0.563		0.835									
	APP/DEPART	49	/	82	62	/	50	18	/	6	18	/	9	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
4/3/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	4
	EAST & WEST:	Orange	CONTROL:	SIGNAL

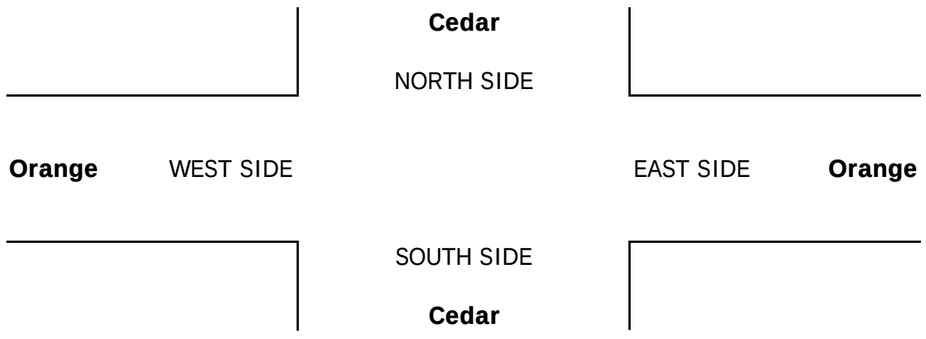
CLASS 3: 3-AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Orange			WESTBOUND Orange			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
AM	7:00 AM	0	11	0	1	5	2	0	0	0	0	0	0	19
	7:15 AM	0	6	0	0	5	1	2	0	0	0	0	0	14
	7:30 AM	0	7	0	0	4	0	3	0	0	0	0	0	14
	7:45 AM	0	3	0	0	3	1	1	0	0	0	0	0	8
	8:00 AM	1	8	0	0	5	1	2	0	1	0	0	0	18
	8:15 AM	0	9	0	1	2	1	1	0	0	0	0	0	14
	8:30 AM	0	6	0	0	8	1	1	0	1	0	0	0	17
	8:45 AM	0	9	0	0	4	0	3	0	0	0	0	0	16
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	1	59	0	2	36	7	13	0	2	0	0	0	120
	APPROACH %	2%	98%	0%	4%	80%	16%	87%	0%	13%	0%	0%	0%	
	APP/DEPART	60	/	72	45	/	38	15	/	2	0	/	8	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	1	32	0	1	19	3	7	0	2	0	0	0	65
	APPROACH %	3%	97%	0%	4%	83%	13%	78%	0%	22%	0%	0%	0%	
	PEAK HR FACTOR		0.917			0.639			0.750			0.000		0.903
	APP/DEPART	33	/	39	23	/	21	9	/	1	0	/	4	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	3	0	0	3	0	1	0	0	0	0	0	7
	4:15 PM	0	5	0	0	8	2	0	0	0	0	0	1	16
	4:30 PM	0	1	0	0	3	2	0	0	0	0	0	0	6
	4:45 PM	0	5	0	0	1	2	0	0	0	0	0	0	8
	5:00 PM	0	0	0	0	4	1	0	0	0	0	0	0	5
	5:15 PM	0	3	0	0	8	1	0	0	0	0	0	0	12
	5:30 PM	0	2	0	0	7	0	2	0	0	0	0	1	12
	5:45 PM	0	3	0	0	0	3	0	0	0	0	0	1	7
	VOLUMES	0	22	0	0	34	11	3	0	0	0	0	3	73
	APPROACH %	0%	100%	0%	0%	76%	24%	100%	0%	0%	0%	0%	100%	
	APP/DEPART	22	/	28	45	/	34	3	/	0	3	/	11	0
	BEGIN PEAK HR		4:00 PM											
	VOLUMES	0	10	0	0	20	4	2	0	0	0	0	1	37
	APPROACH %	0%	100%	0%	0%	83%	17%	100%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR		0.500			0.600			0.250			0.250		0.578
	APP/DEPART	10	/	13	24	/	20	2	/	0	1	/	4	0

U-TURNS					RTOR			
NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	3	1	0
					0	1	1	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	4	0	1
					0	1	0	1



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
4/3/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cedar	LOCATION #:	4
	EAST & WEST:	Orange	CONTROL:	SIGNAL

CLASS 4: 4 OR MORE AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Orange			WESTBOUND Orange			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 1	EL 1	ET 0.5	ER 0.5	WL 0	WT 1	WR 0	TOTAL

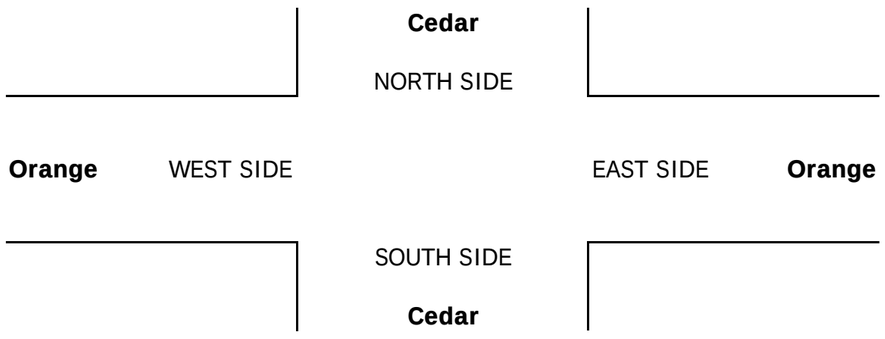
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	7	0	0	6	1	1	0	1	0	0	0	16	0	0	0	0	0	0	0	0	0
	7:15 AM	0	9	0	0	4	2	3	0	0	0	0	0	18	0	0	0	0	0	0	1	0	0
	7:30 AM	0	13	0	0	13	2	3	0	2	0	0	0	33	0	0	0	0	0	0	1	1	0
	7:45 AM	0	12	0	1	11	2	2	0	2	0	0	0	30	0	0	0	0	0	0	0	1	0
	8:00 AM	0	9	0	0	13	4	4	0	1	0	0	0	31	0	0	0	0	0	0	0	1	0
	8:15 AM	0	10	0	0	5	6	3	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0
	8:30 AM	0	6	0	0	9	3	4	0	1	0	0	0	23	0	0	0	0	0	0	2	0	0
	8:45 AM	0	6	0	0	11	1	2	0	1	0	0	0	21	0	0	0	0	0	0	0	1	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	72	0	1	72	21	22	0	8	0	0	0	196	0	0	0	0	0	0	4	4	0
	APPROACH %	0%	100%	0%	1%	77%	22%	73%	0%	27%	0%	0%	0%										
	APP/DEPART	72	/	94	94	/	80	30	/	1	0	/	21	0									
	BEGIN PEAK HR		7:30 AM																				
	VOLUMES	0	44	0	1	42	14	12	0	5	0	0	0	118						0	1	3	0
	APPROACH %	0%	100%	0%	2%	74%	25%	71%	0%	29%	0%	0%	0%										
	PEAK HR FACTOR		0.846			0.838			0.850			0.000		0.894									
	APP/DEPART	44	/	56	57	/	47	17	/	1	0	/	14	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	5	0	0	12	1	1	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0
	4:15 PM	1	1	0	0	9	9	2	0	0	0	0	1	23	0	0	0	0	0	0	2	0	0
	4:30 PM	0	4	0	0	14	2	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0
	4:45 PM	0	11	0	0	6	2	2	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0
	5:00 PM	0	2	0	0	8	4	2	0	1	0	0	0	17	0	0	0	0	0	0	1	1	0
	5:15 PM	0	3	0	0	7	2	1	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0
	5:30 PM	0	4	0	0	8	3	0	0	1	0	0	0	16	0	0	0	0	0	0	0	0	0
	5:45 PM	1	5	0	0	7	1	2	0	1	0	0	0	17	0	0	0	0	0	0	1	0	0
	VOLUMES	2	35	0	0	71	24	10	0	3	0	0	1	146	0	0	0	0	0	0	4	1	0
	APPROACH %	5%	95%	0%	0%	75%	25%	77%	0%	23%	0%	0%	100%										
	APP/DEPART	37	/	46	95	/	74	13	/	0	1	/	26	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	1	21	0	0	41	14	5	0	0	0	0	1	83						0	2	0	0
	APPROACH %	5%	95%	0%	0%	75%	25%	100%	0%	0%	0%	0%	100%										
	PEAK HR FACTOR		0.500			0.764			0.625			0.250		0.902									
	APP/DEPART	22	/	27	55	/	41	5	/	0	1	/	15	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 4/3/18 TUESDAY	LOCATION:	Bloomington	PROJECT #: SC1657
	NORTH & SOUTH:	Cedar	LOCATION #: 4
	EAST & WEST:	Orange	CONTROL: SIGNAL

CLASS 5:	NOTES:
RV	

AM
PM
MD
OTHER
OTHER

▲
N
◄ W E ►
S
▼

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Orange			WESTBOUND Orange			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	1	0	0	0	0	0	0	0	0	0	0	1
	APPROACH %	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	1	/	1	0	/	0	0	/	0	0	/	0	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	1	0	0	0	0	0	0	0	0	0	0	1
	APPROACH %	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.250			0.000			0.000			0.000		0.250
	APP/DEPART	1	/	1	0	/	0	0	/	0	0	/	0	0

		U-TURNS					RTOR			
		NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:						0	0	0	0
AM	7:00 AM	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0
	BEGIN PEAK HR VOLUMES						0	0	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0
	BEGIN PEAK HR VOLUMES						0	0	0	0

Cedar
NORTH SIDE

Orange WEST SIDE EAST SIDE **Orange**

SOUTH SIDE
Cedar

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 4/3/18 TUESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Bloomington Cedar Orange	PROJECT #: LOCATION #: CONTROL:	SC1657 4 SIGNAL

CLASS 6:	**NOTES:**	AM PM MD OTHER OTHER	▲ N ◄ W E ► S ▼
BUSES			

		NORTHBOUND Cedar			SOUTHBOUND Cedar			EASTBOUND Orange			WESTBOUND Orange			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
AM	7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	1
	7:15 AM	0	2	0	0	1	1	0	0	0	0	0	0	4
	7:30 AM	0	4	0	0	4	1	0	0	0	0	0	0	9
	7:45 AM	0	3	0	0	3	0	0	0	0	0	0	0	6
	8:00 AM	0	2	0	0	0	1	1	0	0	0	0	0	4
	8:15 AM	0	3	0	0	4	1	0	0	1	0	0	0	9
	8:30 AM	0	3	0	0	0	0	0	0	0	0	0	0	3
	8:45 AM	0	7	1	2	1	0	0	0	0	0	0	0	11
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	24	1	2	13	5	1	0	1	0	0	0	47
	APPROACH %	0%	96%	4%	10%	65%	25%	50%	0%	50%	0%	0%	0%	
	APP/DEPART	25	/	25	20	/	14	2	/	3	0	/	5	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	12	0	0	11	3	1	0	1	0	0	0	28
	APPROACH %	0%	100%	0%	0%	79%	21%	50%	0%	50%	0%	0%	0%	
	PEAK HR FACTOR		0.750			0.700			0.500			0.000		0.778
	APP/DEPART	12	/	13	14	/	12	2	/	0	0	/	3	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
	4:15 PM	0	1	0	0	0	0	1	0	0	0	0	0	2
	4:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	2
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	5:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
	5:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	3
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	4	0	0	5	1	1	0	0	0	0	1	12
	APPROACH %	0%	100%	0%	0%	83%	17%	100%	0%	0%	0%	0%	100%	
	APP/DEPART	4	/	6	6	/	5	1	/	0	1	/	1	0
	BEGIN PEAK HR		3:45 PM											
	VOLUMES	0	1	0	0	4	0	0	0	0	0	0	1	6
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR		0.250			0.500			0.000			0.250		0.500
	APP/DEPART	1	/	2	4	/	4	0	/	0	1	/	0	0

	U-TURNS					RTOR			
	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
						0	0	0	0
7:00 AM	0	0	0	0	0	0	1	0	0
7:15 AM	0	0	0	0	0	0	1	0	0
7:30 AM	0	0	0	0	0	0	1	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	3	1	0
PEAK HR VOLUMES						0	1	1	0
03:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	1	0	0
PEAK HR VOLUMES						0	0	0	0

Cedar

NORTH SIDE

Orange WEST SIDE

EAST SIDE **Orange**

SOUTH SIDE

Cedar

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Apr 3, 18	LOCATION:	Bloomington	PROJECT #: SC1657
	NORTH & SOUTH:	Larch	LOCATION #: 5
	EAST & WEST:	Slover	CONTROL: SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Larch			SOUTHBOUND Larch			EASTBOUND Slover			WESTBOUND Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	0	0	1	0	1	1	1	1	2	0	
AM	7:00 AM	15	11	5	8	8	1	1	34	13	5	66	9	176
	7:15 AM	11	12	4	9	10	1	0	40	21	13	44	6	171
	7:30 AM	9	17	11	7	10	0	3	42	7	13	39	11	169
	7:45 AM	8	12	3	10	5	1	1	47	5	8	45	4	149
	8:00 AM	5	13	6	13	10	0	0	32	1	6	36	5	127
	8:15 AM	7	13	6	6	5	0	6	21	5	1	48	4	122
	8:30 AM	5	14	5	12	7	8	10	27	8	2	30	5	133
	8:45 AM	6	6	4	12	3	4	2	34	3	0	46	5	125
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	66	98	44	77	58	15	23	277	63	48	354	49	1,172
	APPROACH %	32%	47%	21%	51%	39%	10%	6%	76%	17%	11%	78%	11%	
	APP/DEPART	208	/	170	150	/	169	363	/	398	451	/	435	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	43	52	23	34	33	3	5	163	46	39	194	30	665
	APPROACH %	36%	44%	19%	49%	47%	4%	2%	76%	21%	15%	74%	11%	
	PEAK HR FACTOR		0.797			0.875			0.877			0.822		0.945
	APP/DEPART	118	/	87	70	/	118	214	/	220	263	/	240	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	12	26	16	28	17	14	3	108	19	10	57	23	333
	4:15 PM	12	28	18	6	10	4	8	93	15	2	61	20	277
	4:30 PM	10	48	17	20	15	14	8	119	15	12	66	15	359
	4:45 PM	18	30	16	16	11	9	8	99	14	20	65	15	321
	5:00 PM	13	22	23	5	8	1	9	114	9	14	62	22	302
	5:15 PM	11	40	18	8	8	5	12	116	12	14	49	15	308
	5:30 PM	8	45	13	12	9	8	8	111	20	8	52	6	300
	5:45 PM	12	28	17	11	7	3	6	86	20	10	49	6	255
	VOLUMES	96	267	138	106	85	58	62	846	124	90	461	122	2,455
	APPROACH %	19%	53%	28%	43%	34%	23%	6%	82%	12%	13%	68%	18%	
	APP/DEPART	501	/	448	249	/	299	1,032	/	1,090	673	/	618	0
	BEGIN PEAK HR		4:00 PM											
	VOLUMES	52	140	74	49	42	29	37	448	50	60	242	67	1,290
	APPROACH %	20%	53%	28%	41%	35%	24%	7%	84%	9%	16%	66%	18%	
	PEAK HR FACTOR		0.887			0.508			0.942			0.923		0.898
	APP/DEPART	266	/	242	120	/	152	535	/	571	369	/	325	0

U-TURNS					RTOR			
NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
0	0	0	0		0	0	0	0
0	0	0	0	0	1	0	4	4
0	0	0	0	0	2	0	5	4
0	0	0	0	0	3	0	0	4
0	0	0	0	0	0	1	0	1
0	0	0	0	0	3	0	0	0
0	0	0	0	0	4	0	2	0
0	0	0	0	0	1	1	1	2
0	0	0	0	0	1	1	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	15	3	12	15
					6	1	9	13
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	7	6	5	3
0	0	1	0	1	5	3	6	6
0	0	1	0	1	4	6	2	1
0	0	0	0	0	6	4	7	5
0	0	0	0	0	4	0	1	1
0	0	1	0	1	3	2	3	6
0	0	0	0	0	3	3	10	2
0	0	0	0	0	2	2	6	3
0	0	3	0	3	34	26	40	27
					17	12	13	13

Larch

NORTH SIDE

Slover WEST SIDE EAST SIDE **Slover**

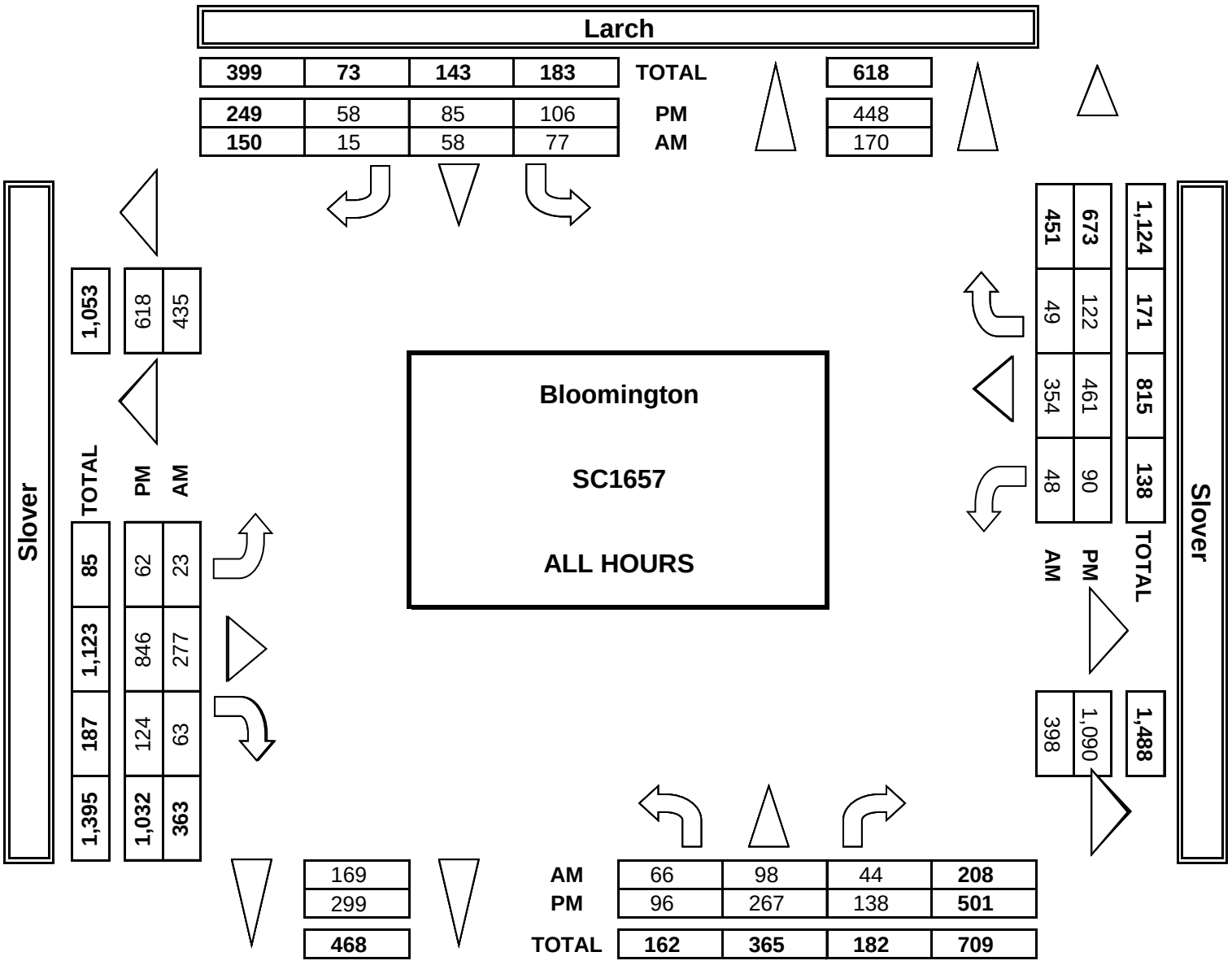
SOUTH SIDE

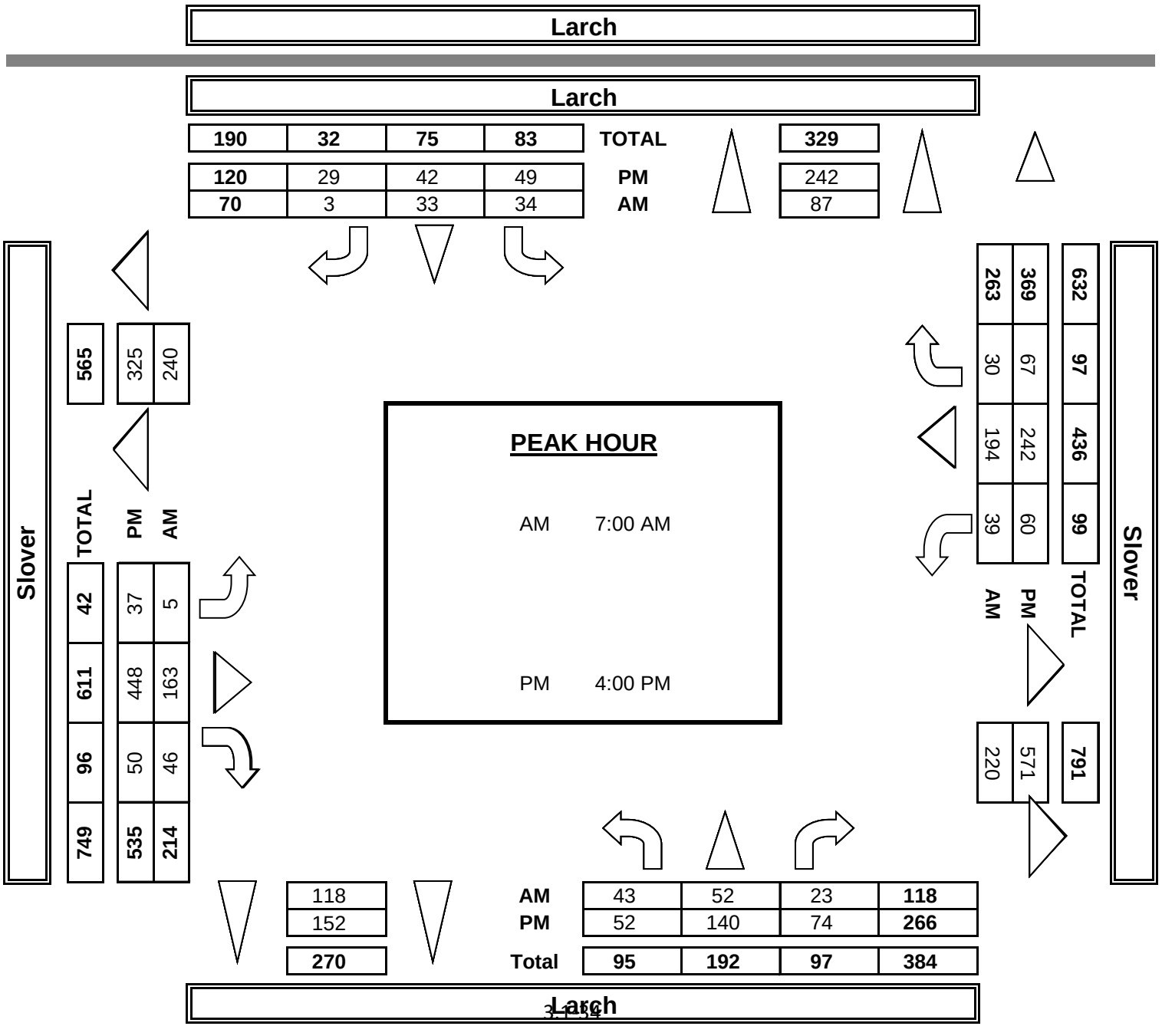
Larch

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	ES	WS	SS	NS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	2	0	2	0	0	2	0	2	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	2	0	2	0	0	2	0	2	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
	4:15 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	4:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	1	0	1	2	0	0	0	1	1	0	1	0	0	1
	5:30 PM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	5	1	2	8	0	4	0	2	6	0	1	1	0	2

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Bloomington		PROJECT #:	SC1657
4/3/18	NORTH & SOUTH:	Larch		LOCATION #:	5
TUESDAY	EAST & WEST:	Slover		CONTROL:	SIGNAL

CLASS 1:
PASSENGER
VEHICLES

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		Larch			Larch			Slover			Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	0	0	1	0	1	1	1	1	2	0	
AM	7:00 AM	14	11	5	6	8	0	1	21	13	5	56	8	148
	7:15 AM	9	10	3	7	10	1	0	33	21	13	38	5	150
	7:30 AM	9	16	11	7	10	0	3	30	6	13	29	10	144
	7:45 AM	8	12	3	7	4	1	1	36	4	8	37	3	124
	8:00 AM	4	12	4	12	10	0	0	20	1	6	26	4	99
	8:15 AM	7	12	6	5	5	0	6	13	4	1	32	4	95
	8:30 AM	5	14	5	12	7	8	9	20	7	2	21	5	115
	8:45 AM	6	6	4	12	3	1	2	17	3	0	27	4	85
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	62	93	41	68	57	11	22	190	59	48	266	43	960
	APPROACH %	32%	47%	21%	50%	42%	8%	8%	70%	22%	13%	75%	12%	
	APP/DEPART	196	/	158	136	/	164	271	/	299	357	/	339	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	40	49	22	27	32	2	5	120	44	39	160	26	566
	APPROACH %	36%	44%	20%	44%	52%	3%	3%	71%	26%	17%	71%	12%	
	PEAK HR FACTOR		0.771			0.847			0.782			0.815		0.943
	APP/DEPART	111	/	80	61	/	115	169	/	169	225	/	202	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	11	19	14	26	16	14	3	80	17	10	49	23	282
	4:15 PM	10	25	15	4	9	4	8	74	15	2	50	18	234
	4:30 PM	10	45	17	20	14	14	8	90	15	12	51	15	311
	4:45 PM	18	29	15	15	11	9	8	83	14	20	41	13	276
	5:00 PM	13	22	22	5	6	1	9	100	9	13	57	21	278
	5:15 PM	10	37	17	8	7	4	12	98	12	13	41	14	273
	5:30 PM	8	41	13	12	7	8	6	88	20	7	46	5	261
	5:45 PM	10	28	16	10	6	3	6	78	19	10	44	5	235
	VOLUMES	90	246	129	100	76	57	60	691	121	87	379	114	2,150
	APPROACH %	19%	53%	28%	43%	33%	24%	7%	79%	14%	15%	65%	20%	
	APP/DEPART	465	/	417	233	/	284	872	/	920	580	/	529	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	51	133	71	48	38	28	35	371	50	58	190	63	1,138
	APPROACH %	20%	52%	28%	42%	33%	25%	8%	81%	11%	19%	61%	20%	
	PEAK HR FACTOR		0.885			0.594			0.939			0.854		0.915
	APP/DEPART	255	/	231	114	/	146	458	/	490	311	/	271	0

	U-TURNS					RTOR			
	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
LANES:						0	0	0	0
7:00 AM	0	0	0	0	0	1	0	4	3
7:15 AM	0	0	0	0	0	2	0	5	3
7:30 AM	0	0	0	0	0	3	0	0	4
7:45 AM	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	1	0	0	0
8:15 AM	0	0	0	0	0	4	0	1	0
8:30 AM	0	0	0	0	0	1	1	1	2
8:45 AM	0	0	0	0	0	1	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	13	2	11	13
VOLUMES (PEAK HR)						6	1	9	11
03:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	6	6	5	3
4:15 PM	0	0	1	0	1	5	3	6	6
4:30 PM	0	0	1	0	1	4	6	2	1
4:45 PM	0	0	0	0	0	5	4	7	5
5:00 PM	0	0	0	0	0	4	0	1	1
5:15 PM	0	0	1	0	1	3	1	3	6
5:30 PM	0	0	0	0	0	3	3	10	2
5:45 PM	0	0	0	0	0	2	2	6	2
VOLUMES	0	0	3	0	3	32	25	40	26
VOLUMES (PEAK HR)						16	11	13	13

Larch

NORTH SIDE

Slover WEST SIDE EAST SIDE **Slover**

SOUTH SIDE

Larch

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
4/3/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Larch	LOCATION #:	5
	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 2:	NOTES:
2-AXLE WORK VEHICLES/ TRUCKS	

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Larch			SOUTHBOUND Larch			EASTBOUND Slover			WESTBOUND Slover			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	1	1	2	0	

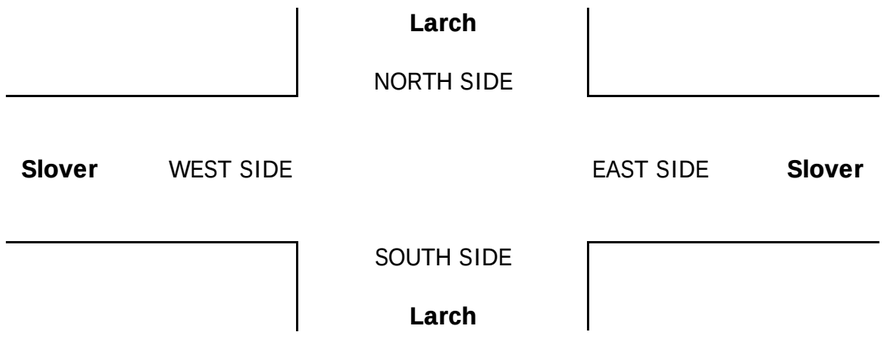
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	1	0	0	2	0	0	0	7	0	0	4	1	15	0	0	0	0	0	0	0	0	1
	7:15 AM	1	2	1	2	0	0	0	1	0	0	1	1	9	0	0	0	0	0	0	0	0	1
	7:30 AM	0	1	0	0	0	0	0	3	0	0	1	1	6	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	2	1	0	0	4	1	0	3	1	12	0	0	0	0	0	0	0	0	0
	8:00 AM	1	1	1	1	0	0	0	5	0	0	4	1	14	0	0	0	0	0	1	0	0	0
	8:15 AM	0	1	0	0	0	0	0	3	1	0	5	0	10	0	0	0	0	0	0	0	1	0
	8:30 AM	0	0	0	0	0	0	1	0	0	0	5	0	6	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	11	0	0	9	1	21	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	3	5	2	7	1	0	1	34	2	0	32	6	93	0	0	0	0	0	1	0	1	2
	APPROACH %	30%	50%	20%	88%	13%	0%	3%	92%	5%	0%	84%	16%										
	APP/DEPART	10	/	12	8	/	3	37	/	43	38	/	35	0									
	BEGIN PEAK HR		8:00 AM																				
	VOLUMES	1	2	1	1	0	0	1	19	1	0	23	2	51						1	0	1	0
	APPROACH %	25%	50%	25%	100%	0%	0%	5%	90%	5%	0%	92%	8%										
	PEAK HR FACTOR		0.333			0.250			0.477			0.625		0.607									
	APP/DEPART	4	/	5	1	/	1	21	/	21	25	/	24	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	1	6	0	1	1	0	0	5	0	0	4	0	18	0	0	0	0	0	0	0	0	0
	4:15 PM	2	3	3	2	1	0	0	9	0	0	5	1	26	0	0	0	0	0	0	0	0	0
	4:30 PM	0	3	0	0	1	0	0	4	0	0	5	0	13	0	0	0	0	0	0	0	0	0
	4:45 PM	0	1	1	1	0	0	0	4	0	0	10	2	19	0	0	0	0	0	1	0	0	0
	5:00 PM	0	0	1	0	2	0	0	2	0	1	1	1	8	0	0	0	0	0	0	0	0	0
	5:15 PM	1	3	0	0	1	1	0	6	0	0	2	1	15	0	0	0	0	0	0	1	0	0
	5:30 PM	0	2	0	0	2	0	2	10	0	1	4	0	21	0	0	0	0	0	0	0	0	0
	5:45 PM	1	0	1	1	1	0	0	1	1	0	2	1	9	0	0	0	0	0	0	0	0	1
	VOLUMES	5	18	6	5	9	1	2	41	1	2	33	6	129	0	0	0	0	0	1	1	0	1
	APPROACH %	17%	62%	21%	33%	60%	7%	5%	93%	2%	5%	80%	15%										
	APP/DEPART	29	/	26	15	/	12	44	/	52	41	/	39	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	3	13	4	4	3	0	0	22	0	0	24	3	76						1	0	0	0
	APPROACH %	15%	65%	20%	57%	43%	0%	0%	100%	0%	0%	89%	11%										
	PEAK HR FACTOR		0.625			0.583			0.611			0.563		0.731									
	APP/DEPART	20	/	16	7	/	3	22	/	30	27	/	27	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 4/3/18 TUESDAY	LOCATION:	Bloomington	PROJECT #:	SC1657
	NORTH & SOUTH:	Larch	LOCATION #:	5
	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 3:
3-AXLE
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
			Larch			Larch			Slover			Slover											
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:	0	1	0	0	1	0	1	1	1	1	2	0							0	0	0	0
AM	7:00 AM	0	0	0	0	0	1	0	2	0	0	2	0	5	0	0	0	0	0	0	0	0	0
	7:15 AM	1	0	0	0	0	0	0	3	0	0	3	0	7	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	3	0	0	1	0	4	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	3	0	0	1	0	4	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	1	0	0	0	0	2	0	0	2	0	5	0	0	0	0	0	1	0	0	0
	8:15 AM	0	0	0	0	0	0	0	3	0	0	5	0	8	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	3	0	0	2	0	5	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	1	0	1	0	0	1	0	22	1	0	16	0	42	0	0	0	0	0	1	0	0	0
	APPROACH %	50%	0%	50%	0%	0%	100%	0%	96%	4%	0%	100%	0%										
	APP/DEPART	2	/	0	1	/	1	23	/	23	16	/	18	0									
	BEGIN PEAK HR		8:00 AM																				
	VOLUMES	0	0	1	0	0	0	0	11	1	0	9	0	22						1	0	0	0
	APPROACH %	0%	0%	100%	0%	0%	0%	0%	92%	8%	0%	100%	0%										
	PEAK HR FACTOR		0.250			0.000			0.750			0.450		0.688									
	APP/DEPART	1	/	0	0	/	1	12	/	12	9	/	9	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	1	2	0	0	0	0	6	1	0	1	0	11	0	0	0	0	0	1	0	0	0
	4:15 PM	0	0	0	0	0	0	0	4	0	0	1	1	6	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	7	0	0	2	0	9	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	4	0	0	5	0	9	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	1	0	0	0	0	5	0	1	3	0	10	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	2	0	0	0	1	3	0	0	0	0	0	0	0	0	0
	5:45 PM	1	0	0	0	0	0	0	1	0	0	1	0	3	0	0	0	0	0	0	0	0	0
	VOLUMES	1	1	3	0	0	0	0	32	1	1	13	2	54	0	0	0	0	0	1	0	0	0
	APPROACH %	20%	20%	60%	0%	0%	0%	0%	97%	3%	6%	81%	13%										
	APP/DEPART	5	/	3	0	/	2	33	/	35	16	/	14	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	1	2	0	0	0	0	21	1	0	9	1	35						1	0	0	0
	APPROACH %	0%	33%	67%	0%	0%	0%	0%	95%	5%	0%	90%	10%										
	PEAK HR FACTOR		0.250			0.000			0.786			0.500		0.795									
	APP/DEPART	3	/	2	0	/	1	22	/	23	10	/	9	0									

Larch

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Larch

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
4/3/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Larch	LOCATION #:	5
	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 4: 4 OR MORE AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER

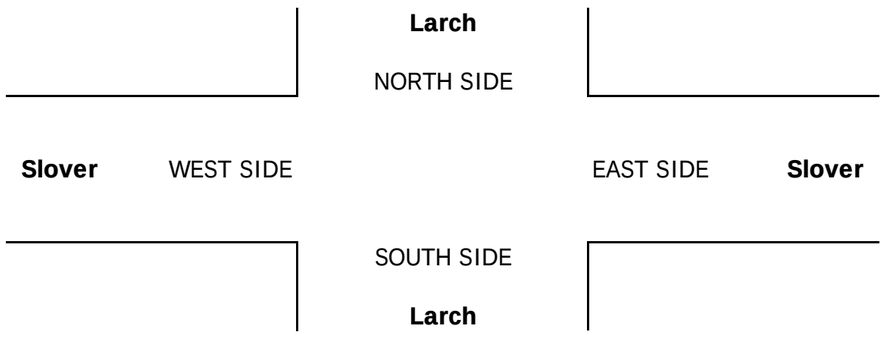
▲ N ◄ W E ► S ▼

	NORTHBOUND Larch			SOUTHBOUND Larch			EASTBOUND Slover			WESTBOUND Slover			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	1	1	2	0	

U-TURNS				
NB	SB	EB	WB	TTL

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	0	0	0	0	0	0	3	0	0	4	0	7	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	3	0	0	1	0	4	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	5	0	0	7	0	12	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	1	0	0	0	4	0	0	4	0	9	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	5	0	0	4	0	9	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	1	0	0	0	2	0	0	5	0	8	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	4	0	0	4	0	8	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	3	0	0	7	0	10	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	2	0	0	0	29	0	0	36	0	67	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%										
	APP/DEPART	0	/	0	2	/	0	29	/	31	36	/	36	0									
	BEGIN PEAK HR		7:30 AM																				
	VOLUMES	0	0	0	2	0	0	0	16	0	0	20	0	38						0	0	0	0
	APPROACH %	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%										
	PEAK HR FACTOR		0.000			0.500			0.800			0.714		0.792									
	APP/DEPART	0	/	0	2	/	0	16	/	18	20	/	20	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	16	1	0	2	0	19	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	6	0	0	5	0	11	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	18	0	0	7	0	25	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	8	0	0	9	0	17	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	9	0	0	4	0	13	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	7	0	0	3	0	10	0	0	0	0	0	0	0	0	0
	5:30 PM	0	1	0	0	0	0	0	11	0	0	2	0	14	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	6	0	0	2	0	8	0	0	0	0	0	0	0	0	0
	VOLUMES	0	1	0	0	0	0	0	81	1	0	34	0	117	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	100%	0%	0%	0%	0%	0%	99%	1%	0%	100%	0%										
	APP/DEPART	1	/	1	0	/	1	82	/	81	34	/	34	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	0	0	0	0	0	0	48	1	0	23	0	72						0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	98%	2%	0%	100%	0%										
	PEAK HR FACTOR		0.000			0.000			0.681			0.639		0.720									
	APP/DEPART	0	/	0	0	/	1	49	/	48	23	/	23	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 4/3/18 TUESDAY	LOCATION:	Bloomington	PROJECT #:	SC1657
	NORTH & SOUTH:	Larch	LOCATION #:	5
	EAST & WEST:	Slover	CONTROL:	SIGNAL

CLASS 5: RV

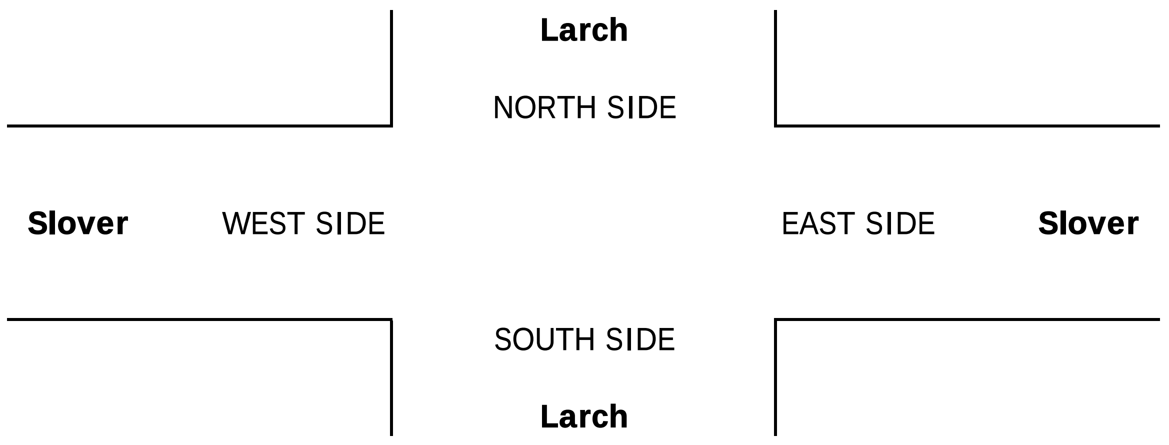
NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W E ►
S ▼

		NORTHBOUND Larch			SOUTHBOUND Larch			EASTBOUND Slover			WESTBOUND Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	0	0	1	0	1	1	1	1	2	0	
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	1	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	1	/	1	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	1	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.250		0.250
	APP/DEPART	0	/	0	0	/	0	0	/	0	1	/	1	0

		U-TURNS					RTOR			
		NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:						0	0	0	0
AM	7:00 AM	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0
	BEGIN PEAK HR VOLUMES						0	0	0	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0
	BEGIN PEAK HR VOLUMES						0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 4/3/18 TUESDAY	LOCATION:	Bloomington		PROJECT #:	SC1657
	NORTH & SOUTH:	Larch		LOCATION #:	5
	EAST & WEST:	Slover		CONTROL:	SIGNAL

CLASS 6: BUSES

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

	NORTHBOUND Larch			SOUTHBOUND Larch			EASTBOUND Slover			WESTBOUND Slover			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	1	1	2	0	
AM 7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM	0	0	0	0	0	0	0	1	1	0	1	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	3	0	0	0	0	1	0	4
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	3	0	2	1	0	4	0	10
APPROACH %	0%	0%	0%	0%	0%	100%	0%	67%	33%	0%	100%	0%	
APP/DEPART	0	/	0	3	/	1	3	/	2	4	/	7	0
BEGIN PEAK HR		7:00 AM											
VOLUMES	0	0	0	0	0	3	0	0	0	0	2	0	5
APPROACH %	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%	0%	
PEAK HR FACTOR		0.000			0.250			0.000			0.500		0.313
APP/DEPART	0	/	0	3	/	0	0	/	0	2	/	5	0
PM 03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	1	0	0	0	1	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	1	0	1	0	0	0	1	0	0	1	0	4
APPROACH %	0%	100%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	
APP/DEPART	1	/	1	1	/	0	1	/	2	1	/	1	0
BEGIN PEAK HR		3:45 PM											
VOLUMES	0	0	0	1	0	0	0	1	0	0	1	0	3
APPROACH %	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR		0.000			0.250			0.250			0.250		0.375
APP/DEPART	0	/	0	1	/	0	1	/	2	1	/	1	0

U-TURNS

	NB	SB	EB	WB	TTL
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
9:00 AM	0	0	0	0	0
9:15 AM	0	0	0	0	0
9:30 AM	0	0	0	0	0
9:45 AM	0	0	0	0	0
VOLUMES	0	0	0	0	0
03:00 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0
3:30 PM	0	0	0	0	0
3:45 PM	0	0	0	0	0
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
VOLUMES	0	0	0	0	0

RTOR

	NRR	SRR	ERR	WRR
LANES:	0	0	0	0
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	1	0	0
9:00 AM	0	0	0	0
9:15 AM	0	0	0	0
9:30 AM	0	0	0	0
9:45 AM	0	0	0	0
VOLUMES	0	1	0	0
PEAK HR VOLUMES	0	1	0	0
03:00 PM	0	0	0	0
3:15 PM	0	0	0	0
3:30 PM	0	0	0	0
3:45 PM	0	0	0	0
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
VOLUMES	0	0	0	0
PEAK HR VOLUMES	0	0	0	0

Larch

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Larch

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Mar 27, 18	LOCATION:	Bloomington	PROJECT #:	SC1657
	NORTH & SOUTH:	Cactus	LOCATION #:	6
	EAST & WEST:	Slover	CONTROL:	STOP N

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Cactus			SOUTHBOUND Cactus			EASTBOUND Slover			WESTBOUND Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	X	0	X	X	X	X	2	0	0	2	X	
AM	7:00 AM	10	0	6	0	0	0	0	35	11	15	25	0	102
	7:15 AM	5	0	8	0	0	0	0	30	8	17	39	0	107
	7:30 AM	13	0	3	0	0	0	0	42	6	14	43	0	121
	7:45 AM	14	0	7	0	0	0	0	44	14	13	38	0	130
	8:00 AM	7	0	7	0	0	0	0	29	8	9	36	0	96
	8:15 AM	12	0	6	0	0	0	0	30	6	5	29	0	88
	8:30 AM	6	0	6	0	0	0	0	48	9	2	39	0	110
	8:45 AM	15	0	11	0	0	0	0	41	6	7	26	0	106
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	82	0	54	0	0	0	0	299	68	82	275	0	860
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	81%	19%	23%	77%	0%	
	APP/DEPART	136	/	0	0	/	150	367	/	353	357	/	357	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	42	0	24	0	0	0	0	151	39	59	145	0	460
	APPROACH %	64%	0%	36%	0%	0%	0%	0%	79%	21%	29%	71%	0%	
	PEAK HR FACTOR		0.786			0.000			0.819			0.895		0.885
	APP/DEPART	66	/	0	0	/	98	190	/	175	204	/	187	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	25	0	13	0	0	0	0	80	9	12	53	0	192
	4:15 PM	15	0	16	0	0	0	0	63	11	9	73	0	187
	4:30 PM	22	0	12	0	0	0	0	87	12	13	62	0	208
	4:45 PM	20	0	11	0	0	0	0	108	10	16	49	0	214
	5:00 PM	16	0	15	0	0	0	0	75	8	15	67	0	196
	5:15 PM	12	0	20	0	0	0	0	83	6	11	73	0	205
	5:30 PM	19	0	14	0	0	0	0	88	9	15	42	0	187
	5:45 PM	16	0	8	0	0	0	0	84	10	15	60	0	193
	VOLUMES	145	0	109	0	0	0	0	668	75	106	479	0	1,582
	APPROACH %	57%	0%	43%	0%	0%	0%	0%	90%	10%	18%	82%	0%	
	APP/DEPART	254	/	0	0	/	181	743	/	777	585	/	624	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	70	0	58	0	0	0	0	353	36	55	251	0	823
	APPROACH %	55%	0%	45%	0%	0%	0%	0%	91%	9%	18%	82%	0%	
	PEAK HR FACTOR		0.941			0.000			0.824			0.911		0.961
	APP/DEPART	128	/	0	0	/	91	389	/	411	306	/	321	0

U-TURNS				
NB	SB	EB	WB	TTL
X	X	X	X	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

RTOR			
NRR	SRR	ERR	WRR
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Cactus

NORTH SIDE

Slover WEST SIDE EAST SIDE **Slover**

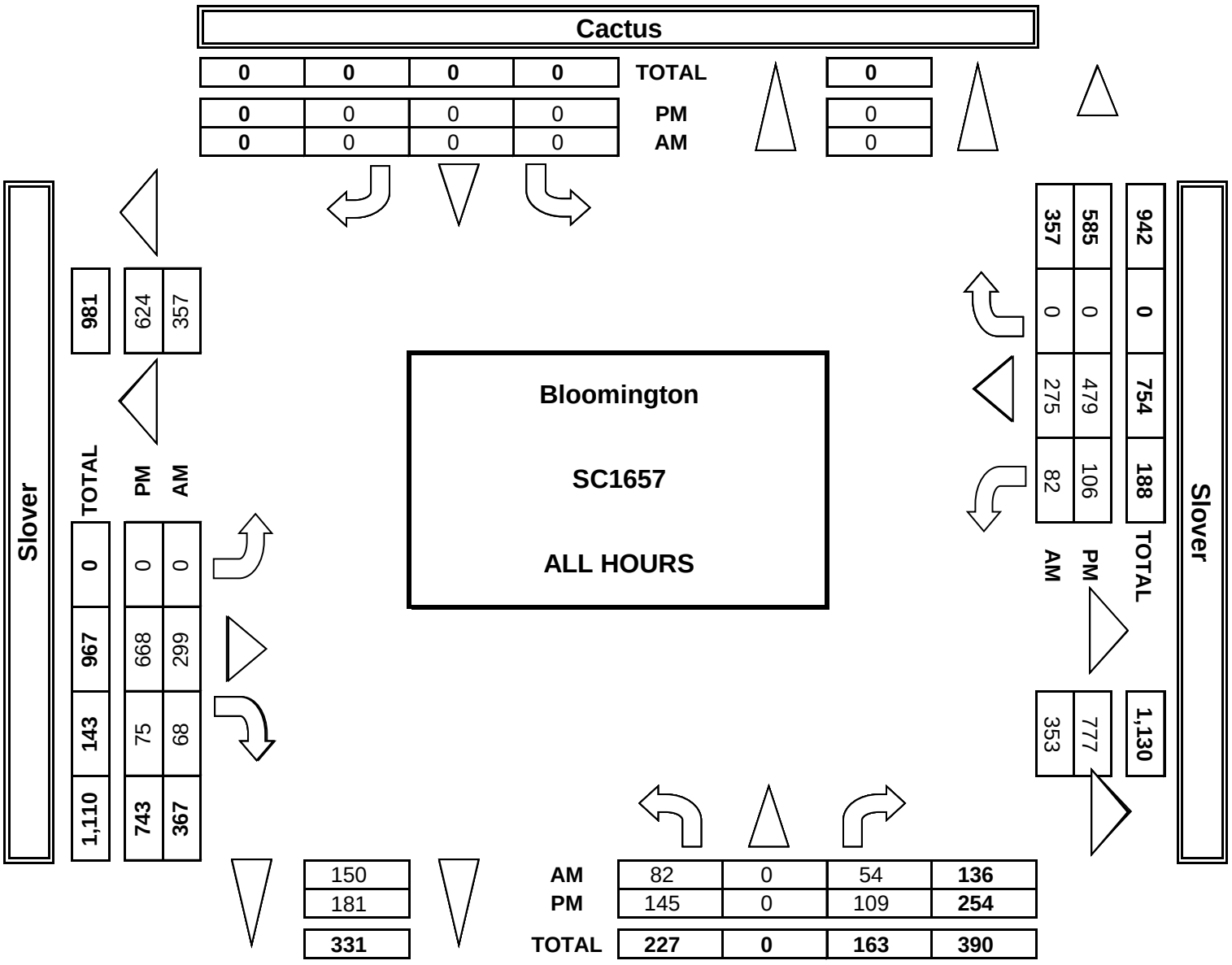
SOUTH SIDE

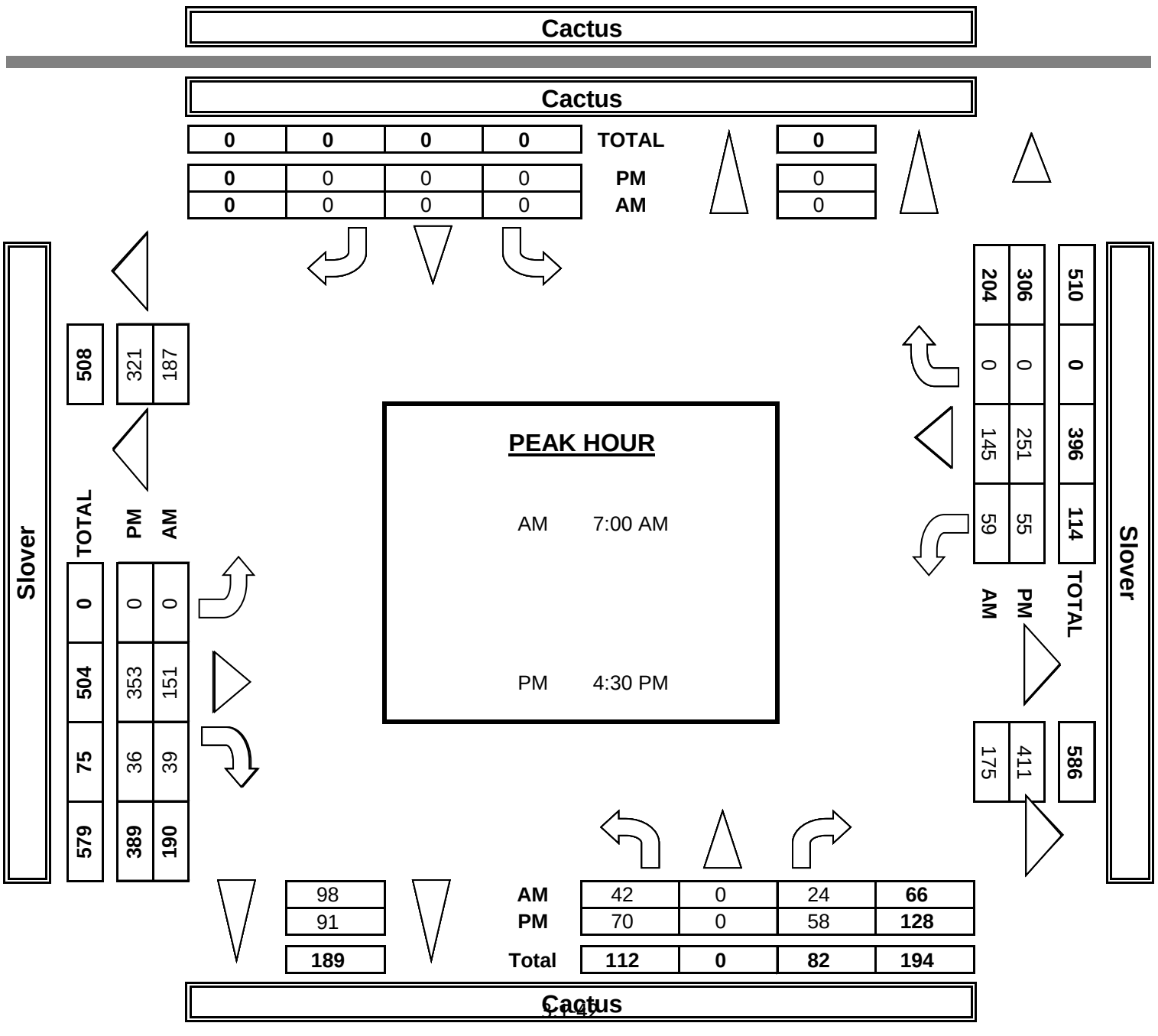
Cactus

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	ES	WS	SS	NS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	2	0	2	0	0	2	0	2	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	TOTAL	0	0	4	0	4	0	0	2	0	2	0	0	2	0	2

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION:	Bloomington		PROJECT #:	SC1657
	NORTH & SOUTH:	Cactus		LOCATION #:	6
	EAST & WEST:	Slover		CONTROL:	STOP N

CLASS 1: PASSENGER VEHICLES	**NOTES:**	AM PM MD OTHER OTHER	◄ W	▲ N S ▼
				E ►

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		Cactus			Cactus			Slover			Slover												
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
	LANES:	0	X	0	X	X	X	X	2	0	0	2	X							0	0	0	1
AM	7:00 AM	10	0	5	0	0	0	0	31	7	11	23	0	87	0	0	0	0	0	0	0	0	0
	7:15 AM	4	0	8	0	0	0	0	21	5	13	34	0	85	0	0	0	0	0	0	0	0	0
	7:30 AM	8	0	3	0	0	0	0	31	4	12	38	0	96	0	0	0	0	0	0	0	0	0
	7:45 AM	10	0	5	0	0	0	0	38	11	10	29	0	103	0	0	0	0	0	0	0	0	0
	8:00 AM	4	0	7	0	0	0	0	22	5	9	25	0	72	0	0	0	0	0	0	0	0	0
	8:15 AM	9	0	6	0	0	0	0	24	5	4	21	0	69	0	0	0	0	0	0	0	0	0
	8:30 AM	6	0	6	0	0	0	0	34	5	1	34	0	86	0	0	0	0	0	0	0	0	0
	8:45 AM	8	0	4	0	0	0	0	28	3	7	16	0	66	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	59	0	44	0	0	0	0	229	45	67	220	0	664	0	0	0	0	0	0	0	0	0
	APPROACH %	57%	0%	43%	0%	0%	0%	0%	84%	16%	23%	77%	0%										
	APP/DEPART	103	/	0	0	/	112	274	/	273	287	/	279	0									
	BEGIN PEAK HR		7:00 AM																				
	VOLUMES	32	0	21	0	0	0	0	121	27	46	124	0	371						0	0	0	0
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	82%	18%	27%	73%	0%										
	PEAK HR FACTOR		0.883			0.000			0.755			0.850		0.900									
	APP/DEPART	53	/	0	0	/	73	148	/	142	170	/	156	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	21	0	12	0	0	0	0	63	5	8	51	0	160	0	0	0	0	0	0	0	0	0
	4:15 PM	10	0	15	0	0	0	0	54	8	5	64	0	156	0	0	0	0	0	0	0	0	0
	4:30 PM	17	0	10	0	0	0	0	78	5	11	55	0	176	0	0	0	0	0	0	0	0	0
	4:45 PM	15	0	9	0	0	0	0	96	3	11	44	0	178	0	0	0	0	0	0	0	0	0
	5:00 PM	10	0	12	0	0	0	0	65	4	11	58	0	160	0	0	0	0	0	0	0	0	0
	5:15 PM	9	0	18	0	0	0	0	69	5	10	65	0	176	0	0	0	0	0	0	0	0	0
	5:30 PM	12	0	12	0	0	0	0	76	7	11	39	0	157	0	0	0	0	0	0	0	0	0
	5:45 PM	10	0	6	0	0	0	0	72	4	11	58	0	161	0	0	0	0	0	0	0	0	0
	VOLUMES	104	0	94	0	0	0	0	573	41	78	434	0	1,324	0	0	0	0	0	0	0	0	0
	APPROACH %	53%	0%	47%	0%	0%	0%	0%	93%	7%	15%	85%	0%										
	APP/DEPART	198	/	0	0	/	119	614	/	667	512	/	538	0									
	BEGIN PEAK HR		4:30 PM																				
	VOLUMES	51	0	49	0	0	0	0	308	17	43	222	0	690						0	0	0	0
	APPROACH %	51%	0%	49%	0%	0%	0%	0%	95%	5%	16%	84%	0%										
	PEAK HR FACTOR		0.926			0.000			0.821			0.883		0.969									
	APP/DEPART	100	/	0	0	/	60	325	/	357	265	/	273	0									

Cactus

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Cactus

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cactus	LOCATION #:	6
	EAST & WEST:	Slover	CONTROL:	STOP N

CLASS 2:	NOTES:
2-AXLE WORK VEHICLES/ TRUCKS	

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cactus			SOUTHBOUND Cactus			EASTBOUND Slover			WESTBOUND Slover			
LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 0	WT 2	WR X	TOTAL

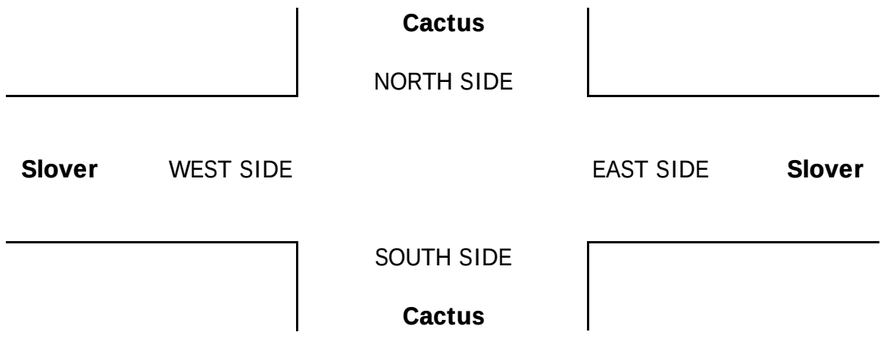
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	1

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	0	1	0	0	0	0	3	2	3	1	0	10	0	0	0	0	0	0	0	0	0
	7:15 AM	1	0	0	0	0	0	0	4	3	4	3	0	15	0	0	0	0	0	0	0	0	0
	7:30 AM	1	0	0	0	0	0	0	5	1	0	3	0	10	0	0	0	0	0	0	0	0	0
	7:45 AM	1	0	0	0	0	0	0	3	1	3	5	0	13	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	3	3	0	5	0	11	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	4	0	0	3	0	7	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	2	3	0	2	0	7	0	0	0	0	0	0	0	0	0
	8:45 AM	3	0	6	0	0	0	0	5	1	0	5	0	20	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	6	0	7	0	0	0	0	29	14	10	27	0	93	0	0	0	0	0	0	0	0	0
	APPROACH %	46%	0%	54%	0%	0%	0%	0%	67%	33%	27%	73%	0%										
	APP/DEPART	13	/	0	0	/	24	43	/	36	37	/	33	0									
	BEGIN PEAK HR	7:15 AM																					
	VOLUMES	3	0	0	0	0	0	0	15	8	7	16	0	49						0	0	0	0
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	65%	35%	30%	70%	0%										
	PEAK HR FACTOR	0.750			0.000			0.821			0.719			0.817									
	APP/DEPART	3	/	0	0	/	15	23	/	15	23	/	19	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	1	0	0	0	0	1	2	1	0	0	5	0	0	0	0	0	0	0	0	0
	4:15 PM	1	0	1	0	0	0	0	3	2	1	5	0	13	0	0	0	0	0	0	0	0	0
	4:30 PM	1	0	0	0	0	0	0	0	3	1	4	0	9	0	0	0	0	0	0	0	0	0
	4:45 PM	3	0	1	0	0	0	0	1	3	2	3	0	13	0	0	0	0	0	0	0	0	0
	5:00 PM	3	0	1	0	0	0	0	6	1	2	4	0	17	0	0	0	0	0	0	0	0	0
	5:15 PM	1	0	1	0	0	0	0	4	0	0	2	0	8	0	0	0	0	0	0	0	0	0
	5:30 PM	2	0	1	0	0	0	0	1	0	3	1	0	8	0	0	0	0	0	0	0	0	0
	5:45 PM	5	0	1	0	0	0	0	6	6	2	0	0	20	0	0	0	0	0	0	0	0	0
	VOLUMES	16	0	7	0	0	0	0	22	17	12	19	0	93	0	0	0	0	0	0	0	0	0
	APPROACH %	70%	0%	30%	0%	0%	0%	0%	56%	44%	39%	61%	0%										
	APP/DEPART	23	/	0	0	/	29	39	/	29	31	/	35	0									
	BEGIN PEAK HR	5:00 PM																					
	VOLUMES	11	0	4	0	0	0	0	17	7	7	7	0	53						0	0	0	0
	APPROACH %	73%	0%	27%	0%	0%	0%	0%	71%	29%	50%	50%	0%										
	PEAK HR FACTOR	0.625			0.000			0.500			0.583			0.663									
	APP/DEPART	15	/	0	0	/	14	24	/	21	14	/	18	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Bloomington Cactus Slover	PROJECT #: LOCATION #: CONTROL:	SC1657 6 STOP N

CLASS 3:
3-AXLE
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◄ W
E ►
S
▼

		NORTHBOUND Cactus			SOUTHBOUND Cactus			EASTBOUND Slover			WESTBOUND Slover			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	X	0	X	X	X	X	2	0	0	2	X	
AM	7:00 AM	0	0	0	0	0	0	0	0	2	0	0	0	2
	7:15 AM	0	0	0	0	0	0	0	4	0	0	0	0	4
	7:30 AM	3	0	0	0	0	0	0	4	0	0	1	0	8
	7:45 AM	1	0	0	0	0	0	0	0	1	0	3	0	5
	8:00 AM	1	0	0	0	0	0	0	3	0	0	2	0	6
	8:15 AM	1	0	0	0	0	0	0	1	0	0	2	0	4
	8:30 AM	0	0	0	0	0	0	0	4	0	0	1	0	5
	8:45 AM	3	0	0	0	0	0	0	4	0	0	2	0	9
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	9	0	0	0	0	0	0	20	3	0	11	0	43
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	87%	13%	0%	100%	0%	
	APP/DEPART	9	/	0	0	/	3	23	/	20	11	/	20	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	5	0	0	0	0	0	0	12	0	0	7	0	24
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.417			0.000			0.750			0.875		0.667
	APP/DEPART	5	/	0	0	/	0	12	/	12	7	/	12	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	1	0	0	0	0	0	0	5	0	0	1	0	7
	4:15 PM	1	0	0	0	0	0	0	0	1	2	2	0	6
	4:30 PM	1	0	0	0	0	0	0	0	2	0	0	0	3
	4:45 PM	1	0	1	0	0	0	0	1	1	0	2	0	6
	5:00 PM	2	0	2	0	0	0	0	2	0	0	2	0	8
	5:15 PM	2	0	0	0	0	0	0	3	1	0	2	0	8
	5:30 PM	2	0	0	0	0	0	0	1	0	0	0	0	3
	5:45 PM	0	0	0	0	0	0	0	2	0	1	0	0	3
	VOLUMES	10	0	3	0	0	0	0	14	5	3	9	0	44
	APPROACH %	77%	0%	23%	0%	0%	0%	0%	74%	26%	25%	75%	0%	
	APP/DEPART	13	/	0	0	/	8	19	/	17	12	/	19	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	7	0	3	0	0	0	0	7	2	0	6	0	25
	APPROACH %	70%	0%	30%	0%	0%	0%	0%	78%	22%	0%	100%	0%	
	PEAK HR FACTOR		0.625			0.000			0.563			0.750		0.781
	APP/DEPART	10	/	0	0	/	2	9	/	10	6	/	13	0

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

RTOR			
NRR	SRR	ERR	WRR
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Cactus

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Cactus

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cactus	LOCATION #:	6
	EAST & WEST:	Slover	CONTROL:	STOP N

CLASS 4: 4 OR MORE AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cactus			SOUTHBOUND Cactus			EASTBOUND Slover			WESTBOUND Slover			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	X	0	X	X	X	X	2	0	0	2	X	

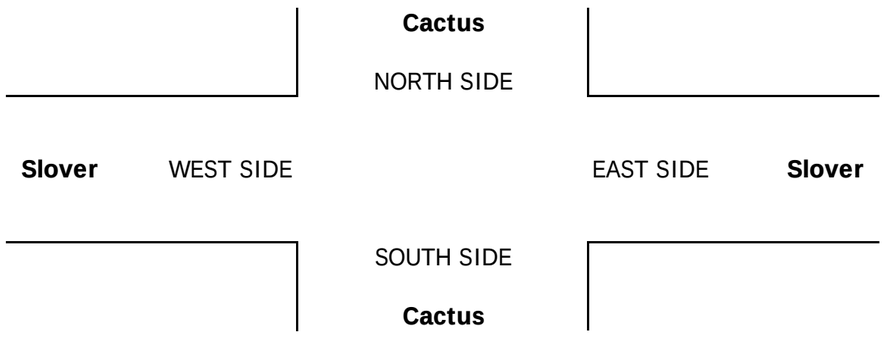
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	1

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	0	0	0	0	0	0	1	0	1	1	0	3	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	3	0	0	0	0	0	0	0	0	0
	7:30 AM	1	0	0	0	0	0	0	2	1	2	1	0	7	0	0	0	0	0	0	0	0	0
	7:45 AM	2	0	2	0	0	0	0	3	1	0	1	0	9	0	0	0	0	0	0	0	0	0
	8:00 AM	2	0	0	0	0	0	0	1	0	0	3	0	6	0	0	0	0	0	0	0	0	0
	8:15 AM	2	0	0	0	0	0	0	1	1	1	3	0	8	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	8	1	1	2	0	12	0	0	0	0	0	0	0	0	0
	8:45 AM	1	0	1	0	0	0	0	4	2	0	3	0	11	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	8	0	3	0	0	0	0	21	6	5	16	0	59	0	0	0	0	0	0	0	0	0
	APPROACH %	73%	0%	27%	0%	0%	0%	0%	78%	22%	24%	76%	0%										
	APP/DEPART	11	/	0	0	/	11	27	/	24	21	/	24	0									
	BEGIN PEAK HR	8:00 AM																					
	VOLUMES	5	0	1	0	0	0	0	14	4	2	11	0	37						0	0	0	0
	APPROACH %	83%	0%	17%	0%	0%	0%	0%	78%	22%	15%	85%	0%										
	PEAK HR FACTOR	0.750			0.000			0.500			0.813			0.771									
	APP/DEPART	6	/	0	0	/	6	18	/	15	13	/	16	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	3	0	0	0	0	0	0	11	2	3	1	0	20	0	0	0	0	0	0	0	0	0
	4:15 PM	3	0	0	0	0	0	0	6	0	1	2	0	12	0	0	0	0	0	0	0	0	0
	4:30 PM	3	0	2	0	0	0	0	9	2	1	3	0	20	0	0	0	0	0	0	0	0	0
	4:45 PM	1	0	0	0	0	0	0	10	3	3	0	0	17	0	0	0	0	0	0	0	0	0
	5:00 PM	1	0	0	0	0	0	0	2	3	2	2	0	10	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	1	0	0	0	0	7	0	1	4	0	13	0	0	0	0	0	0	0	0	0
	5:30 PM	3	0	1	0	0	0	0	10	2	1	2	0	19	0	0	0	0	0	0	0	0	0
	5:45 PM	1	0	1	0	0	0	0	4	0	1	2	0	9	0	0	0	0	0	0	0	0	0
	VOLUMES	15	0	5	0	0	0	0	59	12	13	16	0	120	0	0	0	0	0	0	0	0	0
	APPROACH %	75%	0%	25%	0%	0%	0%	0%	83%	17%	45%	55%	0%										
	APP/DEPART	20	/	0	0	/	25	71	/	64	29	/	31	0									
	BEGIN PEAK HR	4:00 PM																					
	VOLUMES	10	0	2	0	0	0	0	36	7	8	6	0	69						0	0	0	0
	APPROACH %	83%	0%	17%	0%	0%	0%	0%	84%	16%	57%	43%	0%										
	PEAK HR FACTOR	0.600			0.000			0.827			0.875			0.863									
	APP/DEPART	12	/	0	0	/	15	43	/	38	14	/	16	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
3/27/18	LOCATION:	Bloomington	PROJECT #:	SC1657
TUESDAY	NORTH & SOUTH:	Cactus	LOCATION #:	6
	EAST & WEST:	Slover	CONTROL:	STOP N

CLASS 5: RV

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND Cactus			SOUTHBOUND Cactus			EASTBOUND Slover			WESTBOUND Slover			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	X	0	X	X	X	X	2	0	0	2	X	

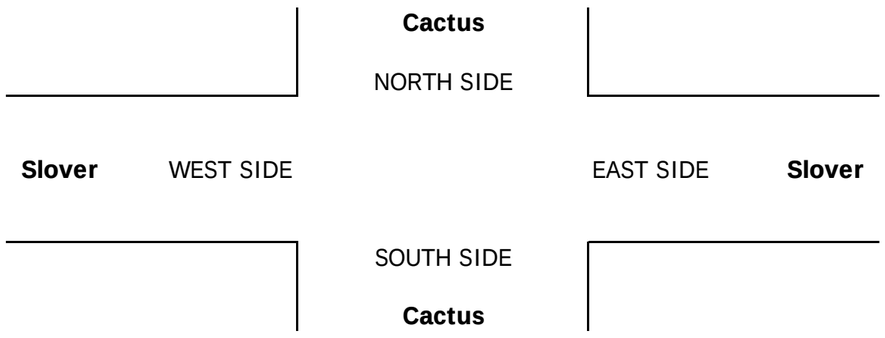
U-TURNS

NB	SB	EB	WB	TTL

RTOR

NRR	SRR	ERR	WRR
0	0	0	1

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS					RTOR			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL	NRR	SRR	ERR	WRR
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									
	BEGIN PEAK HR	7:00 AM																					
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0						0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000									
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									
	BEGIN PEAK HR	3:00 PM																					
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0						0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%										
	PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000									
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0									



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 3/27/18 TUESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Bloomington Cactus Slover	PROJECT #: LOCATION #: CONTROL:	SC1657 6 STOP N

CLASS 6:	**NOTES:**	AM PM MD OTHER OTHER	▲ N ◄ W E ► S ▼
BUSES			

		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
			Cactus			Cactus			Slover			Slover		
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	X	0	X	X	X	X	2	0	0	2	X	
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	1	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	1	/	1	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	1	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.250		0.250
	APP/DEPART	0	/	0	0	/	0	0	/	0	1	/	1	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	1	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	1	/	1	0
	BEGIN PEAK HR		4:15 PM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	1	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.000			0.000			0.250		0.250
	APP/DEPART	0	/	0	0	/	0	0	/	0	1	/	1	0

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

RTOR			
NRR	SRR	ERR	WRR
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Cactus

NORTH SIDE

Slover WEST SIDE

EAST SIDE **Slover**

SOUTH SIDE

Cactus

A816

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tuesday, March 27, 2018
JOB #: SC1657

LOCATION#
CLASS1 Cedar north of Slover

AM	NORTHBOUND														PM	NORTHBOUND													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	32	5	0	2	0	0	3	0	0	0	0	0	42	12:00	0	119	13	0	9	2	1	3	1	0	1	1	0	150
0:15	0	39	1	0	2	0	0	3	0	0	0	0	0	45	12:15	0	130	18	0	12	4	0	7	2	0	1	0	0	174
0:30	0	23	3	0	4	1	0	0	1	0	0	0	0	32	12:30	0	142	19	3	15	1	0	1	2	0	1	0	1	185
0:45	0	20	4	0	5	1	0	1	1	0	0	0	1	33	12:45	0	131	25	1	6	1	0	2	6	0	1	1	0	174
1:00	0	25	1	0	4	1	0	3	0	0	0	0	0	34	13:00	1	146	16	1	10	1	0	6	1	0	0	0	0	182
1:15	1	28	6	0	3	0	0	2	0	0	0	0	0	40	13:15	2	131	24	3	15	2	1	2	2	0	0	1	1	184
1:30	0	22	1	0	2	0	0	1	1	0	0	0	0	27	13:30	1	134	14	1	17	2	1	4	1	0	1	0	0	176
1:45	0	18	1	0	2	2	0	1	0	0	0	0	0	24	13:45	0	168	17	2	11	2	0	1	1	1	1	2	0	206
2:00	2	21	1	0	2	1	0	3	1	0	1	0	0	32	14:00	0	147	14	2	9	3	1	4	0	0	2	0	1	183
2:15	0	21	3	0	1	1	0	1	0	0	2	1	0	30	14:15	1	133	19	2	16	3	0	6	2	0	0	0	0	182
2:30	0	28	2	0	4	0	0	1	0	0	1	0	0	36	14:30	0	169	12	2	17	2	0	0	2	0	0	0	0	204
2:45	0	42	3	1	4	0	0	0	0	0	0	0	0	50	14:45	1	161	14	0	14	2	1	2	0	0	2	0	0	197
3:00	0	41	8	0	5	0	0	1	0	0	0	0	0	55	15:00	1	154	10	1	13	7	0	4	1	0	0	0	4	195
3:15	1	38	4	0	6	1	0	1	0	0	1	0	0	52	15:15	0	173	16	3	11	3	0	0	1	0	2	0	0	209
3:30	0	44	12	0	4	0	0	3	2	0	0	0	0	65	15:30	0	203	20	3	11	2	0	5	1	0	0	1	1	247
3:45	0	58	11	0	7	0	0	4	0	0	1	0	0	81	15:45	0	182	18	1	6	3	3	4	0	0	1	0	0	218
4:00	0	38	10	0	4	1	0	0	0	0	1	0	0	54	16:00	2	190	13	0	8	2	0	6	1	0	0	0	0	222
4:15	0	83	14	0	12	1	0	1	0	0	0	0	0	111	16:15	0	193	19	2	16	1	0	5	1	0	0	0	1	238
4:30	0	83	14	0	10	1	0	0	1	0	1	0	0	110	16:30	3	178	14	1	11	2	0	4	1	0	0	0	0	214
4:45	0	87	15	1	13	1	0	1	0	0	0	1	0	119	16:45	0	210	12	0	10	2	0	1	1	0	1	0	1	238
5:00	0	70	16	1	13	0	0	1	0	0	1	0	1	103	17:00	2	221	15	1	7	3	0	5	1	0	0	0	1	256
5:15	1	94	18	0	16	1	0	0	1	0	0	1	0	132	17:15	0	190	19	1	9	6	0	0	2	0	0	1	1	229
5:30	0	115	18	0	10	1	0	1	1	0	0	0	0	146	17:30	1	198	7	1	8	1	1	4	0	0	1	2	0	224
5:45	0	117	18	0	17	1	0	4	0	0	1	0	0	158	17:45	0	177	11	1	10	4	0	1	1	0	0	0	0	205
6:00	0	88	20	0	12	0	0	3	0	0	2	1	0	126	18:00	0	146	15	1	10	4	0	4	4	0	0	0	1	185
6:15	0	114	19	0	18	2	0	1	0	0	0	0	0	154	18:15	2	143	12	2	8	1	0	2	3	0	1	0	0	174
6:30	0	166	17	0	16	4	0	0	3	0	1	0	0	207	18:30	1	144	13	0	11	1	0	2	2	0	1	1	0	176
6:45	0	177	15	1	8	1	0	0	0	0	0	1	1	204	18:45	0	113	19	1	9	1	0	2	1	0	0	0	0	146
7:00	0	140	14	0	10	4	0	3	0	0	0	0	0	171	19:00	0	123	15	0	8	1	0	6	2	0	0	0	0	155
7:15	1	156	19	0	16	5	0	1	1	0	1	0	1	201	19:15	1	149	11	0	5	0	0	5	0	0	1	0	0	172
7:30	1	172	16	0	14	4	1	2	0	1	0	1	2	214	19:30	0	133	20	0	6	0	0	2	2	0	0	0	0	163
7:45	0	154	14	2	17	3	0	0	1	0	2	1	0	194	19:45	0	106	13	0	6	2	0	3	0	0	0	0	0	130
8:00	1	165	11	0	14	8	0	3	1	0	1	1	1	206	20:00	0	118	12	0	8	4	0	3	2	0	0	0	0	147
8:15	0	142	19	5	13	1	1	2	2	0	2	0	0	187	20:15	0	109	18	0	8	2	0	0	1	0	0	0	0	138
8:30	1	126	11	2	11	3	0	4	1	0	2	0	0	161	20:30	0	83	18	0	8	0	0	2	1	0	0	0	0	112
8:45	0	116	10	2	14	3	1	6	2	0	0	0	0	154	20:45	0	108	8	0	6	0	0	4	0	0	0	0	0	126
9:00	0	90	11	0	7	0	0	3	4	0	0	0	2	117	21:00	0	103	8	0	12	1	0	1	1	0	0	0	0	126
9:15	1	122	14	2	14	5	0	4	1	0	0	1	0	164	21:15	0	110	12	1	7	0	1	3	1	0	0	0	0	135
9:30	0	114	17	0	4	0	0	4	4	0	2	1	0	146	21:30	0	135	13	0	8	0	0	1	0	0	0	0	0	157
9:45	0	114	16	1	19	1	1	4	1	0	1	0	0	158	21:45	0	89	8	0	5	0	0	2	1	0	1	0	0	106
10:00	1	116	17	0	19	0	0	1	1	0	2	1	1	159	22:00	0	83	9	0	7	1	0	2	0	0	1	0	0	103
10:15	1	115	18	1	14	2	0	4	1	0	2	0	1	159	22:15	0	84	9	0	10	0	0	2	0	0	1	0	0	106
10:30	0	112	16	3	27	0	0	2	1	0	1	0	0	162	22:30	0	88	4	0	2	1	0	4	0	1	0	0	0	100
10:45	0	130	14	2	12	1	0	3	2	0	2	0	1	167	22:45	0	60	5	0	6	0	0	1	0	0	0	0	0	72
11:00	1	116	10	0	22	1	1	7	0	0	1	0	0	159	23:00	0	66	9	0	7	0	0	3	1	0	1	0	0	87
11:15	1	125	12	1	11	4	1	2	0	0	1	0	2	160	23:15	0	61	6	1	5	0	0	1	0	0	1	0	0	75
11:30	0	125	17	3	20	0	2	0	0	0	0	0	0	167	23:30	0	30	6	0	3	0	0	1	0	0	0	0	0	40
11:45	0	105	21	1	14	1	0	6	0	0	0	0	0	148	23:45	0	53	7	0	5	0	0	0	0	0	0	0	0	65
TOTAL	14	4,287	557	29	498	68	8	101	35	1	33	11	14	5,656	TOTAL	19	6,417	649	38	441	80	10	133	53	2	23	10	13	7,888

AM PEAK HOUR	7:15 AM
AM PEAK VOLUME	815

PM PEAK HOUR	4:45 PM
PM PEAK VOLUME	947

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	33	10,704	1,206	67	939	148	18	234	88	3	56	21	27	13,544
% OF TOTAL	0.2%	79.0%	8.9%	0.5%	6.9%	1.1%	0.1%	1.7%	0.6%	0.0%	0.4%	0.2%	0.2%	100.0%

Class	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
TOTAL: ALL	67	21,416	2,262	122	1,808	356	49	424	265	12	110	55	79	27,025
% OF TOTAL	0.5%	158.1%	16.7%	0.9%	13.3%	2.6%	0.4%	3.1%	2.0%	0.1%	0.8%	0.4%	0.6%	100.0%

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tuesday, March 27, 2018
JOB #: SC1657

LOCATION#
CLASS1 Cedar north of Slover

AM	SOUTHBOUND														PM	SOUTHBOUND													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	35	4	0	2	1	0	1	0	0	1	0	0	44	12:00	1	152	12	0	17	2	0	1	2	0	3	0	1	191
0:15	0	22	3	0	2	1	0	3	0	0	1	0	0	32	12:15	0	142	14	1	13	1	0	1	5	0	1	3	0	181
0:30	0	30	3	0	4	0	0	2	0	0	1	0	0	40	12:30	0	158	13	0	8	3	1	4	4	1	1	2	0	195
0:45	0	27	1	0	3	0	0	0	2	0	1	0	0	34	12:45	0	180	14	2	10	3	0	3	2	0	0	1	1	216
1:00	0	27	3	0	0	1	0	2	1	0	1	0	0	35	13:00	0	140	18	0	12	2	0	3	2	0	1	1	1	180
1:15	0	17	3	0	1	0	0	1	0	0	0	0	1	23	13:15	0	131	20	3	11	3	0	4	3	0	1	1	0	177
1:30	0	25	5	1	3	0	0	0	0	0	1	0	0	35	13:30	2	161	18	2	11	5	0	2	3	1	0	1	0	206
1:45	0	26	0	0	1	1	0	1	2	0	0	0	0	31	13:45	1	114	18	0	13	4	0	2	3	0	2	2	0	159
2:00	0	21	3	0	0	1	0	0	1	0	1	0	0	27	14:00	1	177	12	0	10	4	1	3	4	2	2	1	0	217
2:15	0	16	2	0	0	1	0	0	1	0	0	0	0	20	14:15	1	162	12	1	13	9	1	3	1	0	0	2	0	205
2:30	0	17	2	0	5	0	0	0	0	0	0	1	0	25	14:30	0	162	18	0	18	0	0	2	2	0	0	1	1	204
2:45	0	10	6	0	3	0	0	0	0	0	1	0	0	20	14:45	3	163	16	0	11	7	2	4	1	0	1	0	0	208
3:00	0	21	4	0	5	0	0	0	1	0	2	0	0	33	15:00	0	166	20	1	17	0	1	2	4	0	0	0	1	212
3:15	0	20	4	0	1	0	0	1	2	0	2	0	0	30	15:15	0	170	17	2	7	3	1	2	0	0	0	0	1	203
3:30	0	34	3	0	6	1	0	2	2	0	0	0	0	48	15:30	1	191	12	1	14	6	2	4	0	0	1	1	2	235
3:45	1	43	4	1	5	1	0	2	2	0	0	0	0	59	15:45	2	187	20	0	13	4	0	3	7	0	0	0	1	237
4:00	0	34	2	0	4	1	0	0	2	0	1	0	0	44	16:00	0	209	14	1	17	5	0	3	2	0	1	0	0	252
4:15	0	66	6	1	5	0	0	1	3	0	1	1	0	84	16:15	2	185	18	0	15	5	0	2	0	0	1	0	2	230
4:30	0	72	8	0	7	0	0	0	2	0	0	0	0	89	16:30	1	190	3	0	2	1	1	2	2	0	0	1	0	203
4:45	0	41	9	0	8	2	0	4	2	0	1	0	2	69	16:45	1	185	1	0	5	2	1	1	1	0	0	0	2	199
5:00	0	68	12	0	17	1	0	0	3	0	1	1	0	103	17:00	0	172	13	1	9	5	0	2	1	0	0	0	4	207
5:15	1	68	10	4	9	2	0	3	4	0	0	0	0	101	17:15	0	185	10	0	10	9	1	2	0	0	1	0	1	219
5:30	0	95	19	1	16	2	0	2	0	0	1	0	1	137	17:30	0	162	12	0	5	4	1	3	4	0	0	1	1	193
5:45	0	78	13	1	9	5	0	0	6	0	0	0	1	113	17:45	0	158	0	0	3	1	0	0	0	0	0	1	2	165
6:00	0	62	11	0	9	3	0	1	4	0	1	0	0	91	18:00	2	161	13	1	3	4	4	1	0	0	0	0	0	189
6:15	0	97	8	1	15	6	0	3	3	0	0	0	0	133	18:15	0	148	10	1	12	0	2	2	2	0	1	0	0	178
6:30	0	147	12	0	10	3	1	1	3	0	2	0	0	179	18:30	2	142	19	0	17	3	1	6	0	0	1	1	0	192
6:45	1	147	11	1	14	4	0	2	4	1	0	0	0	185	18:45	0	105	21	1	12	2	0	0	3	0	0	0	2	146
7:00	0	156	18	0	13	2	0	1	1	0	0	0	1	192	19:00	1	114	11	0	11	3	1	1	1	0	0	0	1	144
7:15	2	165	9	3	13	0	0	1	2	0	0	2	2	199	19:15	0	164	17	0	7	2	0	1	0	0	0	1	1	193
7:30	0	176	10	0	14	6	0	4	2	1	2	0	1	216	19:30	1	144	18	0	11	2	0	2	0	0	0	1	0	179
7:45	0	167	17	0	9	3	0	1	4	1	0	1	0	203	19:45	1	132	9	0	7	0	0	4	1	0	0	0	0	154
8:00	0	175	16	0	7	2	1	2	1	0	1	0	1	206	20:00	0	145	20	0	9	0	1	4	1	0	0	0	1	181
8:15	0	164	9	0	9	3	2	1	5	0	0	1	1	195	20:15	0	127	8	1	9	1	0	1	1	0	0	0	0	148
8:30	0	156	19	0	16	8	2	1	0	0	2	2	0	206	20:30	0	108	8	0	9	2	0	2	2	0	0	0	0	131
8:45	0	145	18	2	13	1	0	2	0	1	0	0	0	182	20:45	0	125	12	0	6	1	0	2	0	1	0	1	1	149
9:00	0	107	20	2	20	1	0	4	2	0	0	0	0	156	21:00	0	111	9	0	8	4	0	2	0	0	0	0	0	134
9:15	0	96	15	3	9	1	0	6	1	0	0	0	1	132	21:15	0	117	9	0	7	2	0	4	2	0	0	0	0	141
9:30	1	130	16	0	18	2	0	2	5	0	0	1	2	177	21:30	0	113	11	0	10	1	0	1	0	0	1	0	1	138
9:45	1	126	20	1	15	2	1	3	5	0	1	0	0	175	21:45	0	95	5	0	11	1	0	3	0	0	1	0	1	117
10:00	0	93	11	1	17	2	0	1	6	0	1	0	1	133	22:00	0	89	9	0	5	1	0	3	1	0	0	0	1	109
10:15	0	117	14	3	11	3	0	4	3	0	1	0	0	156	22:15	0	88	13	0	2	1	0	0	1	0	0	0	0	105
10:30	3	143	13	2	17	0	0	3	2	0	1	0	1	185	22:30	0	81	6	1	4	0	0	0	1	0	0	0	0	93
10:45	0	125	20	1	8	1	2	7	0	0	2	0	1	167	22:45	0	71	1	0	6	0	0	1	0	0	0	0	0	79
11:00	1	140	20	1	12	4	0	6	5	0	0	0	1	190	23:00	0	72	6	0	5	1	0	0	0	0	0	0	0	84
11:15	0	129	11	4	9	6	0	2	5	0	0	0	2	168	23:15	0	51	3	0	2	0	0	2	0	0	1	0	0	59
11:30	0	119	12	0	15	3	0	5	3	0	1	0	1	159	23:30	0	49	5	1	4	0	0	0	0	0	0	0	0	59
11:45	0	125	23	0	17	2	0	1	3	0	1	1	1	174	23:45	0	38	6	0	2	0	0	1	3	0	0	0	0	50
TOTAL	11	4,120	482	34	426	89	9	89	105	4	33	11	22	5,435	TOTAL	23	6,592	574	21	443	119	22	101	72	5	21	23	30	8,046

AM PEAK HOUR	7:15 AM
AM PEAK VOLUME	824

PM PEAK HOUR	3:30 PM
PM PEAK VOLUME	954

CLASS 1	Class 1 — Motorcycles	CLASS 8	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	CLASS 9	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	CLASS 10	6 or More Axles, Single Trailer
CLASS 4	Buses	CLASS 11	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	CLASS 12	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	CLASS 13	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	34	####	1,056	55	869	208	31	190	177	9	54	34	52	13,481
% OF TOTAL	0.3%	79.5%	7.8%	0.4%	6.4%	1.5%	0.2%	1.4%	1.3%	0.1%	0.4%	0.3%	0.4%	100.0%

Class	1	2	3	4	5	6	7	8	9	10	11	12	13

A816

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tuesday, March 27, 2018
JOB #: SC1657

LOCATION#
CLASS2 Slover west of Cactus

AM	EASTBOUND														PM	EASTBOUND													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	9	1	0	2	0	0	0	1	0	1	0	0	14	12:00	0	29	4	1	6	2	1	2	3	0	0	0	1	49
0:15	0	9	1	0	1	1	0	0	3	0	1	0	0	16	12:15	0	41	6	1	5	0	0	0	4	0	0	0	1	58
0:30	0	6	2	0	0	3	0	0	1	0	0	0	0	12	12:30	0	36	7	1	8	0	0	1	5	0	1	0	0	59
0:45	1	11	1	0	2	2	0	1	0	0	1	0	0	19	12:45	0	37	4	0	7	3	1	2	3	0	0	0	0	57
1:00	0	12	2	0	1	2	0	0	1	0	0	0	1	19	13:00	1	40	8	0	10	0	0	2	4	0	1	0	0	66
1:15	0	4	1	0	2	3	0	3	1	0	1	0	0	15	13:15	1	36	7	3	9	5	0	1	2	0	1	0	0	65
1:30	0	8	1	0	0	2	0	1	1	0	0	0	0	13	13:30	0	29	13	0	6	2	0	3	3	0	0	0	0	56
1:45	0	8	1	0	2	0	0	1	0	0	0	0	0	12	13:45	0	39	6	1	5	2	0	3	4	0	0	0	0	60
2:00	0	5	0	0	3	1	0	0	1	0	1	0	0	11	14:00	0	21	2	0	1	2	0	1	3	0	1	0	0	31
2:15	0	8	2	0	0	1	0	0	0	0	2	0	0	13	14:15	0	28	13	0	6	0	0	1	5	0	0	0	0	53
2:30	0	7	1	0	2	1	0	0	0	0	1	0	0	12	14:30	0	33	6	0	9	3	0	0	2	0	0	2	0	55
2:45	0	10	3	2	0	1	0	0	0	0	0	0	0	16	14:45	0	28	7	0	5	2	1	1	1	0	0	0	0	45
3:00	0	6	1	0	1	2	0	0	0	0	0	0	0	10	15:00	1	46	4	1	5	1	0	3	7	0	1	0	0	69
3:15	0	7	1	0	2	3	0	0	0	0	2	1	0	16	15:15	0	33	9	1	5	1	1	4	1	0	0	0	0	55
3:30	0	17	3	0	2	1	0	0	1	0	0	0	0	24	15:30	1	43	9	0	2	2	0	4	7	0	1	0	0	69
3:45	0	21	3	0	1	2	0	0	2	0	2	0	0	31	15:45	0	31	10	1	3	4	0	3	7	0	1	0	0	60
4:00	0	8	0	0	2	1	0	1	0	0	1	0	0	13	16:00	3	50	13	0	11	0	0	11	2	0	3	0	0	93
4:15	0	17	2	1	3	2	0	1	1	0	0	0	0	27	16:15	0	61	9	1	3	2	0	0	2	0	0	0	0	78
4:30	0	22	10	2	2	3	0	1	0	0	2	0	0	42	16:30	0	75	8	0	4	0	0	7	4	0	0	0	1	99
4:45	0	34	3	0	5	3	0	0	0	0	1	0	0	46	16:45	1	75	13	1	5	2	0	6	4	0	2	0	1	110
5:00	0	21	5	0	7	1	0	0	2	0	0	0	0	36	17:00	1	61	7	0	5	3	0	3	2	0	0	0	0	82
5:15	0	13	4	0	1	1	0	0	1	0	0	0	0	20	17:15	1	68	10	1	4	3	1	4	2	0	0	0	0	94
5:30	0	29	10	0	2	0	0	0	0	0	0	0	0	41	17:30	3	65	7	0	3	4	0	6	1	0	1	0	1	91
5:45	0	32	7	1	8	1	0	0	4	0	1	0	0	54	17:45	0	65	9	1	9	1	0	3	0	0	0	0	0	88
6:00	0	20	4	1	4	0	0	0	1	0	3	0	0	33	18:00	0	62	5	2	8	2	0	0	1	0	1	0	0	81
6:15	0	15	7	0	5	0	0	0	1	0	0	0	0	28	18:15	1	44	9	0	6	1	0	4	2	0	0	0	0	67
6:30	0	19	9	0	3	1	0	1	1	0	1	0	0	35	18:30	0	34	4	0	2	1	0	0	0	0	1	1	0	43
6:45	1	37	5	0	4	0	0	0	0	0	0	1	0	48	18:45	0	38	2	1	2	2	0	2	1	0	0	0	0	48
7:00	0	28	11	0	3	2	0	0	0	0	1	0	0	45	19:00	0	25	2	0	1	2	0	6	3	0	0	0	0	39
7:15	0	18	9	0	6	2	0	0	2	0	0	0	0	37	19:15	1	34	2	0	1	1	0	4	4	0	1	0	0	48
7:30	0	32	2	0	6	3	0	0	2	0	0	0	0	45	19:30	0	31	4	0	1	0	0	3	0	0	0	0	0	39
7:45	0	35	10	0	6	1	0	1	2	0	0	0	0	55	19:45	0	27	4	0	2	1	0	0	1	0	0	0	0	35
8:00	0	25	5	0	6	2	0	0	0	0	1	0	0	39	20:00	0	15	1	0	4	3	0	3	0	0	0	0	0	26
8:15	0	22	6	2	3	1	0	0	1	0	1	0	0	36	20:15	0	25	3	0	0	3	0	2	0	0	0	0	0	33
8:30	0	32	4	0	10	1	0	1	6	0	0	0	0	54	20:30	0	21	3	1	4	0	0	2	0	0	0	0	0	31
8:45	0	29	6	1	3	3	0	1	4	0	2	0	0	49	20:45	0	18	3	0	0	2	0	2	0	0	0	0	0	25
9:00	0	17	7	0	7	2	0	2	4	0	2	0	0	41	21:00	0	15	0	0	1	0	0	2	1	0	0	0	0	19
9:15	0	23	2	0	2	3	0	0	2	0	0	0	0	32	21:15	0	14	4	0	1	0	0	3	1	0	0	1	0	24
9:30	0	21	5	0	4	1	0	1	3	0	2	0	0	37	21:30	0	26	5	0	4	0	1	5	0	0	0	0	0	41
9:45	0	20	4	0	3	2	0	1	3	0	1	0	0	34	21:45	0	37	4	0	4	0	0	1	0	0	0	0	0	46
10:00	0	22	9	0	10	1	0	2	0	0	1	0	1	46	22:00	0	23	4	0	2	1	0	3	0	0	1	0	0	34
10:15	1	22	5	0	8	4	0	3	5	0	1	0	0	49	22:15	0	15	1	0	2	1	0	3	0	0	0	0	0	22
10:30	0	23	11	1	12	1	0	1	2	1	0	2	0	54	22:30	0	35	4	0	2	0	0	1	1	0	2	0	0	45
10:45	0	25	5	0	8	3	0	0	9	0	0	0	0	50	22:45	0	28	1	0	3	1	0	0	0	0	0	0	0	33
11:00	1	24	9	0	9	1	0	2	7	0	0	0	1	54	23:00	0	24	2	0	1	1	0	2	1	0	0	1	0	32
11:15	0	22	9	0	7	2	0	1	7	0	1	0	0	49	23:15	0	19	1	1	0	1	0	1	0	0	1	0	0	24
11:30	0	21	5	1	5	0	0	2	5	2	1	0	0	42	23:30	0	16	2	1	0	0	0	0	1	0	0	0	0	20
11:45	1	24	7	1	6	2	0	2	4	0	0	0	0	47	23:45	0	14	4	0	1	0	0	0	0	0	0	0	0	19
TOTAL	5	900	221	13	191	75	0	30	91	3	35	4	3	1,571	TOTAL	15	1,710	265	20	188	67	6	120	95	0	20	5	5	2,516

AM PEAK HOUR	10:30 AM
AM PEAK VOLUME	207

PM PEAK HOUR	4:30 PM
PM PEAK VOLUME	385

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	20	2,610	486	33	379	142	6	150	186	3	55	9	8	4,087
% OF TOTAL	0.5%	63.9%	11.9%	0.8%	9.3%	3.5%	0.1%	3.7%	4.6%	0.1%	1.3%	0.2%	0.2%	100.0%
Class	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
TOTAL: ALL	44	4,882	953	65	827	245	7	322	324	7	87	15	12	7,790
% OF TOTAL	1.1%	119.5%	23.3%	1.6%	20.2%	6.0%	0.2%	7.9%	7.9%	0.2%	2.1%	0.4%	0.3%	100.0%

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tuesday, March 27, 2018
JOB #: SC1657

LOCATION#
CLASS2 Slover west of Cactus

AM	WESTBOUND													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	6	0	0	1	0	0	1	0	0	1	0	0	9
0:15	0	4	0	0	0	0	0	2	0	0	1	0	0	7
0:30	0	10	2	0	0	0	0	2	0	0	1	0	0	15
0:45	0	10	1	1	0	1	0	1	1	0	2	0	0	17
1:00	0	13	2	0	1	0	0	2	3	0	0	0	0	21
1:15	0	3	1	0	0	0	0	1	1	0	0	1	0	7
1:30	0	3	2	0	2	0	0	2	0	0	1	0	0	10
1:45	0	3	0	0	2	0	0	0	2	0	0	0	0	7
2:00	0	5	1	0	0	1	0	0	1	0	1	0	0	9
2:15	0	3	1	0	1	0	0	0	1	0	0	0	0	6
2:30	0	4	2	0	1	0	0	0	0	0	0	1	0	8
2:45	0	2	0	0	0	0	0	2	0	0	1	0	0	5
3:00	0	9	2	0	1	0	0	0	0	0	2	0	0	14
3:15	0	4	2	0	0	0	0	0	2	0	1	0	0	9
3:30	0	4	1	0	0	1	0	1	0	0	0	0	0	7
3:45	0	7	1	0	0	1	0	0	2	0	0	0	0	11
4:00	0	6	0	0	0	1	0	0	1	0	1	0	0	9
4:15	0	11	1	0	0	0	0	1	5	0	0	1	0	19
4:30	0	9	6	0	3	2	0	0	1	0	1	0	0	22
4:45	0	14	5	0	2	0	0	0	2	0	0	0	0	23
5:00	0	10	2	0	1	3	0	0	4	0	0	0	0	20
5:15	0	20	2	2	4	3	0	2	1	1	0	0	0	35
5:30	0	14	2	0	1	0	0	2	2	0	0	0	0	21
5:45	2	11	4	0	1	1	0	1	3	0	1	0	0	24
6:00	0	12	3	0	5	0	0	0	1	0	0	0	0	21
6:15	1	23	10	0	7	2	0	2	3	0	0	0	0	48
6:30	1	25	8	0	5	1	0	1	0	0	1	0	0	42
6:45	1	40	6	0	3	0	0	1	0	1	0	0	0	52
7:00	0	24	6	0	2	0	0	0	1	0	0	0	0	33
7:15	0	37	8	0	8	0	0	0	1	0	0	0	0	54
7:30	0	40	12	0	3	1	0	2	0	0	1	0	0	59
7:45	1	28	10	0	4	3	0	1	2	0	0	0	0	49
8:00	0	23	10	0	6	1	0	0	2	0	1	0	0	43
8:15	0	20	8	1	5	0	0	0	4	0	0	0	0	38
8:30	0	28	8	0	6	1	0	0	2	0	0	0	0	45
8:45	0	12	7	1	8	1	0	5	1	0	1	0	0	36
9:00	0	20	7	4	14	0	0	2	0	0	0	0	0	47
9:15	0	26	3	4	4	1	0	4	3	0	1	0	0	46
9:30	0	17	10	0	9	2	0	2	0	0	0	0	1	41
9:45	0	13	3	0	5	0	0	3	5	0	1	0	0	30
10:00	0	20	2	0	9	1	0	0	2	0	0	0	0	34
10:15	0	20	5	2	8	2	0	2	2	0	0	0	0	41
10:30	0	27	9	0	10	4	0	1	2	0	0	1	0	54
10:45	0	31	6	1	7	2	0	2	0	0	0	0	0	49
11:00	0	27	7	0	4	0	0	4	0	0	0	0	0	42
11:15	0	25	5	2	8	0	0	2	2	0	0	0	0	44
11:30	2	21	5	0	11	1	0	2	5	0	0	0	0	47
11:45	2	32	6	0	7	2	0	1	1	1	1	0	0	53
TOTAL	10	776	204	18	179	39	0	57	71	3	21	4	1	1,383

AM PEAK HOUR	7:15 AM
AM PEAK VOLUME	205

PM	WESTBOUND													
Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
12:00	1	37	5	0	5	0	0	0	5	0	2	0	0	55
12:15	0	31	3	1	8	1	0	4	3	0	1	0	2	54
12:30	0	35	4	0	8	3	0	6	2	0	0	0	0	58
12:45	2	25	9	2	7	1	0	2	4	0	0	0	0	52
13:00	2	26	1	2	3	0	0	3	1	0	0	0	0	38
13:15	2	22	9	0	4	2	0	3	1	0	0	0	0	43
13:30	1	25	8	0	6	5	0	2	4	0	0	0	0	51
13:45	1	26	6	1	12	4	0	3	3	0	0	0	0	56
14:00	0	38	4	0	8	3	0	3	2	1	0	0	1	60
14:15	0	37	8	1	6	1	0	9	3	0	0	0	0	65
14:30	0	52	11	0	7	1	0	2	2	0	0	0	0	75
14:45	1	51	5	1	9	5	0	2	2	0	0	0	0	76
15:00	0	41	8	1	9	1	0	1	1	0	0	1	0	63
15:15	0	37	8	0	5	1	0	0	3	0	0	0	0	54
15:30	0	48	9	0	6	3	0	4	1	0	1	0	0	72
15:45	1	44	9	1	11	1	0	2	1	0	0	0	0	70
16:00	1	54	12	0	4	0	0	3	2	0	0	0	0	76
16:15	0	57	6	1	9	4	0	3	1	0	0	0	0	81
16:30	1	50	11	1	10	2	0	2	1	0	1	0	0	79
16:45	0	51	7	2	4	2	0	1	0	0	0	0	0	67
17:00	0	53	11	0	15	3	0	1	3	0	0	0	0	86
17:15	0	62	7	0	4	2	0	3	3	0	0	0	0	81
17:30	0	46	11	0	7	1	0	3	0	0	0	0	0	68
17:45	0	61	8	0	7	0	0	1	0	0	0	0	0	77
18:00	0	40	6	0	5	1	0	5	3	0	0	0	0	60
18:15	0	35	3	0	2	0	0	1	1	0	1	0	0	43
18:30	0	27	9	0	10	1	0	5	2	0	1	0	0	55
18:45	0	18	4	0	5	2	0	0	4	0	0	0	0	33
19:00	0	30	1	0	3	3	0	1	2	0	0	0	0	40
19:15	0	29	3	0	8	0	0	4	0	0	0	1	0	45
19:30	0	16	7	0	4	1	0	2	0	0	0	0	0	30
19:45	0	17	5	0	4	1	0	1	1	0	0	0	0	29
20:00	1	28	6	0	4	2	0	2	1	0	0	0	0	44
20:15	0	18	2	0	2	1	1	2	0	0	0	0	0	26
20:30	0	11	2	0	4	0	0	2	1	0	0	0	0	20
20:45	0	21	4	0	6	0	0	1	1	0	0	0	0	33
21:00	0	16	1	0	6	1	0	4	0	0	0	0	0	28
21:15	0	21	6	0	1	0	0	5	0	0	1	0	0	34
21:30	0	20	3	0	5	0	0	4	1	0	0	0	0	33
21:45	0	19	3	0	4	1	0	2	1	0	1	0	0	31
22:00	0	23	2	0	6	1	0	5	0	0	0	0	0	37
22:15	0	16	2	0	1	0	0	1	0	0	0	0	0	20
22:30	0	26	4	0	0	0	0	0	0	0	1	0	0	31
22:45	0	17	2	0	4	0	0	1	0	0	0	0	0	24
23:00	0	14	3	0	5	0	0	4	0	0	0	0	0	26
23:15	0	5	1	0	1	1	0	0	0	0	1	0	0	9
23:30	0	13	1	0	3	1	0	0	1	0	0	0	0	19
23:45	0	7	3	0	2	1	0	0	0	0	0	0	0	13
TOTAL	14	1,496	263	14	269	64	1	115	67	1	11	2	3	2,320

PM PEAK HOUR	4:30 PM
PM PEAK VOLUME	313

CLASS 1	Class 1 — Motorcycles	CLASS 8	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	CLASS 9	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	CLASS 10	6 or More Axles, Single Trailer
CLASS 4	Buses	CLASS 11	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	CLASS 12	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	CLASS 13	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	24	2,272	467	32	448	103	1	172	138	4	32	6	4	3,703
% OF TOTAL	0.6%	61.4%	12.6%	0.9%	12.1%	2.8%	0.0%	4.6%	3.7%	0.1%	0.9%	0.2%	0.1%	100.0%

Class	1	2	3	4	5	6	7	8	9	10	11	12	13

APPENDIX 3.2:

EXISTING (2019) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

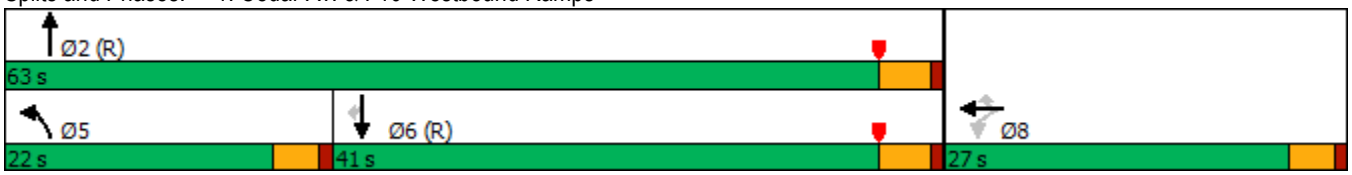
This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	13	326	337	1206	1431	812
Future Volume (vph)	13	326	337	1206	1431	812
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	27.0	27.0	22.0	63.0	41.0	41.0
Total Split (%)	30.0%	30.0%	24.4%	70.0%	45.6%	45.6%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 59 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	365	13	326	337	1206	0	0	1431	812
Future Volume (veh/h)	0	0	0	365	13	326	337	1206	0	0	1431	812
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				384	14	203	355	1269	0	0	1506	599
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				423	15	390	362	2395	0	0	2174	675
Arrive On Green				0.24	0.24	0.24	0.13	0.44	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1749	64	1610	1810	3705	0	0	5358	1610
Grp Volume(v), veh/h				398	0	203	355	1269	0	0	1506	599
Grp Sat Flow(s),veh/h/ln				1813	0	1610	1810	1805	0	0	1729	1610
Q Serve(g_s), s				19.2	0.0	9.8	17.6	23.0	0.0	0.0	21.4	31.0
Cycle Q Clear(g_c), s				19.2	0.0	9.8	17.6	23.0	0.0	0.0	21.4	31.0
Prop In Lane				0.96		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				439	0	390	362	2395	0	0	2174	675
V/C Ratio(X)				0.91	0.00	0.52	0.98	0.53	0.00	0.00	0.69	0.89
Avail Cap(c_a), veh/h				463	0	411	362	2395	0	0	2174	675
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.58	0.58	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				33.1	0.0	29.6	38.8	14.8	0.0	0.0	21.4	24.2
Incr Delay (d2), s/veh				20.9	0.0	1.1	31.1	0.5	0.0	0.0	1.8	16.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.4	0.0	3.7	11.0	9.8	0.0	0.0	8.3	13.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				54.0	0.0	30.7	69.9	15.3	0.0	0.0	23.2	40.2
LnGrp LOS				D	A	C	E	B	A	A	C	D
Approach Vol, veh/h					601			1624			2105	
Approach Delay, s/veh					46.1			27.2			28.1	
Approach LOS					D			C			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	64.2		22.0	42.2		25.8						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	58.5		18.0	36.5		23.0						
Max Q Clear Time (g_c+I1), s	25.0		19.6	33.0		21.2						
Green Ext Time (p_c), s	11.1		0.0	3.0		0.6						

Intersection Summary		
HCM 6th Ctrl Delay	30.3	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	4	1089	434	443	1353
Future Volume (vph)	453	4	1089	434	443	1353
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	453	4	362	0	0	0	0	1089	434	443	1353	0
Future Volume (veh/h)	453	4	362	0	0	0	0	1089	434	443	1353	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	397	109	319				0	1134	376	461	1409	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	503	119	347				0	1596	495	498	2265	0
Arrive On Green	0.28	0.28	0.28				0.00	0.31	0.31	0.09	0.21	0.00
Sat Flow, veh/h	1810	427	1249				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	397	0	428				0	1134	376	461	1409	0
Grp Sat Flow(s),veh/h/ln	1810	0	1675				0	1729	1610	1810	1805	0
Q Serve(g_s), s	18.3	0.0	22.3				0.0	17.4	19.0	22.8	32.0	0.0
Cycle Q Clear(g_c), s	18.3	0.0	22.3				0.0	17.4	19.0	22.8	32.0	0.0
Prop In Lane	1.00		0.75				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	503	0	466				0	1596	495	498	2265	0
V/C Ratio(X)	0.79	0.00	0.92				0.00	0.71	0.76	0.93	0.62	0.00
Avail Cap(c_a), veh/h	523	0	484				0	1596	495	503	2265	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.57	0.57	0.63	0.63	0.00
Uniform Delay (d), s/veh	30.0	0.0	31.5				0.0	27.6	28.1	40.0	26.0	0.0
Incr Delay (d2), s/veh	7.7	0.0	22.2				0.0	1.6	6.2	16.1	0.8	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
%ile BackOfQ(50%),veh/ln	8.4	0.0	11.2				0.0	7.0	7.7	13.1	15.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	0.0	53.7				0.0	29.2	34.3	56.1	26.8	0.0
LnGrp LOS	D	A	D				A	C	C	E	C	A
Approach Vol, veh/h		825						1510			1870	
Approach Delay, s/veh		46.0						30.5			34.0	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	28.8	32.2		29.0		61.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	24.8	21.0		24.3		34.0
Green Ext Time (p_c), s	0.0	2.9		0.7		7.2

Intersection Summary		
HCM 6th Ctrl Delay		35.1
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	294	6	1	1	1	1138	109	1151	456
Future Volume (vph)	294	6	1	1	1	1138	109	1151	456
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	47.0	47.0	47.0	47.0	9.6	59.0	14.0	63.4	63.4
Total Split (%)	39.2%	39.2%	39.2%	39.2%	8.0%	49.2%	11.7%	52.8%	52.8%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 109
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	294	6	21	1	1	91	1	1138	7	109	1151	456
Future Volume (veh/h)	294	6	21	1	1	91	1	1138	7	109	1151	456
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		1.00	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	313	6	20	1	1	46	1	1211	6	116	1224	321
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	413	93	309	39	15	374	194	1908	9	287	2032	906
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.00	0.55	0.55	0.05	0.59	0.59
Sat Flow, veh/h	1303	365	1215	5	59	1470	1619	3490	17	1619	3420	1525
Grp Volume(v), veh/h	313	0	26	48	0	0	1	593	624	116	1224	321
Grp Sat Flow(s),veh/h/ln	1303	0	1580	1534	0	0	1619	1710	1797	1619	1710	1525
Q Serve(g_s), s	20.0	0.0	1.2	0.0	0.0	0.0	0.0	23.6	23.6	2.9	22.2	10.6
Cycle Q Clear(g_c), s	22.3	0.0	1.2	2.4	0.0	0.0	0.0	23.6	23.6	2.9	22.2	10.6
Prop In Lane	1.00		0.77	0.02		0.96	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	413	0	402	428	0	0	194	935	982	287	2032	906
V/C Ratio(X)	0.76	0.00	0.06	0.11	0.00	0.00	0.01	0.63	0.63	0.40	0.60	0.35
Avail Cap(c_a), veh/h	643	0	682	700	0	0	274	935	982	363	2032	906
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	27.7	28.1	0.0	0.0	11.6	15.4	15.4	12.3	12.6	10.2
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.1	0.3	1.3	1.1
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	7.3	0.0	0.5	0.9	0.0	0.0	0.0	9.0	9.4	0.9	7.7	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.4	0.0	27.7	28.2	0.0	0.0	11.6	18.7	18.5	12.7	13.9	11.3
LnGrp LOS	D	A	C	C	A	A	B	B	B	B	B	B
Approach Vol, veh/h		339			48			1218			1661	
Approach Delay, s/veh		35.8			28.2			18.6			13.3	
Approach LOS		D			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	59.0		29.6	4.7	63.7		29.6				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	9.4	53.6		* 42	5.0	58.0		* 42				
Max Q Clear Time (g_c+I1), s	4.9	25.6		24.3	2.0	24.2		4.4				
Green Ext Time (p_c), s	0.0	8.9		0.6	0.0	12.4		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

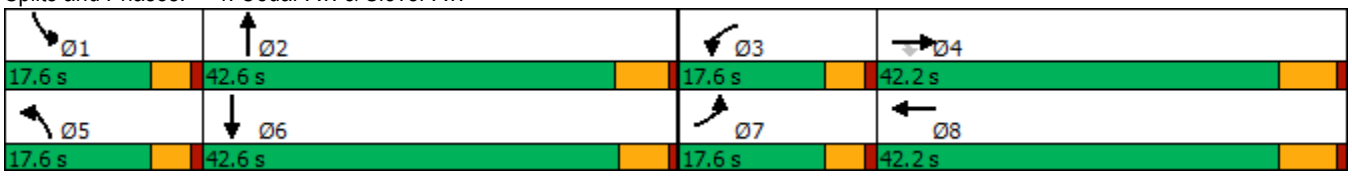
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

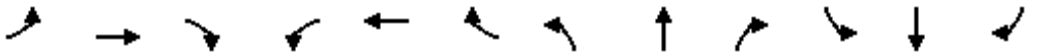
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	189	127	39	14	156	74	829	108	955
Future Volume (vph)	189	127	39	14	156	74	829	108	955
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 92.6
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	127	39	14	156	128	74	829	32	108	955	110
Future Volume (veh/h)	189	127	39	14	156	128	74	829	32	108	955	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		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	205	138	29	15	170	117	80	901	35	117	1038	117
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	239	895	399	29	262	171	100	1232	48	145	1224	138
Arrive On Green	0.15	0.26	0.26	0.02	0.13	0.13	0.06	0.37	0.37	0.09	0.39	0.39
Sat Flow, veh/h	1619	3420	1524	1619	1986	1291	1619	3356	130	1619	3098	349
Grp Volume(v), veh/h	205	138	29	15	145	142	80	459	477	117	573	582
Grp Sat Flow(s),veh/h/ln	1619	1710	1524	1619	1710	1568	1619	1710	1776	1619	1710	1737
Q Serve(g_s), s	9.9	2.5	1.2	0.7	6.5	6.9	3.9	18.7	18.7	5.7	24.5	24.5
Cycle Q Clear(g_c), s	9.9	2.5	1.2	0.7	6.5	6.9	3.9	18.7	18.7	5.7	24.5	24.5
Prop In Lane	1.00		1.00	1.00		0.82	1.00		0.07	1.00		0.20
Lane Grp Cap(c), veh/h	239	895	399	29	226	207	100	628	652	145	675	686
V/C Ratio(X)	0.86	0.15	0.07	0.52	0.64	0.69	0.80	0.73	0.73	0.81	0.85	0.85
Avail Cap(c_a), veh/h	262	1532	683	262	766	702	262	783	814	262	792	804
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	33.4	22.8	22.3	39.1	33.1	33.3	37.2	22.0	22.0	35.9	22.1	22.1
Incr Delay (d2), s/veh	20.8	0.1	0.1	5.4	3.0	4.0	5.5	2.7	2.6	4.0	7.6	7.5
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	5.0	0.9	0.4	0.3	2.7	2.7	1.6	7.1	7.3	2.3	10.2	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	22.9	22.4	44.5	36.1	37.3	42.7	24.7	24.6	39.9	29.7	29.7
LnGrp LOS	D	C	C	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		372			302			1016			1272	
Approach Delay, s/veh		40.1			37.1			26.0			30.6	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	35.3	6.0	27.2	9.6	37.5	16.4	16.8
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	7.7	20.7	2.7	4.5	5.9	26.5	11.9	8.9
Green Ext Time (p_c), s	0.1	4.9	0.0	0.8	0.0	5.2	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

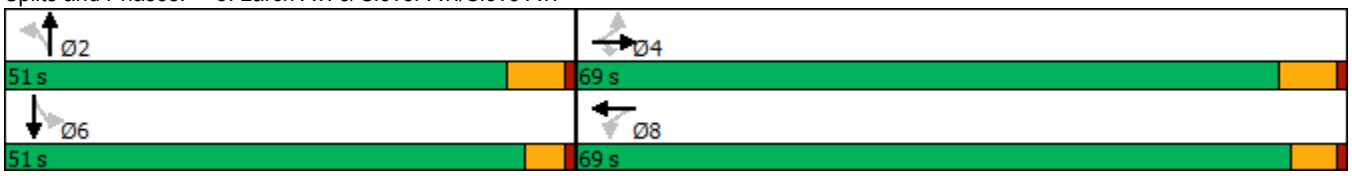
Notes

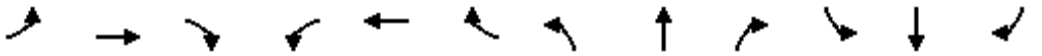
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	215	47	39	248	45	54	39	34
Future Volume (vph)	5	215	47	39	248	45	54	39	34
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	69.0	69.0	69.0	69.0	69.0	51.0	51.0	51.0	51.0
Total Split (%)	57.5%	57.5%	57.5%	57.5%	57.5%	42.5%	42.5%	42.5%	42.5%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 89.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	215	47	39	248	32	45	54	24	39	34	4
Future Volume (veh/h)	5	215	47	39	248	32	45	54	24	39	34	4
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		1.00	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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	5	229	40	41	264	20	48	57	20	41	36	3
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	838	1334	1130	833	2389	180	116	101	30	140	105	7
Arrive On Green	0.74	0.74	0.74	0.74	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1051	1800	1525	1065	3224	243	504	877	263	670	909	62
Grp Volume(v), veh/h	5	229	40	41	139	145	125	0	0	80	0	0
Grp Sat Flow(s),veh/h/ln	1051	1800	1525	1065	1710	1756	1644	0	0	1641	0	0
Q Serve(g_s), s	0.1	3.3	0.6	1.0	2.0	2.0	2.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	3.3	0.6	4.3	2.0	2.0	6.1	0.0	0.0	3.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.14	0.38		0.16	0.51		0.04
Lane Grp Cap(c), veh/h	838	1334	1130	833	1267	1302	247	0	0	252	0	0
V/C Ratio(X)	0.01	0.17	0.04	0.05	0.11	0.11	0.51	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	838	1334	1130	833	1267	1302	884	0	0	897	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	3.4	3.3	3.0	3.9	3.1	3.2	36.4	0.0	0.0	35.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.1	0.2	0.2	1.6	0.0	0.0	0.7	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	0.7	0.1	0.2	0.4	0.4	2.5	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.5	3.6	3.0	4.1	3.3	3.3	38.0	0.0	0.0	36.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		274			325			125			80	
Approach Delay, s/veh		3.5			3.4			38.0			36.1	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.1		70.1		16.1		70.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		44.8		62.8		* 46		* 64				
Max Q Clear Time (g_c+I1), s		8.1		5.3		5.7		6.3				
Green Ext Time (p_c), s		0.7		1.3		0.5		1.7				

Intersection Summary		
HCM 6th Ctrl Delay		12.1
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	182	50	71	167	54	29
Future Vol, veh/h	182	50	71	167	54	29
Conflicting Peds, #/hr	0	1	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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	204	56	80	188	61	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	261	0	487	131
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	254	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1315	-	515	901
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	771	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1314	-	479	900
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	719	-

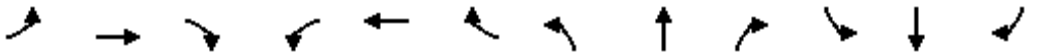
Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	646	-	-	1314	-
HCM Lane V/C Ratio	0.144	-	-	0.061	-
HCM Control Delay (s)	11.5	-	-	7.9	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	594	0	353	400	823	1242	583
Future Volume (vph)	594	0	353	400	823	1242	583
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	15.8	15.8	15.8	9.6	23.2	16.2	16.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 85.7
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	594	0	353	400	823	0	0	1242	583
Future Volume (veh/h)	0	0	0	594	0	353	400	823	0	0	1242	583
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				673	0	103	421	866	0	0	1307	449
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				826	0	368	510	3238	0	0	2761	680
Arrive On Green				0.23	0.00	0.23	0.15	0.62	0.00	0.00	0.42	0.42
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				673	0	103	421	866	0	0	1307	449
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				14.3	0.0	4.3	9.5	6.1	0.0	0.0	11.7	18.2
Cycle Q Clear(g_c), s				14.3	0.0	4.3	9.5	6.1	0.0	0.0	11.7	18.2
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				826	0	368	510	3238	0	0	2761	680
V/C Ratio(X)				0.81	0.00	0.28	0.83	0.27	0.00	0.00	0.47	0.66
Avail Cap(c_a), veh/h				1210	0	538	664	3238	0	0	2761	680
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.8	0.0	25.9	33.8	6.9	0.0	0.0	17.0	18.8
Incr Delay (d2), s/veh				2.8	0.0	0.4	5.1	0.2	0.0	0.0	0.6	5.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.1	0.0	1.6	4.1	1.7	0.0	0.0	3.9	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.6	0.0	26.3	38.9	7.1	0.0	0.0	17.5	23.8
LnGrp LOS				C	A	C	D	A	A	A	B	C
Approach Vol, veh/h					776			1287			1756	
Approach Delay, s/veh					31.8			17.5			19.1	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.0		16.4	40.6		24.4						
Change Period (Y+Rc), s	6.2		4.6	6.2		5.8						
Max Green Setting (Gmax), s	50.8		15.4	30.8		27.2						
Max Q Clear Time (g_c+I1), s	8.1		11.5	20.2		16.3						
Green Ext Time (p_c), s	6.2		0.3	6.8		2.2						

Intersection Summary		
HCM 6th Ctrl Delay		21.2
HCM 6th LOS		C

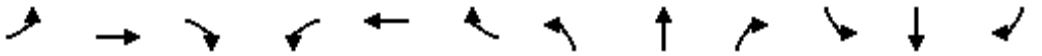
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	313	0	429	910	527	1310
Future Volume (vph)	313	0	429	910	527	1310
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.0	18.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	48.9%	20.0%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 86.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	0	429	0	0	0	0	910	587	527	1310	0
Future Volume (veh/h)	313	0	429	0	0	0	0	910	587	527	1310	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	435	0	210				0	978	554	567	1409	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	615	0	274				0	1600	745	576	2466	0
Arrive On Green	0.17	0.00	0.17				0.00	0.46	0.46	0.16	0.68	0.00
Sat Flow, veh/h	3619	0	1610				0	3629	1609	3510	3705	0
Grp Volume(v), veh/h	435	0	210				0	978	554	567	1409	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1755	1805	0
Q Serve(g_s), s	9.3	0.0	10.2				0.0	17.3	23.0	13.2	16.6	0.0
Cycle Q Clear(g_c), s	9.3	0.0	10.2				0.0	17.3	23.0	13.2	16.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	615	0	274				0	1600	745	576	2466	0
V/C Ratio(X)	0.71	0.00	0.77				0.00	0.61	0.74	0.98	0.57	0.00
Avail Cap(c_a), veh/h	984	0	438				0	1600	745	576	2466	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.0	0.0	32.4				0.0	16.4	18.0	34.0	6.7	0.0
Incr Delay (d2), s/veh	1.5	0.0	4.5				0.0	1.8	6.6	33.4	1.0	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
%ile BackOfQ(50%),veh/ln	3.9	0.0	4.0				0.0	6.1	8.5	7.8	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	0.0	36.9				0.0	18.2	24.6	67.4	7.7	0.0
LnGrp LOS	C	A	D				A	B	C	E	A	A
Approach Vol, veh/h		645						1532			1976	
Approach Delay, s/veh		34.6						20.5			24.8	
Approach LOS		C						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	18.0	44.0		19.7		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.4	37.8		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.2	25.0		12.2		18.6
Green Ext Time (p_c), s	0.0	7.5		1.7		12.4

Intersection Summary		
HCM 6th Ctrl Delay		24.7
HCM 6th LOS		C

Notes

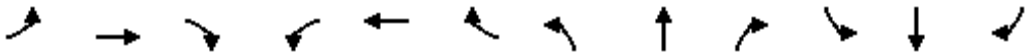
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	324	35	23	16	78	1160	20	1362
Future Volume (vph)	324	35	23	16	78	1160	20	1362
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	32.8	32.8	32.8	32.8	9.6	47.6	9.6	47.6
Total Split (%)	36.4%	36.4%	36.4%	36.4%	10.7%	52.9%	10.7%	52.9%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 88
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	35	86	23	16	44	78	1160	26	20	1362	360
Future Volume (veh/h)	324	35	86	23	16	44	78	1160	26	20	1362	360
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		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	345	37	85	24	17	30	83	1234	24	21	1449	314
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	463	496	441	401	496	442	104	1852	36	41	1413	299
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.06	0.51	0.51	0.02	0.48	0.48
Sat Flow, veh/h	1457	1805	1607	1359	1805	1610	1810	3622	70	1810	2965	627
Grp Volume(v), veh/h	345	37	85	24	17	30	83	615	643	21	868	895
Grp Sat Flow(s),veh/h/ln	1457	1805	1607	1359	1805	1610	1810	1805	1887	1810	1805	1787
Q Serve(g_s), s	19.9	1.3	3.5	1.2	0.6	1.2	3.9	21.9	21.9	1.0	41.4	41.4
Cycle Q Clear(g_c), s	21.1	1.3	3.5	4.7	0.6	1.2	3.9	21.9	21.9	1.0	41.4	41.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.35
Lane Grp Cap(c), veh/h	463	496	441	401	496	442	104	923	965	41	860	852
V/C Ratio(X)	0.75	0.07	0.19	0.06	0.03	0.07	0.80	0.67	0.67	0.51	1.01	1.05
Avail Cap(c_a), veh/h	516	561	499	450	561	501	104	923	965	104	860	852
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	31.1	23.3	24.1	25.9	23.1	23.3	40.4	15.7	15.7	41.9	22.7	22.7
Incr Delay (d2), s/veh	5.2	0.1	0.2	0.1	0.0	0.1	31.5	3.8	3.6	3.5	32.9	44.9
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	7.1	0.5	1.3	0.4	0.2	0.4	2.6	8.4	8.8	0.5	22.4	25.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	23.4	24.3	26.0	23.1	23.3	71.9	19.5	19.4	45.5	55.7	67.6
LnGrp LOS	D	C	C	C	C	C	E	B	B	D	F	F
Approach Vol, veh/h		467			71			1341			1784	
Approach Delay, s/veh		33.1			24.2			22.7			61.5	
Approach LOS		C			C			C			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	50.6		29.6	9.6	47.6		29.6				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	41.4		27.0	5.0	41.4		27.0				
Max Q Clear Time (g_c+I1), s	3.0	23.9		23.1	5.9	43.4		6.7				
Green Ext Time (p_c), s	0.0	7.1		0.7	0.0	0.0		0.2				

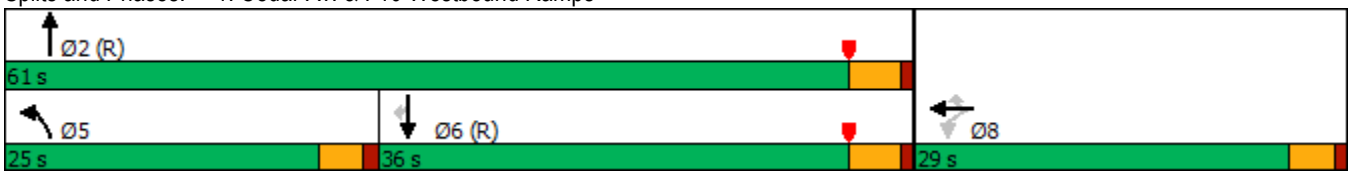
Intersection Summary			
HCM 6th Ctrl Delay		43.0	
HCM 6th LOS		D	

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	409	281	1527	1229	557
Future Volume (vph)	4	409	281	1527	1229	557
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	29.0	29.0	25.0	61.0	36.0	36.0
Total Split (%)	32.2%	32.2%	27.8%	67.8%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	232	4	409	281	1527	0	0	1229	557
Future Volume (veh/h)	0	0	0	232	4	409	281	1527	0	0	1229	557
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				239	134	329	290	1574	0	0	1267	380
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				279	156	380	328	2416	0	0	2302	705
Arrive On Green				0.24	0.24	0.24	0.24	0.89	0.00	0.00	0.44	0.44
Sat Flow, veh/h				1180	661	1610	1810	3705	0	0	5358	1588
Grp Volume(v), veh/h				373	0	329	290	1574	0	0	1267	380
Grp Sat Flow(s),veh/h/ln				1841	0	1610	1810	1805	0	0	1729	1588
Q Serve(g_s), s				17.5	0.0	17.7	13.9	10.3	0.0	0.0	16.2	15.7
Cycle Q Clear(g_c), s				17.5	0.0	17.7	13.9	10.3	0.0	0.0	16.2	15.7
Prop In Lane				0.64		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				435	0	380	328	2416	0	0	2302	705
V/C Ratio(X)				0.86	0.00	0.86	0.89	0.65	0.00	0.00	0.55	0.54
Avail Cap(c_a), veh/h				511	0	447	422	2416	0	0	2302	705
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.46	0.46	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				32.9	0.0	33.0	33.3	2.2	0.0	0.0	18.4	18.3
Incr Delay (d2), s/veh				12.1	0.0	14.4	8.5	0.6	0.0	0.0	1.0	2.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.7	0.0	7.9	6.2	1.7	0.0	0.0	6.1	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				45.0	0.0	47.3	41.8	2.8	0.0	0.0	19.4	21.2
LnGrp LOS				D	A	D	D	A	A	A	B	C
Approach Vol, veh/h					702			1864			1647	
Approach Delay, s/veh					46.1			8.9			19.8	
Approach LOS					D			A			B	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	64.7		20.3	44.4		25.3						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	56.5		21.0	31.5		25.0						
Max Q Clear Time (g_c+I1), s	12.3		15.9	18.2		19.7						
Green Ext Time (p_c), s	17.0		0.4	7.9		1.6						

Intersection Summary		
HCM 6th Ctrl Delay	19.4	
HCM 6th LOS	B	

Notes

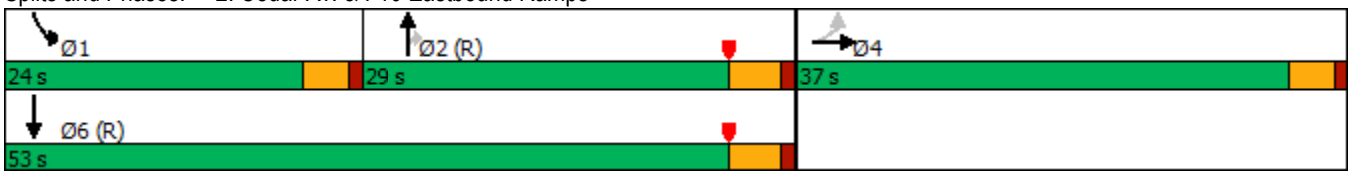
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	763	1	1046	430	454	1007
Future Volume (vph)	763	1	1046	430	454	1007
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	37.0	37.0	29.0	29.0	24.0	53.0
Total Split (%)	41.1%	41.1%	32.2%	32.2%	26.7%	58.9%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	763	1	276	0	0	0	0	1046	430	454	1007	0
Future Volume (veh/h)	763	1	276	0	0	0	0	1046	430	454	1007	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	531	371	265				0	1090	361	473	1049	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	663	378	270				0	1412	438	402	1945	0
Arrive On Green	0.37	0.37	0.37				0.00	0.27	0.27	0.07	0.18	0.00
Sat Flow, veh/h	1810	1031	736				0	5358	1608	1810	3705	0
Grp Volume(v), veh/h	531	0	636				0	1090	361	473	1049	0
Grp Sat Flow(s),veh/h/ln	1810	0	1767				0	1729	1608	1810	1805	0
Q Serve(g_s), s	23.7	0.0	32.0				0.0	17.4	19.0	20.0	23.8	0.0
Cycle Q Clear(g_c), s	23.7	0.0	32.0				0.0	17.4	19.0	20.0	23.8	0.0
Prop In Lane	1.00		0.42				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	663	0	648				0	1412	438	402	1945	0
V/C Ratio(X)	0.80	0.00	0.98				0.00	0.77	0.82	1.18	0.54	0.00
Avail Cap(c_a), veh/h	663	0	648				0	1412	438	402	1945	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.73	0.73	0.78	0.78	0.00
Uniform Delay (d), s/veh	25.5	0.0	28.2				0.0	30.2	30.7	41.7	26.8	0.0
Incr Delay (d2), s/veh	6.9	0.0	30.6				0.0	3.1	12.2	98.2	0.8	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
%ile BackOfQ(50%),veh/ln	10.5	0.0	17.7				0.0	7.2	8.4	20.5	11.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	0.0	58.8				0.0	33.2	42.9	139.9	27.7	0.0
LnGrp LOS	C	A	E				A	C	D	F	C	A
Approach Vol, veh/h		1167						1451			1522	
Approach Delay, s/veh		46.8						35.7			62.5	
Approach LOS		D						D			E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.0	29.0		37.0		53.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	20.0	24.5		33.0		48.5
Max Q Clear Time (g_c+I1), s	22.0	21.0		34.0		25.8
Green Ext Time (p_c), s	0.0	2.0		0.0		4.9

Intersection Summary		
HCM 6th Ctrl Delay		48.7
HCM 6th LOS		D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	158	49	3	2	8	1073	46	996	240
Future Volume (vph)	158	49	3	2	8	1073	46	996	240
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	47.0	47.0	47.0	47.0	10.0	62.0	11.0	63.0	63.0
Total Split (%)	39.2%	39.2%	39.2%	39.2%	8.3%	51.7%	9.2%	52.5%	52.5%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 100.3
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	49	10	3	2	245	8	1073	2	46	996	240
Future Volume (veh/h)	158	49	10	3	2	245	8	1073	2	46	996	240
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		1.00	1.00		0.98	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	165	51	7	3	2	190	8	1118	2	48	1038	155
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	266	347	48	39	7	334	291	2052	4	324	2098	934
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.01	0.59	0.59	0.04	0.61	0.61
Sat Flow, veh/h	1143	1549	213	6	33	1491	1619	3502	6	1619	3420	1523
Grp Volume(v), veh/h	165	0	58	195	0	0	8	546	574	48	1038	155
Grp Sat Flow(s),veh/h/ln	1143	0	1761	1530	0	0	1619	1710	1799	1619	1710	1523
Q Serve(g_s), s	8.1	0.0	2.6	0.0	0.0	0.0	0.2	18.7	18.8	1.1	16.3	4.2
Cycle Q Clear(g_c), s	19.1	0.0	2.6	10.9	0.0	0.0	0.2	18.7	18.8	1.1	16.3	4.2
Prop In Lane	1.00		0.12	0.02		0.97	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	395	381	0	0	291	1002	1054	324	2098	934
V/C Ratio(X)	0.62	0.00	0.15	0.51	0.00	0.00	0.03	0.54	0.54	0.15	0.49	0.17
Avail Cap(c_a), veh/h	510	0	771	708	0	0	365	1002	1054	371	2098	934
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	0.0	30.0	33.3	0.0	0.0	8.9	12.2	12.2	9.1	10.4	8.0
Incr Delay (d2), s/veh	0.9	0.0	0.1	0.4	0.0	0.0	0.0	2.1	2.0	0.1	0.8	0.4
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	3.9	0.0	1.1	4.1	0.0	0.0	0.1	6.8	7.1	0.3	5.5	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	0.0	30.1	33.7	0.0	0.0	8.9	14.3	14.2	9.1	11.2	8.4
LnGrp LOS	D	A	C	C	A	A	A	B	B	A	B	A
Approach Vol, veh/h		223			195			1128			1241	
Approach Delay, s/veh		36.6			33.7			14.2			10.8	
Approach LOS		D			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	62.0		26.4	5.6	64.7		26.4				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	6.4	56.6		* 42	5.4	57.6		* 42				
Max Q Clear Time (g_c+I1), s	3.1	20.8		21.1	2.2	18.3		12.9				
Green Ext Time (p_c), s	0.0	8.3		0.5	0.0	9.4		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		15.8	
HCM 6th LOS		B	

Notes

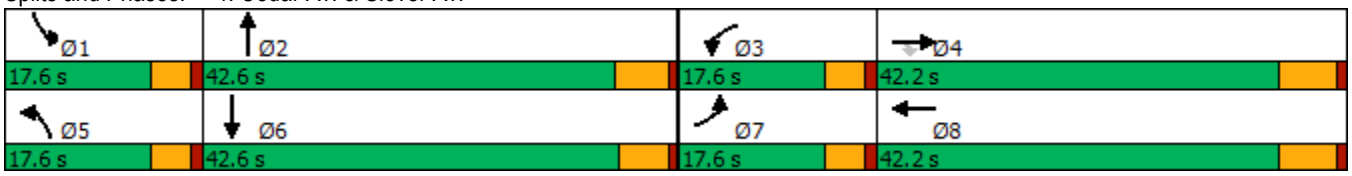
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

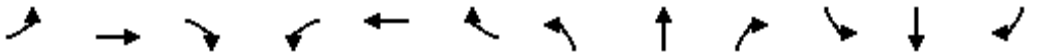
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	225	472	130	35	263	86	756	131	784
Future Volume (vph)	225	472	130	35	263	86	756	131	784
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 93.6
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	472	130	35	263	103	86	756	71	131	784	94
Future Volume (veh/h)	225	472	130	35	263	103	86	756	71	131	784	94
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	1.00		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	239	502	89	37	280	76	91	804	74	139	834	97
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	261	963	423	57	414	110	114	1001	92	170	1080	126
Arrive On Green	0.16	0.28	0.28	0.03	0.16	0.16	0.07	0.32	0.32	0.10	0.35	0.35
Sat Flow, veh/h	1619	3420	1501	1619	2662	708	1619	3166	291	1619	3080	358
Grp Volume(v), veh/h	239	502	89	37	178	178	91	434	444	139	463	468
Grp Sat Flow(s),veh/h/ln	1619	1710	1501	1619	1710	1660	1619	1710	1747	1619	1710	1729
Q Serve(g_s), s	11.7	10.0	3.7	1.8	7.9	8.2	4.5	18.8	18.8	6.8	19.5	19.5
Cycle Q Clear(g_c), s	11.7	10.0	3.7	1.8	7.9	8.2	4.5	18.8	18.8	6.8	19.5	19.5
Prop In Lane	1.00		1.00	1.00		0.43	1.00		0.17	1.00		0.21
Lane Grp Cap(c), veh/h	261	963	423	57	266	258	114	541	552	170	600	606
V/C Ratio(X)	0.92	0.52	0.21	0.65	0.67	0.69	0.80	0.80	0.80	0.82	0.77	0.77
Avail Cap(c_a), veh/h	261	1525	669	261	762	740	261	779	796	261	788	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	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	33.3	24.4	22.2	38.5	32.1	32.3	37.0	25.3	25.3	35.4	23.3	23.3
Incr Delay (d2), s/veh	33.8	0.4	0.2	4.7	2.9	3.3	4.8	4.0	3.9	6.3	3.5	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	6.7	3.7	1.2	0.8	3.2	3.3	1.8	7.4	7.6	2.8	7.7	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.2	24.9	22.4	43.2	35.0	35.5	41.8	29.3	29.2	41.7	26.8	26.8
LnGrp LOS	E	C	C	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		830			393			969			1070	
Approach Delay, s/veh		36.8			36.0			30.4			28.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	31.3	7.4	28.9	10.3	34.1	17.6	18.7
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	8.8	20.8	3.8	12.0	6.5	21.5	13.7	10.2
Green Ext Time (p_c), s	0.1	4.6	0.0	3.2	0.0	5.1	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	32.2
HCM 6th LOS	C

Notes

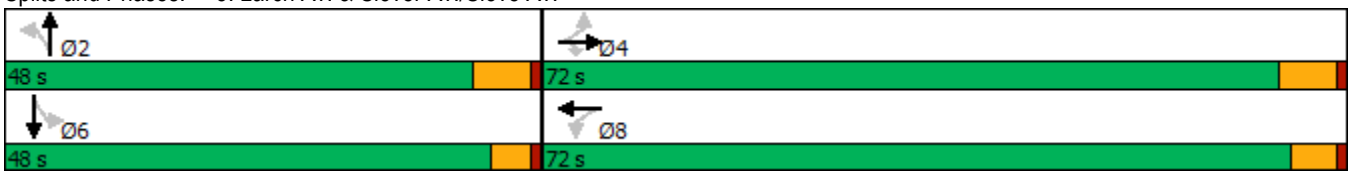
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

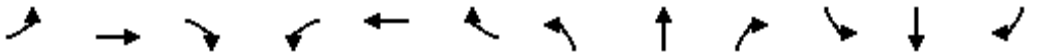
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	37	583	54	61	318	54	149	52	44
Future Volume (vph)	37	583	54	61	318	54	149	52	44
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	72.0	72.0	72.0	72.0	72.0	48.0	48.0	48.0	48.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 103
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	583	54	61	318	70	54	149	79	52	44	29
Future Volume (veh/h)	37	583	54	61	318	70	54	149	79	52	44	29
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		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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	41	648	46	68	353	64	60	166	69	58	49	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	651	1204	999	419	1937	348	98	209	81	140	109	35
Arrive On Green	0.67	0.67	0.67	0.67	0.67	0.67	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	930	1800	1494	720	2896	520	264	1008	388	423	526	169
Grp Volume(v), veh/h	41	648	46	68	207	210	295	0	0	126	0	0
Grp Sat Flow(s),veh/h/ln	930	1800	1494	720	1710	1706	1661	0	0	1118	0	0
Q Serve(g_s), s	1.7	18.6	1.1	5.4	4.6	4.7	7.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.4	18.6	1.1	24.0	4.6	4.7	17.0	0.0	0.0	9.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.30	0.20		0.23	0.46		0.15
Lane Grp Cap(c), veh/h	651	1204	999	419	1144	1141	387	0	0	284	0	0
V/C Ratio(X)	0.06	0.54	0.05	0.16	0.18	0.18	0.76	0.00	0.00	0.44	0.00	0.00
Avail Cap(c_a), veh/h	651	1204	999	419	1144	1141	729	0	0	603	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	7.5	8.6	5.7	14.8	6.2	6.3	38.1	0.0	0.0	34.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.7	0.1	0.8	0.3	0.4	3.1	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	0.3	6.1	0.3	0.9	1.4	1.4	7.1	0.0	0.0	2.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	10.3	5.7	15.6	6.6	6.6	41.2	0.0	0.0	35.9	0.0	0.0
LnGrp LOS	A	B	A	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		735			485			295			126	
Approach Delay, s/veh		9.9			7.9			41.2			35.9	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		26.9		73.1		26.9		73.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		41.8		65.8		* 43		* 67				
Max Q Clear Time (g_c+I1), s		19.0		20.6		11.9		26.0				
Green Ext Time (p_c), s		1.7		4.7		0.8		2.8				

Intersection Summary		
HCM 6th Ctrl Delay		16.9
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	426	58	72	285	92	69
Future Vol, veh/h	426	58	72	285	92	69
Conflicting Peds, #/hr	0	1	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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	444	60	75	297	96	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	505	0	774	253
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	299	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1070	-	339	753
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1069	-	310	752
Mov Cap-2 Maneuver	-	-	-	-	429	-
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	671	-

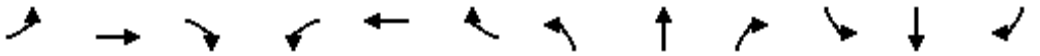
Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	526	-	-	1069	-
HCM Lane V/C Ratio	0.319	-	-	0.07	-
HCM Control Delay (s)	15	-	-	8.6	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.2	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	449	2	522	355	1478	1051	430
Future Volume (vph)	449	2	522	355	1478	1051	430
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.8	10.8	10.8	9.6	23.2	11.2	11.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 86
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	449	2	522	355	1478	0	0	1051	430
Future Volume (veh/h)	0	0	0	449	2	522	355	1478	0	0	1051	430
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				586	0	241	374	1556	0	0	1106	318
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				759	0	338	467	3316	0	0	2930	722
Arrive On Green				0.21	0.00	0.21	0.13	0.64	0.00	0.00	0.45	0.45
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				586	0	241	374	1556	0	0	1106	318
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				12.1	0.0	11.1	8.2	12.3	0.0	0.0	8.9	10.8
Cycle Q Clear(g_c), s				12.1	0.0	11.1	8.2	12.3	0.0	0.0	8.9	10.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				759	0	338	467	3316	0	0	2930	722
V/C Ratio(X)				0.77	0.00	0.71	0.80	0.47	0.00	0.00	0.38	0.44
Avail Cap(c_a), veh/h				1239	0	551	680	3316	0	0	2930	722
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.6	0.0	29.2	33.4	7.4	0.0	0.0	14.6	15.1
Incr Delay (d2), s/veh				1.7	0.0	2.8	2.6	0.5	0.0	0.0	0.4	1.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.0	0.0	4.2	3.4	3.2	0.0	0.0	2.9	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.3	0.0	32.0	36.0	7.9	0.0	0.0	14.9	17.0
LnGrp LOS				C	A	C	D	A	A	A	B	B
Approach Vol, veh/h					827			1930			1424	
Approach Delay, s/veh					31.5			13.3			15.4	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.0		15.2	41.8		22.5						
Change Period (Y+Rc), s	6.2		4.6	6.2		5.8						
Max Green Setting (Gmax), s	50.8		15.4	30.8		27.2						
Max Q Clear Time (g_c+I1), s	14.3		10.2	12.8		14.1						
Green Ext Time (p_c), s	13.6		0.4	7.8		2.5						

Intersection Summary		
HCM 6th Ctrl Delay	17.6	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	624	3	362	1209	421	1078
Future Volume (vph)	624	3	362	1209	421	1078
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.0	18.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	48.9%	20.0%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 89.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	624	3	362	0	0	0	0	1209	667	421	1078	0
Future Volume (veh/h)	624	3	362	0	0	0	0	1209	667	421	1078	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	745	0	186				0	1273	591	443	1135	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	844	0	375				0	1503	690	514	2278	0
Arrive On Green	0.23	0.00	0.23				0.00	0.43	0.43	0.15	0.63	0.00
Sat Flow, veh/h	3619	0	1610				0	3647	1595	3510	3705	0
Grp Volume(v), veh/h	745	0	186				0	1266	598	443	1135	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1613	1755	1805	0
Q Serve(g_s), s	17.6	0.0	8.9				0.0	29.0	29.5	10.9	15.0	0.0
Cycle Q Clear(g_c), s	17.6	0.0	8.9				0.0	29.0	29.5	10.9	15.0	0.0
Prop In Lane	1.00		1.00				0.00		0.99	1.00		0.00
Lane Grp Cap(c), veh/h	844	0	375				0	1496	698	514	2278	0
V/C Ratio(X)	0.88	0.00	0.50				0.00	0.85	0.86	0.86	0.50	0.00
Avail Cap(c_a), veh/h	909	0	404				0	1496	698	532	2278	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.7	0.0	29.4				0.0	22.5	22.6	36.8	8.8	0.0
Incr Delay (d2), s/veh	9.7	0.0	1.0				0.0	6.1	12.9	12.5	0.8	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
%ile BackOfQ(50%),veh/ln	8.3	0.0	3.3				0.0	11.4	12.1	5.2	4.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	0.0	30.4				0.0	28.6	35.5	49.4	9.6	0.0
LnGrp LOS	D	A	C				A	C	D	D	A	A
Approach Vol, veh/h		931						1864			1578	
Approach Delay, s/veh		40.1						30.8			20.7	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	17.6	44.4		26.4		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.4	37.8		22.2		55.8
Max Q Clear Time (g_c+I1), s	12.9	31.5		19.6		17.0
Green Ext Time (p_c), s	0.1	5.0		1.0		9.0

Intersection Summary			
HCM 6th Ctrl Delay			29.1
HCM 6th LOS			C

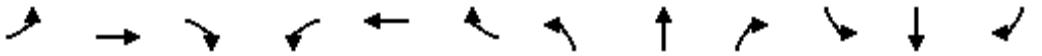
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	479	126	35	9	25	1276	26	1078
Future Volume (vph)	479	126	35	9	25	1276	26	1078
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	38.0	38.0	38.0	38.0	9.6	42.4	9.6	42.4
Total Split (%)	42.2%	42.2%	42.2%	42.2%	10.7%	47.1%	10.7%	47.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 84.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	479	126	144	35	9	82	25	1276	17	26	1078	337
Future Volume (veh/h)	479	126	144	35	9	82	25	1276	17	26	1078	337
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	494	130	128	36	9	66	26	1315	18	27	1111	314
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	567	665	593	460	665	593	48	1510	21	50	1152	322
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1420	1805	1610	1203	1805	1610	1810	3646	50	1810	2777	776
Grp Volume(v), veh/h	494	130	128	36	9	66	26	651	682	27	718	707
Grp Sat Flow(s),veh/h/ln	1420	1805	1610	1203	1805	1610	1810	1805	1891	1810	1805	1748
Q Serve(g_s), s	29.8	4.3	4.8	1.9	0.3	2.4	1.2	28.9	28.9	1.3	33.8	34.8
Cycle Q Clear(g_c), s	32.2	4.3	4.8	6.6	0.3	2.4	1.2	28.9	28.9	1.3	33.8	34.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.44
Lane Grp Cap(c), veh/h	567	665	593	460	665	593	48	748	783	50	749	725
V/C Ratio(X)	0.87	0.20	0.22	0.08	0.01	0.11	0.54	0.87	0.87	0.54	0.96	0.98
Avail Cap(c_a), veh/h	567	665	593	460	665	593	104	748	783	104	749	725
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	29.1	18.8	18.9	21.2	17.5	18.2	42.0	23.5	23.5	42.0	24.8	25.1
Incr Delay (d2), s/veh	13.8	0.1	0.2	0.1	0.0	0.1	3.4	13.2	12.7	3.4	24.2	27.9
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	11.6	1.7	1.7	0.5	0.1	0.8	0.6	13.4	13.9	0.6	17.4	18.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	18.9	19.1	21.3	17.5	18.3	45.4	36.7	36.2	45.3	49.0	53.0
LnGrp LOS	D	B	B	C	B	B	D	D	D	D	D	D
Approach Vol, veh/h		752			111			1359			1452	
Approach Delay, s/veh		34.7			19.2			36.6			50.9	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	42.4		38.0	6.9	42.5		38.0				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	36.2		32.2	5.0	36.2		32.2				
Max Q Clear Time (g_c+I1), s	3.3	30.9		34.2	3.2	36.8		8.6				
Green Ext Time (p_c), s	0.0	3.3		0.0	0.0	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		41.3	
HCM 6th LOS		D	

APPENDIX 3.3:

EXISTING (2019) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

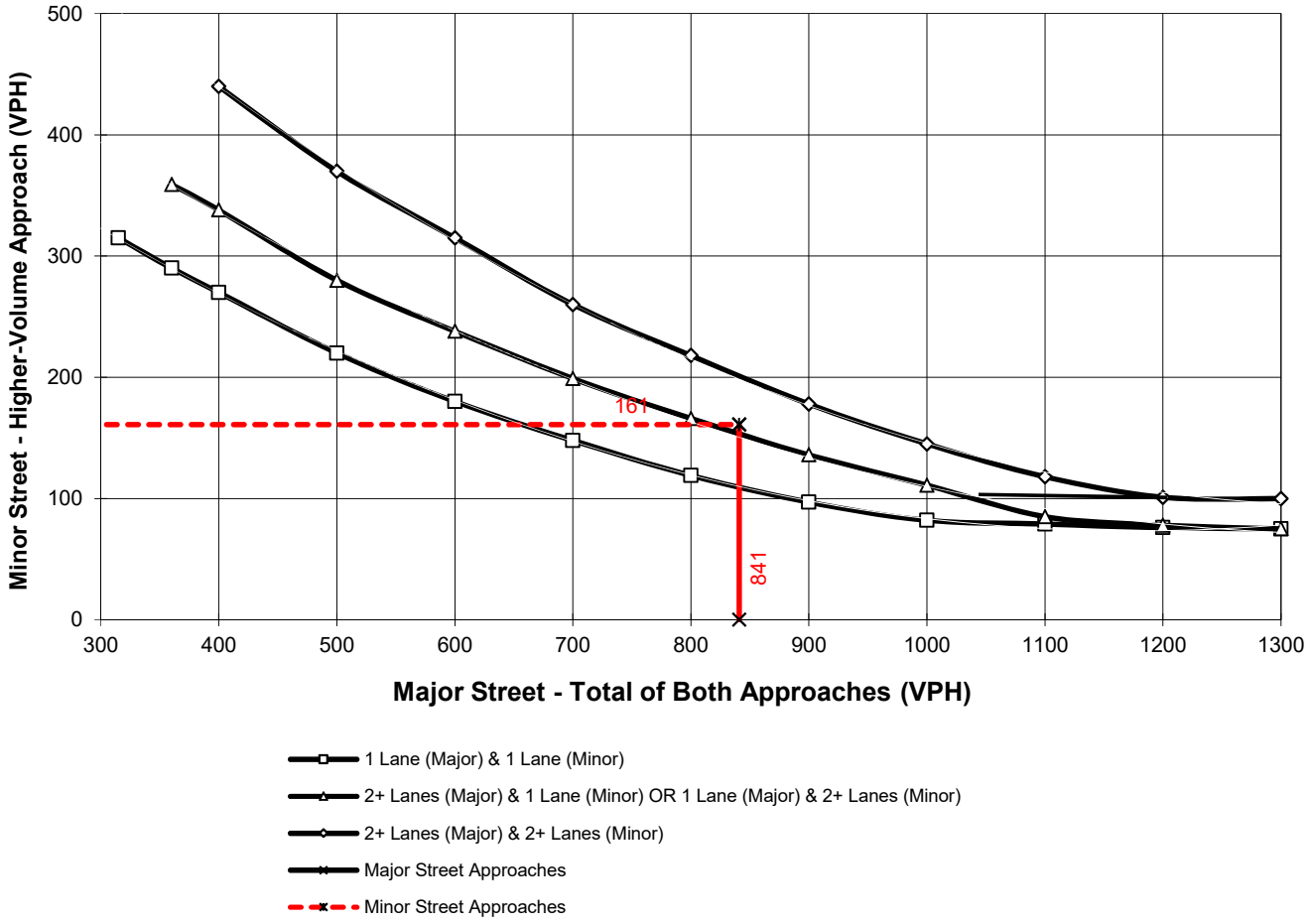
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2019) Conditions - Weekday PM Peak Hour**

Major Street Name = **Slover Av.**
Total of Both Approaches (VPH) = **841**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Cactus Av.**
High Volume Approach (VPH) = **161**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



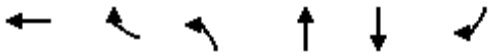
*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

This Page Intentionally Left Blank

APPENDIX 3.4:

EXISTING (2019) CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

This Page Intentionally Left Blank



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	432	309	355	1269	1506	855
v/c Ratio	0.98	0.68	0.98	0.54	0.72	0.84
Control Delay	74.2	30.8	62.4	4.3	24.8	15.4
Queue Delay	38.0	0.0	0.0	2.2	1.0	0.0
Total Delay	112.2	30.8	62.4	6.5	25.8	15.4
Queue Length 50th (ft)	254	123	141	1	256	113
Queue Length 95th (ft)	#457	222	m#331	m2	310	#365
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	439	452	361	2346	2103	1021
Starvation Cap Reductn	0	0	0	892	0	0
Spillback Cap Reductn	86	0	0	0	331	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.68	0.98	0.87	0.85	0.84

Intersection Summary

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

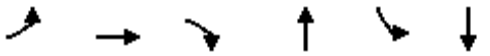
Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	425	428	1134	452	461	1409
v/c Ratio	0.90	0.92	0.70	0.55	0.94	0.62
Control Delay	54.7	54.1	30.3	5.4	48.1	18.4
Queue Delay	0.0	0.0	0.1	0.0	0.0	48.9
Total Delay	54.7	54.1	30.4	5.4	48.1	67.3
Queue Length 50th (ft)	240	217	212	0	273	387
Queue Length 95th (ft)	#411	#401	263	69	m#406	m460
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	495	486	1630	817	501	2271
Starvation Cap Reductn	0	0	0	0	0	991
Spillback Cap Reductn	0	0	44	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.88	0.72	0.55	0.92	1.10

Intersection Summary

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	344	341	312	421	866	1307	614
v/c Ratio	0.76	0.69	0.61	0.76	0.28	0.52	0.62
Control Delay	40.4	27.6	19.8	44.6	9.3	22.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	40.4	27.6	19.8	44.6	9.6	22.3	5.0
Queue Length 50th (ft)	178	129	80	114	81	165	0
Queue Length 95th (ft)	280	230	168	167	112	211	73
Internal Link Dist (ft)		1238			270	316	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	546	579	586	631	3085	2504	997
Starvation Cap Reductn	0	0	0	0	1440	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.59	0.53	0.67	0.53	0.52	0.62

Intersection Summary

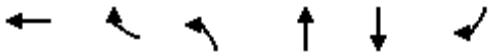


Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	276	264	258	1609	567	1409
v/c Ratio	0.75	0.66	0.64	0.72	1.04	0.60
Control Delay	45.0	27.9	26.7	19.5	88.6	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	5.0
Total Delay	45.0	27.9	26.7	19.5	88.6	15.9
Queue Length 50th (ft)	148	91	83	231	~183	227
Queue Length 95th (ft)	238	181	167	295	#291	303
Internal Link Dist (ft)		1268		1816		270
Turn Bay Length (ft)			290			
Base Capacity (vph)	441	459	464	2250	543	2332
Starvation Cap Reductn	0	0	0	0	0	846
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.58	0.56	0.72	1.04	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	344	321	290	1574	1267	574
v/c Ratio	0.82	0.77	0.79	0.66	0.58	0.57
Control Delay	46.8	37.3	38.5	14.5	22.9	4.6
Queue Delay	0.0	0.0	0.0	23.4	0.1	0.0
Total Delay	46.8	37.3	38.5	37.9	22.9	4.6
Queue Length 50th (ft)	177	137	157	416	211	0
Queue Length 95th (ft)	#281	234	m192	m525	274	70
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	479	474	421	2402	2168	999
Starvation Cap Reductn	0	0	0	885	0	0
Spillback Cap Reductn	0	0	0	0	93	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.68	0.69	1.04	0.61	0.57

Intersection Summary

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	556	528	1090	448	473	1049
v/c Ratio	0.92	0.85	0.77	0.59	1.12	0.53
Control Delay	49.7	37.1	34.6	6.3	100.4	9.7
Queue Delay	49.3	40.2	0.2	0.0	0.0	1.9
Total Delay	99.0	77.3	34.8	6.3	100.4	11.6
Queue Length 50th (ft)	306	245	208	0	~330	259
Queue Length 95th (ft)	#511	#433	259	72	#506	342
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	628	642	1412	759	423	1990
Starvation Cap Reductn	0	0	0	0	0	738
Spillback Cap Reductn	157	149	30	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.18	1.07	0.79	0.59	1.12	0.84

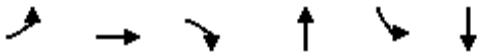
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	355	340	329	374	1556	1106	453
v/c Ratio	0.77	0.79	0.69	0.71	0.51	0.44	0.50
Control Delay	41.2	41.0	27.5	42.9	11.5	21.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Total Delay	41.2	41.0	27.5	42.9	13.2	21.2	4.4
Queue Length 50th (ft)	186	173	117	103	179	134	0
Queue Length 95th (ft)	289	283	215	149	226	175	63
Internal Link Dist (ft)		1163			240	366	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	543	504	551	628	3071	2535	903
Starvation Cap Reductn	0	0	0	0	1271	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.67	0.60	0.60	0.86	0.44	0.50

Intersection Summary



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	361	356	324	1975	443	1135
v/c Ratio	0.88	0.90	0.74	0.89	0.87	0.50
Control Delay	56.3	59.2	32.9	28.2	55.8	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.4
Total Delay	56.3	59.2	32.9	28.2	55.8	13.7
Queue Length 50th (ft)	206	208	125	346	127	170
Queue Length 95th (ft)	#366	#382	#237	#428	#206	218
Internal Link Dist (ft)		1277		1822		240
Turn Bay Length (ft)			290			
Base Capacity (vph)	427	410	453	2209	526	2258
Starvation Cap Reductn	0	0	0	0	0	1001
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.87	0.72	0.89	0.84	0.90

Intersection Summary

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

APPENDIX 3.5:

EXISTING (2019) CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6997	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2092
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.87
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	34.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6580	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1574
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6570	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1964
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.82
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	31.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6367	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1468
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	69.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6446	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1858
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	28.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6709	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1950
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7181	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2147
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	36.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7000	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1674
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7125	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2130
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	35.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6478	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1464
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	69.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6384	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1786
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6468	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1810
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.75
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

APPENDIX 3.6:

EXISTING (2019) CONDITIONS RAMP JUNCTION ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5970	1027
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	12.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.893
Flow Rate (vi),pc/h	7139	1250
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.87	0.60

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	30.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.460
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2142
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	57.1
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.062	Outer Lanes Freeway Speed (SO), mi/h	64.1
Flow in Lanes 1 and 2 (v12), pc/h	2856	Ramp Junction Speed (S), mi/h	60.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	4106	Average Density (D), pc/mi/ln	34.7
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6580	610
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.901
Flow Rate (vi),pc/h	7868	736
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.66	0.35

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	17.9
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.364
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1568
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.8
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.6
Flow in Lanes 1 and 2 (v12), pc/h	3159	Ramp Junction Speed (S), mi/h	66.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.7
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6570	779
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.870
Flow Rate (vi),pc/h	7856	973
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.65	0.46

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	22.1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.386
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1498
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.2
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.8
Flow in Lanes 1 and 2 (v12), pc/h	3289	Ramp Junction Speed (S), mi/h	65.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.9
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5670	697
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	18.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.847
Flow Rate (vi),pc/h	6474	894
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.54	0.43

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	15.7
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.378
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1300
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.4
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.6
Flow in Lanes 1 and 2 (v12), pc/h	2903	Ramp Junction Speed (S), mi/h	66.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.6
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5650	776
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.885
Flow Rate (vi),pc/h	6451	953
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.77	0.45

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	27.5
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.381
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1936
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	59.3
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.099	Outer Lanes Freeway Speed (SO), mi/h	64.8
Flow in Lanes 1 and 2 (v12), pc/h	2580	Ramp Junction Speed (S), mi/h	62.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3533	Average Density (D), pc/mi/ln	29.8
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5826	883
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	18.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.847
Flow Rate (vi),pc/h	6652	1133
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.81	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	27.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.390
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1996
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	59.1
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.076	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	2661	Ramp Junction Speed (S), mi/h	61.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3794	Average Density (D), pc/mi/ln	31.5
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6409	772
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.917
Flow Rate (vi),pc/h	7664	915
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.89	0.44

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	29.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.432
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2299
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.103	Outer Lanes Freeway Speed (SO), mi/h	63.5
Flow in Lanes 1 and 2 (v12), pc/h	3066	Ramp Junction Speed (S), mi/h	60.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3981	Average Density (D), pc/mi/ln	35.3
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7000	591
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.917
Flow Rate (vi),pc/h	8370	701
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.70	0.33

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	19.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.361
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1691
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.9
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.1
Flow in Lanes 1 and 2 (v12), pc/h	3315	Ramp Junction Speed (S), mi/h	66.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.2
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7125	823
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	12.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.893
Flow Rate (vi),pc/h	8520	1002
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.71	0.48

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	24.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.388
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1640
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.1
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.3
Flow in Lanes 1 and 2 (v12), pc/h	3537	Ramp Junction Speed (S), mi/h	65.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.0
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5563	915
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.885
Flow Rate (vi),pc/h	6227	1124
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.52	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	16.1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.399
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1175
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	76.1
Flow in Lanes 1 and 2 (v12), pc/h	2942	Ramp Junction Speed (S), mi/h	65.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.0
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5563	821
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	8.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.926
Flow Rate (vi),pc/h	6227	964
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.75	0.46

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	26.9
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.371
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1868
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	59.6
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.097	Outer Lanes Freeway Speed (SO), mi/h	65.1
Flow in Lanes 1 and 2 (v12), pc/h	2491	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3455	Average Density (D), pc/mi/ln	28.9
Level of Service (LOS)	C		

Service Volume Table

HCS7 Freeway Merge Report

Project Information			
Analyst	cP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5531	937
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	2.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.980	0.909
Flow Rate (vi),pc/h	6135	1120
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.76	0.53

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	25.6
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.356
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1841
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	60.0
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.078	Outer Lanes Freeway Speed (SO), mi/h	65.2
Flow in Lanes 1 and 2 (v12), pc/h	2454	Ramp Junction Speed (S), mi/h	62.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	3574	Average Density (D), pc/mi/ln	29.0
Level of Service (LOS)	C		

APPENDIX 4.1:

POST PROCESSING WORKSHEETS

This Page Intentionally Left Blank

Project:	Slover and Cactus Warehouse	Job #:	11181
Scenario:	Horizon Year Without Project	Analyst:	CS
		Date:	4/9/19

LOCATION: Cedar Avenue / I-10 Westbound Ramps
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	334	345	12	3%	279	340	62	22%
	Through	1,194	1,324	131	11%	1,512	1,623	111	7%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	1,527	1,669	142	9%	1,791	1,963	173	10%
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	1,417	1,557	140	10%	1,217	1,441	225	18%
	Right	804	774	-30	-4%	552	546	-6	-1%
	SB Total	2,221	2,331	110	5%	1,768	1,987	219	12%
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
WEST BOUND	Left	362	353	-9	-2%	230	269	40	17%
	Through	13	11	-2	-15%	4	4	0	0%
	Right	323	296	-27	-8%	405	347	-58	-14%
	WB Total	697	660	-37	-5%	638	620	-18	-3%
TOTAL ENTERING VOLUME		4,445	4,660	215	5%	4,197	4,570	374	9%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	2,331	1,987			
North Leg	Outbound	1,620	1,970			
North Leg	**TOTAL**	**3,951**	**3,957**	**10%**	**10%**	**38,566**
South Leg	Inbound	1,669	1,963			
South Leg	Outbound	1,910	1,710			
South Leg	**TOTAL**	**3,579**	**3,673**	**10%**	**10%**	**35,124**
East Leg	Inbound	660	620			
East Leg	Outbound	0	0			
East Leg	**TOTAL**	**660**	**620**	**10%**	**9%**	**6,794**
West Leg	Inbound	0	0			
West Leg	Outbound	1,130	890			
West Leg	**TOTAL**	**1,130**	**890**	**13%**	**10%**	**8,690**
OVERALL TOTAL		***9,320***	***9,140***	**10%**	***10%***	***89,174***

U:\UcJobs_11100-11500_11100\11181\Post Processing\11181-06\[01 Cedar_I-10 WB Ramps.xls]Output (3)

Project:	Slover and Cactus Warehouse	Job #:	11181
Scenario:	Horizon Year Without Project	Analyst:	CS
		Date:	4/9/19

LOCATION: Cedar Avenue / I-10 Eastbound Ramps
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	1,079	1,313	235	22%	1,036	1,435	400	39%
	Right	430	504	75	17%	426	569	143	34%
	NB Total	1,508	1,817	309	20%	1,462	2,004	543	37%
SOUTH BOUND	Left	439	383	-56	-13%	449	481	32	7%
	Through	1,340	1,530	191	14%	997	1,234	237	24%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	SB Total	1,779	1,913	135	8%	1,446	1,715	269	19%
EAST BOUND	Left	449	357	-92	-20%	755	535	-220	-29%
	Through	4	3	-1	-14%	1	1	0	0%
	Right	358	360	2	1%	273	216	-57	-21%
	EB Total	810	720	-90	-11%	1,029	752	-277	-27%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	WB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
TOTAL ENTERING VOLUME		4,097	4,450	353.5	9%	3,937	4,471	535	14%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	1,913	1,715			
North Leg	Outbound	1,670	1,970			
North Leg	**TOTAL**	**3,583**	**3,685**	**10%**	**10%**	**35,124**
South Leg	Inbound	1,817	2,004			
South Leg	Outbound	1,890	1,450			
South Leg	**TOTAL**	**3,707**	**3,454**	**11%**	**11%**	**32,734**
East Leg	Inbound	0	0			
East Leg	Outbound	890	1,051			
East Leg	**TOTAL**	**890**	**1,051**	**15%**	**17%**	**6,051**
West Leg	Inbound	720	752			
West Leg	Outbound	0	0			
West Leg	**TOTAL**	**720**	**752**	**12%**	**13%**	**5,897**
OVERALL TOTAL		***8,900***	***8,942***	**11%**	***11%***	***79,806***

U:\UcJobs_11100-11500_11100\11181\Post Processing\11181-06\[02 Cedar_I-10 EB Ramps.xls]Output (3)

Project:	Slover and Cactus Warehouse	Job #:	11181
Scenario:	Horizon Year Without Project	Analyst:	CS
		Date:	4/9/19

LOCATION: Cedar Avenue / Slover Street
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	73	46	-27	-37%	86	46	-40	-46%
	Through	821	997	176	21%	748	1,061	313	42%
	Right	32	37	5	16%	70	102	32	46%
	NB Total	926	1,080	154	17%	904	1,209	306	34%
SOUTH BOUND	Left	107	248	142	133%	130	320	190	146%
	Through	946	971	26	3%	777	800	24	3%
	Right	109	138	30	27%	93	84	-9	-10%
	SB Total	1,161	1,357	197	17%	1,000	1,204	205	20%
EAST BOUND	Left	188	212	25	13%	223	259	37	16%
	Through	126	135	9	7%	467	558	91	19%
	Right	39	18	-21	-54%	129	64	-65	-50%
	EB Total	353	365	13	4%	819	881	63	8%
WEST BOUND	Left	14	11	-3	-21%	35	46	11	31%
	Through	154	146	-8	-5%	261	300	40	15%
	Right	127	231	105	83%	102	310	208	204%
	WB Total	295	388	94	32%	398	656	259	65%
TOTAL ENTERING VOLUME		2,734	3,190	456.5	17%	3,119	3,950	831	27%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	1,357	1,204			
North Leg	Outbound	1,440	1,630			
North Leg	**TOTAL**	**2,797**	**2,834**	**9%**	**9%**	**31,924**
South Leg	Inbound	1,080	1,209			
South Leg	Outbound	1,000	910			
South Leg	**TOTAL**	**2,080**	**2,119**	**9%**	**9%**	**23,148**
East Leg	Inbound	388	656			
East Leg	Outbound	420	980			
East Leg	**TOTAL**	**808**	**1,636**	**8%**	**17%**	**9,776**
West Leg	Inbound	365	881			
West Leg	Outbound	330	430			
West Leg	**TOTAL**	**695**	**1,311**	**5%**	**9%**	**14,966**
OVERALL TOTAL		***6,380***	***7,900***	***8%***	***10%***	***79,814***

U:\UcJobs_11100-11500_11100\11181\Post Processing\11181-06\[04 Cedar_Slover.xls]Output (3)

Project:	Slover and Cactus Warehouse	Job #:	11181
Scenario:	Horizon Year Without Project	Analyst:	CS
		Date:	4/9/19

LOCATION: Cactus Avenue / Slover Street
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	54	65	12	21%	91	203	112	123%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	29	16	-13	-44%	69	108	40	58%
	NB Total	82	81	-1	-1%	160	311	152	95%
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	SB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	181	217	37	20%	422	682	261	62%
	Right	50	141	92	185%	58	64	7	11%
	EB Total	230	358	128	56%	479	746	267	56%
WEST BOUND	Left	70	82	12	17%	72	46	-26	-36%
	Through	166	179	14	8%	282	367	85	30%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	WB Total	236	261	26	11%	354	413	60	17%
TOTAL ENTERING VOLUME		548	700	152.5	28%	992	1,470	478	48%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	0	0			
North Leg	Outbound	0	0			
North Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
South Leg	Inbound	81	311			
South Leg	Outbound	223	110			
South Leg	**TOTAL**	**304**	**421**	**11%**	**15%**	**2,878**
East Leg	Inbound	261	413			
East Leg	Outbound	233	790			
East Leg	**TOTAL**	**494**	**1,203**	**13%**	**31%**	**3,871**
West Leg	Inbound	358	746			
West Leg	Outbound	244	570			
West Leg	**TOTAL**	**602**	**1,316**	**9%**	**20%**	**6,509**
OVERALL TOTAL		***1,400***	***2,940***	**11%**	***22%***	***13,258***

U:\UcJobs_11100-11500_11100\11181\Post Processing\11181-06\[08 Cactus_Slover.xls]Output (3)

Project:	Slover and Cactus Warehouse	Job #:	11181
Scenario:	Horizon Year Without Project	Analyst:	CP
		Date:	5/9/19

LOCATION: Riverside Avenue / I-10 WB Ramps
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	400	467	68	17%	355	525	170	48%
	Through	823	1,084	262	32%	1,478	1,898	421	28%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	1,222	1,551	329	27%	1,833	2,423	591	32%
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	1,242	1,784	542	44%	1,051	1,573	523	50%
	Right	583	603	21	4%	430	483	53	12%
	SB Total	1,825	2,387	563	31%	1,481	2,056	576	39%
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
WEST BOUND	Left	594	696	102	17%	449	597	149	33%
	Through	0	0	0	#DIV/0!	2	1	-1	-33%
	Right	353	336	-17	-5%	522	452	-70	-13%
	WB Total	947	1,032	85	9%	972	1,050	79	8%
TOTAL ENTERING VOLUME		3,994	4,970	976.5	24%	4,285	5,529	1245	29%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	2,387	2,056			
North Leg	Outbound	1,420	2,350			
North Leg	**TOTAL**	**3,807**	**4,406**	**7%**	**8%**	**54,507**
South Leg	Inbound	1,551	2,423			
South Leg	Outbound	2,480	2,170			
South Leg	**TOTAL**	**4,031**	**4,593**	**7%**	**8%**	**54,861**
East Leg	Inbound	1,032	1,050			
East Leg	Outbound	0	0			
East Leg	**TOTAL**	**1,032**	**1,050**	**11%**	**11%**	**9,140**
West Leg	Inbound	0	0			
West Leg	Outbound	1,070	1,009			
West Leg	**TOTAL**	**1,070**	**1,009**	**10%**	**9%**	**11,026**
OVERALL TOTAL		***9,940***	***11,058***	***8%***	***9%***	***129,534***

U:\UcJobs_11100-11500_11100\11181\Post Processing\11181-09\[11 Riverside_I-10 WB Ramps.xls]Output (3)

Project:	Slover and Cactus Warehouse	Job #:	11181
Scenario:	Horizon Year Without Project	Analyst:	CP
		Date:	5/9/19

LOCATION: Riverside Avenue / I-10 EB Ramps
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	910	1,222	313	34%	1,209	1,967	758	63%
	Right	587	636	50	8%	667	643	-24	-4%
	NB Total	1,496	1,858	362	24%	1,876	2,610	734	39%
SOUTH BOUND	Left	527	566	40	8%	421	578	157	37%
	Through	1,310	1,916	607	46%	1,078	1,581	503	47%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	SB Total	1,836	2,482	646	35%	1,499	2,159	660	44%
EAST BOUND	Left	313	331	19	6%	624	468	-156	-25%
	Through	0	0	0	#DIV/0!	3	1	-2	-67%
	Right	429	499	70	16%	362	172	-190	-52%
	EB Total	742	830	89	12%	989	641	-348	-35%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	WB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
TOTAL ENTERING VOLUME		4,074	5,170	1096.5	27%	4,364	5,410	1047	24%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	2,482	2,159			
North Leg	Outbound	1,553	2,435			
North Leg	**TOTAL**	**4,035**	**4,594**	**7%**	**8%**	**54,862**
South Leg	Inbound	1,858	2,610			
South Leg	Outbound	2,415	1,753			
South Leg	**TOTAL**	**4,273**	**4,363**	**8%**	**8%**	**53,679**
East Leg	Inbound	0	0			
East Leg	Outbound	1,202	1,222			
East Leg	**TOTAL**	**1,202**	**1,222**	**14%**	**14%**	**8,680**
West Leg	Inbound	830	641			
West Leg	Outbound	0	0			
West Leg	**TOTAL**	**830**	**641**	**12%**	**10%**	**6,641**
OVERALL TOTAL		***10,340***	***10,820***	***8%***	***9%***	***123,862***

U:\UcJobs_11100-11500_11100\11181\Post Processing\11181-09\[12 Riverside_I-10 EB Ramps.xls]Output (3)

Project:	Slover and Cactus Warehouse	Job #:	11181
Scenario:	Horizon Year Without Project	Analyst:	CP
		Date:	5/9/19

LOCATION: Riverside Avenue / Slover Avenue
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	78	96	19	24%	25	62	37	148%
	Through	1,160	1,507	347	30%	1,276	2,012	736	58%
	Right	26	36	11	41%	17	68	51	300%
	NB Total	1,263	1,639	376	30%	1,318	2,142	824	63%
SOUTH BOUND	Left	20	21	1	5%	26	40	14	54%
	Through	1,362	2,062	701	51%	1,078	1,400	322	30%
	Right	360	342	-18	-5%	337	318	-19	-5%
	SB Total	1,742	2,425	684	39%	1,441	1,758	318	22%
EAST BOUND	Left	324	288	-36	-11%	479	455	-24	-5%
	Through	35	33	-2	-6%	126	302	177	141%
	Right	86	116	30	35%	144	293	150	104%
	EB Total	445	437	-8	-2%	748	1,050	303	40%
WEST BOUND	Left	23	77	55	242%	35	57	23	65%
	Through	16	33	18	113%	9	10	2	18%
	Right	44	99	55	125%	82	63	-19	-23%
	WB Total	82	209	127	155%	125	130	6	4%
TOTAL ENTERING VOLUME		3,532	4,710	1178.5	33%	3,631	5,080	1450	40%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	2,425	1,758			
North Leg	Outbound	1,894	2,530			
North Leg	**TOTAL**	**4,319**	**4,288**	**9%**	**8%**	**50,774**
South Leg	Inbound	1,639	2,142			
South Leg	Outbound	2,255	1,750			
South Leg	**TOTAL**	**3,894**	**3,892**	**8%**	**8%**	**50,147**
East Leg	Inbound	209	130			
East Leg	Outbound	90	410			
East Leg	**TOTAL**	**299**	**540**	**18%**	**33%**	**1,617**
West Leg	Inbound	437	1,050			
West Leg	Outbound	471	390			
West Leg	**TOTAL**	**908**	**1,440**	**19%**	**31%**	**4,674**
OVERALL TOTAL		***9,420***	***10,160***	***9%***	***9%***	***107,212***

U:\UcJobs_11100-11500_11100\11181\Post Processing\11181-09\[13 Riverside_Slover.xls]Output (3)

This Page Intentionally Left Blank

APPENDIX 4.2:

CUMULATIVE PROJECT TRIP GENERATION

This Page Intentionally Left Blank

Cumulative Project Trip Generation Summary (PCE)

Land Use	Units[2]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates (PCE)[1]									
General Light Industrial[3]	TSF	110	0.810	0.110	0.920	0.120	0.850	0.970	6.970
Passenger Cars			0.637	0.086	0.723	0.094	0.668	0.762	5.478
2-Axle Trucks (PCE = 1.5)			0.097	0.013	0.110	0.014	0.102	0.116	0.836
3-Axle Trucks (PCE = 2.0)			0.063	0.009	0.072	0.009	0.066	0.076	0.544
4-Axle+ Trucks (PCE = 3.0)			0.231	0.031	0.262	0.034	0.242	0.276	1.986
Warehouse	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.00%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%) (PCE = 1.5)[5]			0.006	0.002	0.008	0.003	0.008	0.011	0.087
3-Axle Trucks (4.14%) (PCE = 2.0)[5]			0.010	0.004	0.014	0.004	0.012	0.016	0.144
4-Axle+ Trucks (12.52%) (PCE = 3.0)[5]			0.048	0.015	0.063	0.018	0.051	0.069	0.654
High-Cube Fulfillment Center Warehouse[4]	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks (PCE = 2.0)			0.012	0.004	0.016	0.006	0.016	0.022	0.324
5+-Axle Trucks (PCE = 3.0)			0.025	0.008	0.033	0.008	0.022	0.030	0.651
High-Cube Cold Storage Warehouse	TSF	157	0.085	0.025	0.110	0.032	0.088	0.120	2.120
Passenger Cars (69.2% AM, 78.3% PM, 67.8% Daily)			0.059	0.018	0.076	0.025	0.069	0.094	1.437
2-Axle Trucks (30.8%)			0.014	0.004	0.018	0.004	0.010	0.014	0.355
3-Axle Trucks (21.7%)			0.006	0.002	0.007	0.002	0.004	0.006	0.150
4-Axle+ Trucks (32.2%)			0.042	0.013	0.055	0.011	0.031	0.042	1.112
Fast Food Restaurant With Drive-Thru Window	TSF	934	20.50	19.69	40.19	16.99	15.68	32.67	470.95
Fast Food Restaurant Without Drive-Thru Window	TSF	933	15.06	10.04	25.10	14.17	14.17	28.34	346.22
Single Family Detached Residential	DU	210	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Office	TSF	710	1.00	0.16	1.16	0.18	0.97	1.15	9.74
Tire Store	TSF	848	1.74	0.98	2.72	1.71	2.27	3.98	28.52
Shopping Center	TSF	820	0.58	0.36	0.94	1.83	1.98	3.81	37.75
Discount Superstore	TSF	813	1.04	0.81	1.85	2.12	2.21	4.33	50.70

Project	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary (PCE[5])									
SB1 - NWC of Slover Av. & Locust Av.	20.750	TSF							
Warehouse - Passenger Cars:			2	1	3	1	2	3	30
Warehouse - Truck Trips:									
2-axle:			*0*	*0*	*0*	*0*	*0*	*0*	*2*
3-axle:			*0*	*0*	*0*	*0*	*0*	*0*	*4*
4+-axle:			*1*	*0*	*1*	*0*	*1*	*1*	*14*
Fast Food Restaurant With Drive-Thru:	3.265	TSF	*67*	*64*	*131*	*55*	*51*	*107*	*1,538*
Shopping Center:	7.200	TSF	*4*	*3*	*7*	*13*	*14*	*27*	*272*
SB2 - SEC of Linden Av. and Valley Bl.	1.500	TSF	31	30	60	25	24	49	708
SB3 - Valley Bl., West of Linden Av.	0.250	AC	5	1	6	1	5	6	58
SB4 - Linden Av., north of Slover Av.	3.000	TSF	5	3	8	5	7	12	86
SB5 - Slover Av., between Locust Av. and Laurel Av.	344.000	TSF							
Warehouse - Passenger Cars:			27	8	35	14	36	50	602
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			*4*	*1*	*6*	*2*	*5*	*8*	*112*
5+-Axle Trucks (PCE = 3.0)			*9*	*3*	*11*	*3*	*7*	*10*	*224*
SB6 - Locust Av. and 7th St.	198	DU	37	110	147	123	73	196	1870
SB7 - NEC and NWC of Cedar Av. and Orange St.	395.000	TSF							
Warehouse - Passenger Cars:			31	9	41	16	41	57	692
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			5	1	6	2	6	9	128
5+-Axle Trucks (PCE = 3.0)			10	3	13	3	9	12	258
SB8 - NWC of Cedar Av. and Jurupa Av.	677.000	TSF							
Warehouse - Passenger Cars:			54	16	70	27	70	97	1,186
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			8	2	11	4	11	15	220
5+-Axle Trucks (PCE = 3.0)			17	5	22	6	15	20	442
SB9 - West of Agua Mansa Rd. and North of El Rivino Rd.	506.000	TSF							
Warehouse - Passenger Cars:			40	12	52	20	52	73	886
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			6	2	8	3	8	11	164
5+-Axle Trucks (PCE = 3.0)			13	4	17	4	11	15	330
SB10 - Holly Truck Terminal	450.000	TSF							
Warehouse - Passenger Cars:			36	11	46	18	47	65	788
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			8	2	11	4	11	15	220
5+-Axle Trucks (PCE = 3.0)			17	5	22	6	15	20	442
SB11 - Cedar Avenue Technology Center	184.770	TSF							
Warehouse - Passenger Cars:			19	6	25	8	21	28	258
Warehouse - Truck Trips:									
2-axle:			1	0	1	1	1	2	18
3-axle:			2	1	3	1	2	3	28
4+-axle:			9	3	12	3	9	13	122
RIA1 - Panattoni I-10 (Cactus Av. & El Rivino Rd.)	2,475.745	TSF							
Warehouse - Passenger Cars:			85	12	97	13	90	102	736
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			0	0	0	0	0	0	0
5+-Axle Trucks (PCE = 3.0)			410	56	466	61	430	491	3,528

Project	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
RIA2 - CapRock III	582.000	TSF							
Warehouse - Passenger Cars:			61	18	79	24	65	88	812
Warehouse - Truck Trips:									
2-axle:			3	1	4	2	4	6	52
3-axle:			6	2	8	2	7	9	84
4+-axle:			28	9	37	10	30	40	382
RIA3 - Newmark Merrill Companies									
Discount Super Store	198.000	TSF	205	161	366	420	437	857	10,040
Tire Store	9.861	TSF	17	10	27	17	22	39	282
Retail	25.436	TSF	15	9	24	47	50	97	962
Fast Food w/ Drive-Thru	5.484	TSF	112	108	220	93	86	179	2,584
RIA4 - Kore Infrastructure	288.0	TPD	11	11	22	23	23	45	287
RIA5 - NEC of Sycamore Av. and Cameron Wy.	--[6]	--	11	3	14	4	10	14	106
RIA6 - South of Santa Ana Av., East of Riverside Av.	370.000	TSF							
Warehouse - Passenger Cars:			29	9	38	15	38	53	648
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			6	2	8	3	8	11	164
5+-Axle Trucks (PCE = 3.0)			13	4	17	4	11	15	330
RIA7 - North of Agua Mansa Rd., East of Hopkins Rd.	808.500	TSF							
Warehouse - Passenger Cars:			64	19	83	33	84	116	1,416
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			6	2	8	3	8	11	164
5+-Axle Trucks (PCE = 3.0)			13	4	17	4	11	15	330
RIA8 - SEC of Riverside Av. and Industrial Dr.	--[6]	--	68	20	88	24	64	88	420
RIA9 - NWC of Riversid Av. and Industrial Dr.	--[6]	--	60	18	78	18	49	67	850
RIA10 - NWC of Riverside Av. and Santa Ana Av.	--[6]	--	116	34	150	46	123	169	1,540
RIA11 - SEC of Riverside Av. and Santa Ana Av.	--[6]	--	232	231	463	190	189	379	3,804
RIA12 - South of Jurupa Av., West of Riverside Av.	--[6]	--	111	33	144	35	96	131	2,224
RIA13 - SWC of Riverside Av. & Slover Av.	--[6]	--	29	27	56	38	37	75	1,104
RIA14 - North of Valley Bl., West of Riverside Av.	--[6]	--	29	9	38	11	29	40	444
RIA15 - South of Slover Av., East of Cactus Av.	--[6]	--	68	20	88	21	57	78	976
RIA16 - South of Valley Bl., West of Cactus Av.	--[6]	--	155	46	201	57	158	215	2,406
COL1 - 2036, 2053 Miguel Bustamante Pkwy.	299.584	TSF							
Warehouse - Passenger Cars:			31	9	41	12	33	46	418
Warehouse - Truck Trips:									
2-axle:			2	0	2	1	2	3	28
3-axle:			3	1	4	1	4	5	44
4+-axle:			14	4	19	5	15	21	196
COL2 - Roquet Ranch	--[7]	--	238	581	819	617	374	991	10,022
COL3 - 2163 Riverside Av.	447.330	TSF							
Warehouse - Passenger Cars:			35	11	46	18	46	64	784
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			6	2	7	3	7	10	146
5+-Axle Trucks (PCE = 3.0)			11	3	15	4	10	13	292
JV1 - Inland Empire Cold Storage	40.800	TSF							
Warehouse - Passenger Cars:			6	4	10	10	10	19	186
Warehouse - Truck Trips:									
2-axle:			25	8	33	10	26	36	636
3-axle:			18	5	23	8	21	28	432
4+-axle:			4	1	5	1	3	4	108

Project	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
JV2 - Agua Mansa Commerce Specific Plan	4,277.000	TSF							
Warehouse - Passenger Cars:			339	101	441	172	443	616	7,486
Warehouse - Truck Trips:									
2-4 Axle Trucks (PCE = 2.0)			6	2	7	3	7	10	146
5+-Axle Trucks (PCE = 3.0)			11	3	15	4	10	13	292
	150.000	TSF							
General Light Industrial - Passenger Cars:			95	13	108	14	100	114	822
General Light Industrial - Truck Trips:									
2-axle:			15	2	17	2	15	17	126
3-axle:			9	1	11	1	10	11	82
4+-axle:			35	5	39	5	36	41	298
Shopping Center:	25.000	TSF	*15*	*9*	*24*	*46*	*50*	*95*	*944*

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Handbook, Third Edition (September 2017).

[4] Trip Generation and Vehicle Mix Source: TUMF High Cube Warehouse Trip Generation Study, WSP, January 29, 2019.
Inbound and outbound split source: High Cube Warehouse Vehicle Trip Generation Analysis, October 2016, ITE.

[5] PCE rates are per San Bernardino County Transportation Authority (SBCTA).

[6] Trip generation data provided by the City of Rialto.

[7] Trip generation source: Roquet Ranch Specific Plan

APPENDIX 5.1:

E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

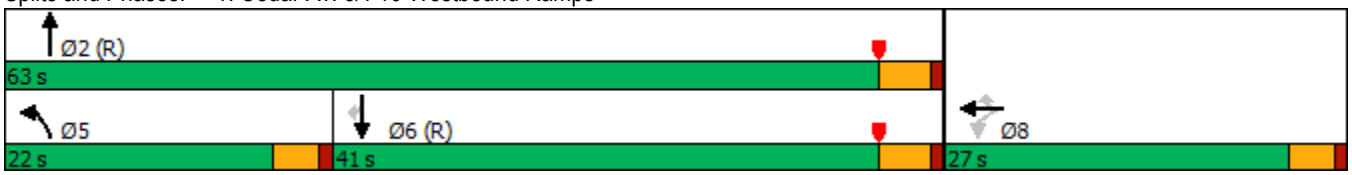
This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	13	326	343	1206	1432	812
Future Volume (vph)	13	326	343	1206	1432	812
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	27.0	27.0	22.0	63.0	41.0	41.0
Total Split (%)	30.0%	30.0%	24.4%	70.0%	45.6%	45.6%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 59 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	365	13	326	343	1206	0	0	1432	812
Future Volume (veh/h)	0	0	0	365	13	326	343	1206	0	0	1432	812
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				384	14	203	361	1269	0	0	1507	599
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				423	15	390	362	2395	0	0	2174	675
Arrive On Green				0.24	0.24	0.24	0.13	0.44	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1749	64	1610	1810	3705	0	0	5358	1610
Grp Volume(v), veh/h				398	0	203	361	1269	0	0	1507	599
Grp Sat Flow(s),veh/h/ln				1813	0	1610	1810	1805	0	0	1729	1610
Q Serve(g_s), s				19.2	0.0	9.8	17.9	23.0	0.0	0.0	21.4	31.0
Cycle Q Clear(g_c), s				19.2	0.0	9.8	17.9	23.0	0.0	0.0	21.4	31.0
Prop In Lane				0.96		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				439	0	390	362	2395	0	0	2174	675
V/C Ratio(X)				0.91	0.00	0.52	1.00	0.53	0.00	0.00	0.69	0.89
Avail Cap(c_a), veh/h				463	0	411	362	2395	0	0	2174	675
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.57	0.57	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				33.1	0.0	29.6	38.9	14.8	0.0	0.0	21.4	24.2
Incr Delay (d2), s/veh				20.9	0.0	1.1	35.0	0.5	0.0	0.0	1.8	16.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.4	0.0	3.7	11.6	9.8	0.0	0.0	8.3	13.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				54.0	0.0	30.7	74.0	15.3	0.0	0.0	23.2	40.2
LnGrp LOS				D	A	C	E	B	A	A	C	D
Approach Vol, veh/h					601			1630			2106	
Approach Delay, s/veh					46.1			28.3			28.1	
Approach LOS					D			C			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	64.2		22.0	42.2		25.8						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	58.5		18.0	36.5		23.0						
Max Q Clear Time (g_c+I1), s	25.0		19.9	33.0		21.2						
Green Ext Time (p_c), s	11.1		0.0	3.0		0.6						

Intersection Summary		
HCM 6th Ctrl Delay		30.6
HCM 6th LOS		C

Notes

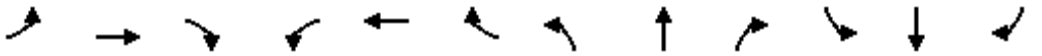
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	4	1095	434	443	1354
Future Volume (vph)	453	4	1095	434	443	1354
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	453	4	382	0	0	0	0	1095	434	443	1354	0
Future Volume (veh/h)	453	4	382	0	0	0	0	1095	434	443	1354	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	408	94	340				0	1141	376	461	1410	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	509	102	367				0	1578	490	498	2253	0
Arrive On Green	0.28	0.28	0.28				0.00	0.30	0.30	0.09	0.21	0.00
Sat Flow, veh/h	1810	361	1305				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	408	0	434				0	1141	376	461	1410	0
Grp Sat Flow(s),veh/h/ln	1810	0	1665				0	1729	1610	1810	1805	0
Q Serve(g_s), s	18.8	0.0	22.8				0.0	17.7	19.1	22.8	32.0	0.0
Cycle Q Clear(g_c), s	18.8	0.0	22.8				0.0	17.7	19.1	22.8	32.0	0.0
Prop In Lane	1.00		0.78				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	509	0	469				0	1578	490	498	2253	0
V/C Ratio(X)	0.80	0.00	0.93				0.00	0.72	0.77	0.93	0.63	0.00
Avail Cap(c_a), veh/h	523	0	481				0	1578	490	503	2253	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.56	0.56	0.63	0.63	0.00
Uniform Delay (d), s/veh	30.0	0.0	31.4				0.0	27.9	28.4	40.0	26.2	0.0
Incr Delay (d2), s/veh	8.5	0.0	23.7				0.0	1.6	6.4	16.1	0.8	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
%ile BackOfQ(50%),veh/ln	8.8	0.0	11.5				0.0	7.1	7.8	13.1	15.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	55.1				0.0	29.6	34.8	56.1	27.0	0.0
LnGrp LOS	D	A	E				A	C	C	E	C	A
Approach Vol, veh/h		842						1517			1871	
Approach Delay, s/veh		47.1						30.9			34.2	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	28.8	31.9		29.3		60.7
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	24.8	21.1		24.8		34.0
Green Ext Time (p_c), s	0.0	2.9		0.5		7.2

Intersection Summary	
HCM 6th Ctrl Delay	35.6
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	294	6	1	1	1	1144	109	1172	456
Future Volume (vph)	294	6	1	1	1	1144	109	1172	456
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	47.0	47.0	47.0	47.0	9.6	59.0	14.0	63.4	63.4
Total Split (%)	39.2%	39.2%	39.2%	39.2%	8.0%	49.2%	11.7%	52.8%	52.8%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 109
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	294	6	21	1	1	91	1	1144	7	109	1172	456
Future Volume (veh/h)	294	6	21	1	1	91	1	1144	7	109	1172	456
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		1.00	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	313	6	20	1	1	46	1	1217	6	116	1247	321
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	413	93	309	39	15	374	189	1908	9	286	2032	906
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.00	0.55	0.55	0.05	0.59	0.59
Sat Flow, veh/h	1303	365	1215	5	59	1470	1619	3490	17	1619	3420	1525
Grp Volume(v), veh/h	313	0	26	48	0	0	1	596	627	116	1247	321
Grp Sat Flow(s),veh/h/ln	1303	0	1580	1534	0	0	1619	1710	1797	1619	1710	1525
Q Serve(g_s), s	20.0	0.0	1.2	0.0	0.0	0.0	0.0	23.8	23.8	2.9	22.8	10.6
Cycle Q Clear(g_c), s	22.3	0.0	1.2	2.4	0.0	0.0	0.0	23.8	23.8	2.9	22.8	10.6
Prop In Lane	1.00		0.77	0.02		0.96	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	413	0	402	428	0	0	189	935	982	286	2032	906
V/C Ratio(X)	0.76	0.00	0.06	0.11	0.00	0.00	0.01	0.64	0.64	0.41	0.61	0.35
Avail Cap(c_a), veh/h	643	0	682	700	0	0	270	935	982	362	2032	906
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	27.7	28.1	0.0	0.0	11.7	15.5	15.5	12.4	12.7	10.2
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.2	0.3	1.4	1.1
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	7.3	0.0	0.5	0.9	0.0	0.0	0.0	9.1	9.5	0.9	7.9	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.4	0.0	27.7	28.2	0.0	0.0	11.7	18.8	18.6	12.8	14.1	11.3
LnGrp LOS	D	A	C	C	A	A	B	B	B	B	B	B
Approach Vol, veh/h		339			48			1224			1684	
Approach Delay, s/veh		35.8			28.2			18.7			13.5	
Approach LOS		D			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	59.0		29.6	4.7	63.7		29.6				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	9.4	53.6		* 42	5.0	58.0		* 42				
Max Q Clear Time (g_c+I1), s	4.9	25.8		24.3	2.0	24.8		4.4				
Green Ext Time (p_c), s	0.0	8.9		0.6	0.0	12.6		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		17.9
HCM 6th LOS		B

Notes

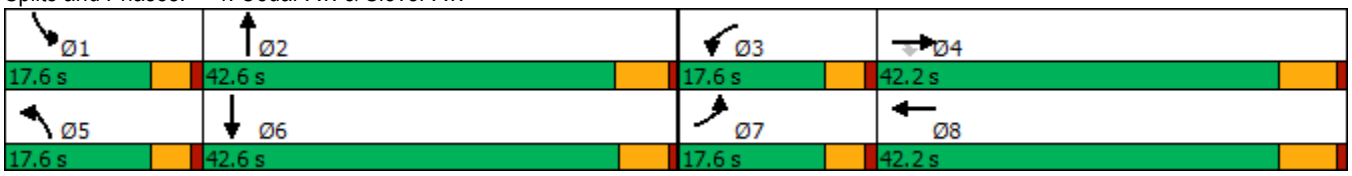
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

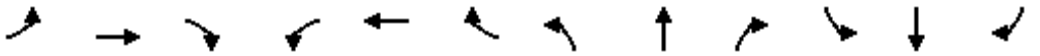
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	189	128	39	15	156	74	829	129	955
Future Volume (vph)	189	128	39	15	156	74	829	129	955
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 92.7
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	128	39	15	156	134	74	829	35	129	955	110
Future Volume (veh/h)	189	128	39	15	156	134	74	829	35	129	955	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		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	205	139	29	16	170	124	80	901	38	140	1038	117
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	238	900	401	30	261	179	100	1172	49	171	1221	138
Arrive On Green	0.15	0.26	0.26	0.02	0.13	0.13	0.06	0.35	0.35	0.11	0.39	0.39
Sat Flow, veh/h	1619	3420	1524	1619	1938	1332	1619	3343	141	1619	3098	349
Grp Volume(v), veh/h	205	139	29	16	149	145	80	461	478	140	573	582
Grp Sat Flow(s),veh/h/ln	1619	1710	1524	1619	1710	1560	1619	1710	1774	1619	1710	1737
Q Serve(g_s), s	10.0	2.5	1.2	0.8	6.7	7.2	3.9	19.4	19.4	6.8	24.7	24.7
Cycle Q Clear(g_c), s	10.0	2.5	1.2	0.8	6.7	7.2	3.9	19.4	19.4	6.8	24.7	24.7
Prop In Lane	1.00		1.00	1.00		0.85	1.00		0.08	1.00		0.20
Lane Grp Cap(c), veh/h	238	900	401	30	230	210	100	599	622	171	674	685
V/C Ratio(X)	0.86	0.15	0.07	0.53	0.65	0.69	0.80	0.77	0.77	0.82	0.85	0.85
Avail Cap(c_a), veh/h	260	1523	679	260	762	695	260	778	808	260	787	799
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	33.7	22.9	22.4	39.3	33.1	33.4	37.4	23.3	23.3	35.4	22.3	22.3
Incr Delay (d2), s/veh	21.1	0.1	0.1	5.2	3.0	4.0	5.5	3.5	3.4	6.7	7.8	7.7
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	5.0	0.9	0.4	0.3	2.7	2.7	1.6	7.5	7.8	2.9	10.3	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.8	22.9	22.4	44.6	36.2	37.4	42.9	26.8	26.7	42.1	30.1	30.0
LnGrp LOS	D	C	C	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		373			310			1019			1295	
Approach Delay, s/veh		40.4			37.2			28.0			31.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	34.1	6.1	27.5	9.6	37.7	16.5	17.1
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	8.8	21.4	2.8	4.5	5.9	26.7	12.0	9.2
Green Ext Time (p_c), s	0.1	4.9	0.0	0.8	0.0	5.2	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	32.0
HCM 6th LOS	C

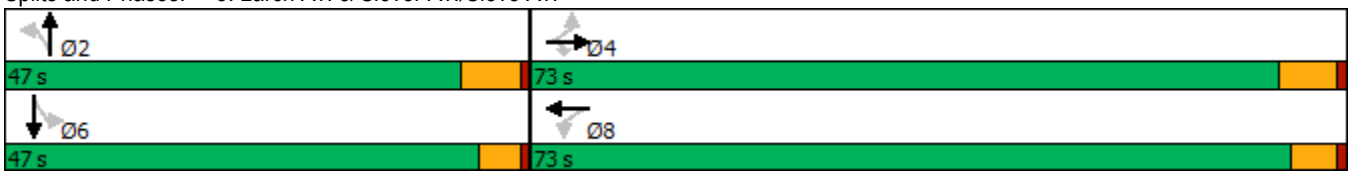
Notes

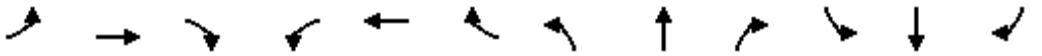
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	240	47	39	255	45	54	39	34
Future Volume (vph)	5	240	47	39	255	45	54	39	34
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	73.0	73.0	73.0	73.0	73.0	47.0	47.0	47.0	47.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	60.8%	39.2%	39.2%	39.2%	39.2%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 94
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	240	47	39	255	32	45	54	24	39	34	4
Future Volume (veh/h)	5	240	47	39	255	32	45	54	24	39	34	4
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		1.00	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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	5	255	40	41	271	20	48	57	20	41	36	3
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	842	1354	1148	820	2431	178	112	96	29	133	99	7
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1044	1800	1525	1040	3230	237	513	872	264	662	901	61
Grp Volume(v), veh/h	5	255	40	41	143	148	125	0	0	80	0	0
Grp Sat Flow(s),veh/h/ln	1044	1800	1525	1040	1710	1757	1649	0	0	1624	0	0
Q Serve(g_s), s	0.1	3.7	0.6	1.1	2.0	2.1	2.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	3.7	0.6	4.8	2.0	2.1	6.4	0.0	0.0	3.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.13	0.38		0.16	0.51		0.04
Lane Grp Cap(c), veh/h	842	1354	1148	820	1287	1322	237	0	0	239	0	0
V/C Ratio(X)	0.01	0.19	0.03	0.05	0.11	0.11	0.53	0.00	0.00	0.33	0.00	0.00
Avail Cap(c_a), veh/h	842	1354	1148	820	1287	1322	776	0	0	787	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	3.3	3.2	2.8	3.9	3.0	3.0	38.5	0.0	0.0	37.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.1	0.2	0.2	1.8	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	0.0	0.8	0.1	0.2	0.4	0.5	2.7	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.3	3.5	2.9	4.0	3.2	3.2	40.3	0.0	0.0	38.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		300			332			125			80	
Approach Delay, s/veh		3.4			3.3			40.3			38.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.1		74.1		16.1		74.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		40.8		66.8		* 42		* 68				
Max Q Clear Time (g_c+I1), s		8.4		5.7		5.9		6.8				
Green Ext Time (p_c), s		0.7		1.5		0.5		1.7				

Intersection Summary		
HCM 6th Ctrl Delay		12.2
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	246	11	6	225	3	2
Future Vol, veh/h	246	11	6	225	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	267	12	7	245	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	279	0	410	140
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	137	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1295	-	575	889
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	881	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1295	-	572	889
Mov Cap-2 Maneuver	-	-	-	-	626	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	877	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	710	-	-	1295	-
HCM Lane V/C Ratio	0.008	-	-	0.005	-
HCM Control Delay (s)	10.1	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	243	4	5	229	1	2
Future Vol, veh/h	243	4	5	229	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	264	4	5	249	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	268	0	401	134
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	135	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1307	-	582	897
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	883	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1307	-	580	897
Mov Cap-2 Maneuver	-	-	-	-	632	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	879	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	787	-	-	1307	-
HCM Lane V/C Ratio	0.004	-	-	0.004	-
HCM Control Delay (s)	9.6	-	-	7.8	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	185	59	78	178	57	31
Future Vol, veh/h	185	59	78	178	57	31
Conflicting Peds, #/hr	0	1	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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	208	66	88	200	64	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	275	0	518	138
Stage 1	-	-	-	-	242	-
Stage 2	-	-	-	-	276	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1300	-	492	891
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1299	-	454	890
Mov Cap-2 Maneuver	-	-	-	-	541	-
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	695	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	628	-	-	1299	-
HCM Lane V/C Ratio	0.157	-	-	0.067	-
HCM Control Delay (s)	11.8	-	-	8	0.2
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	84	125	12
Future Vol, veh/h	4	0	0	84	125	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	0	0	91	136	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	234	143	149	0	-	0
Stage 1	143	-	-	-	-	-
Stage 2	91	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	759	910	1445	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	938	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	759	910	1445	-	-	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	938	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1445	-	759	-	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	0	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	83	121	4
Future Vol, veh/h	1	0	1	83	121	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	0	1	90	132	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	226	134	136	0	-	0
Stage 1	134	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	767	920	1461	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	766	920	1461	-	-	-
Mov Cap-2 Maneuver	766	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	937	-	-	-	-	-

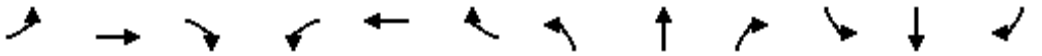
Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1461	-	766	-	-
HCM Lane V/C Ratio	0.001	-	0.001	-	-
HCM Control Delay (s)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	606	0	353	400	823	1243	583
Future Volume (vph)	606	0	353	400	823	1243	583
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	15.8	15.8	15.8	9.6	23.2	16.2	16.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	22.9	22.9	22.9	13.5	51.0	32.8	32.8
Actuated g/C Ratio	0.27	0.27	0.27	0.16	0.59	0.38	0.38
v/c Ratio	0.77	0.69	0.61	0.76	0.28	0.52	0.62
Control Delay	41.0	28.0	19.6	44.7	9.3	22.5	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	41.0	28.0	19.6	44.7	9.6	22.5	5.0
LOS	D	C	B	D	A	C	A
Approach Delay		29.9			21.1	16.9	
Approach LOS		C			C	B	

Intersection Summary		
Cycle Length: 90		
Actuated Cycle Length: 85.9		
Natural Cycle: 55		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.77		
Intersection Signal Delay: 21.3	Intersection LOS: C	
Intersection Capacity Utilization 117.0%	ICU Level of Service H	
Analysis Period (min) 15		

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	606	0	353	400	823	0	0	1243	583
Future Volume (veh/h)	0	0	0	606	0	353	400	823	0	0	1243	583
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				686	0	103	421	866	0	0	1308	449
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				838	0	373	509	3224	0	0	2746	677
Arrive On Green				0.23	0.00	0.23	0.15	0.62	0.00	0.00	0.42	0.42
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				686	0	103	421	866	0	0	1308	449
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				14.7	0.0	4.3	9.5	6.2	0.0	0.0	11.9	18.3
Cycle Q Clear(g_c), s				14.7	0.0	4.3	9.5	6.2	0.0	0.0	11.9	18.3
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				838	0	373	509	3224	0	0	2746	677
V/C Ratio(X)				0.82	0.00	0.28	0.83	0.27	0.00	0.00	0.48	0.66
Avail Cap(c_a), veh/h				1204	0	536	661	3224	0	0	2746	677
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.8	0.0	25.8	33.9	7.0	0.0	0.0	17.2	19.1
Incr Delay (d2), s/veh				3.0	0.0	0.4	5.2	0.2	0.0	0.0	0.6	5.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.2	0.0	1.6	4.1	1.7	0.0	0.0	3.9	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.8	0.0	26.2	39.2	7.2	0.0	0.0	17.8	24.1
LnGrp LOS				C	A	C	D	A	A	A	B	C
Approach Vol, veh/h					789			1287			1757	
Approach Delay, s/veh					31.9			17.7			19.4	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.0		16.5	40.5		24.7						
Change Period (Y+Rc), s	6.2		4.6	6.2		5.8						
Max Green Setting (Gmax), s	50.8		15.4	30.8		27.2						
Max Q Clear Time (g_c+I1), s	8.2		11.5	20.3		16.7						
Green Ext Time (p_c), s	6.2		0.3	6.7		2.2						

Intersection Summary		
HCM 6th Ctrl Delay	21.4	
HCM 6th LOS	C	

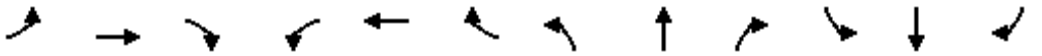
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	313	0	429	910	527	1324
Future Volume (vph)	313	0	429	910	527	1324
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.1	17.9	62.0
Total Split (%)	31.1%	31.1%	31.1%	49.0%	19.9%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	18.6	18.6	18.6	38.0	13.3	56.0
Actuated g/C Ratio	0.21	0.21	0.21	0.44	0.15	0.65
v/c Ratio	0.75	0.66	0.64	0.71	1.05	0.61
Control Delay	45.0	27.9	26.7	19.5	91.1	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	5.5
Total Delay	45.0	27.9	26.7	19.5	91.1	16.4
LOS	D	C	C	B	F	B
Approach Delay		33.5		19.5		37.7
Approach LOS		C		B		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 86.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 117.0%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	0	429	0	0	0	0	910	591	527	1324	0
Future Volume (veh/h)	313	0	429	0	0	0	0	910	591	527	1324	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	435	0	210				0	978	558	567	1424	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	615	0	274				0	1605	747	572	2466	0
Arrive On Green	0.17	0.00	0.17				0.00	0.46	0.46	0.16	0.68	0.00
Sat Flow, veh/h	3619	0	1610				0	3629	1609	3510	3705	0
Grp Volume(v), veh/h	435	0	210				0	978	558	567	1424	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1755	1805	0
Q Serve(g_s), s	9.3	0.0	10.2				0.0	17.3	23.2	13.2	16.9	0.0
Cycle Q Clear(g_c), s	9.3	0.0	10.2				0.0	17.3	23.2	13.2	16.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	615	0	274				0	1605	747	572	2466	0
V/C Ratio(X)	0.71	0.00	0.77				0.00	0.61	0.75	0.99	0.58	0.00
Avail Cap(c_a), veh/h	984	0	438				0	1605	747	572	2466	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.0	0.0	32.4				0.0	16.4	18.0	34.1	6.8	0.0
Incr Delay (d2), s/veh	1.5	0.0	4.5				0.0	1.7	6.7	35.4	1.0	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
%ile BackOfQ(50%),veh/ln	3.9	0.0	4.0				0.0	6.1	8.6	8.0	4.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	0.0	36.9				0.0	18.1	24.7	69.6	7.8	0.0
LnGrp LOS	C	A	D				A	B	C	E	A	A
Approach Vol, veh/h		645						1536			1991	
Approach Delay, s/veh		34.6						20.5			25.4	
Approach LOS		C						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	17.9	44.1		19.7		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.3	37.9		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.2	25.2		12.2		18.9
Green Ext Time (p_c), s	0.0	7.5		1.7		12.6

Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	328	35	23	17	81	1160	20	1362
Future Volume (vph)	328	35	23	17	81	1160	20	1362
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	32.8	32.8	32.8	32.8	9.6	47.6	9.6	47.6
Total Split (%)	36.4%	36.4%	36.4%	36.4%	10.7%	52.9%	10.7%	52.9%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	25.1	25.1	25.1	25.1	5.0	47.3	5.0	41.5
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.06	0.54	0.06	0.47
v/c Ratio	0.91	0.13	0.07	0.07	0.84	0.65	0.21	1.11
Control Delay	59.4	8.8	23.3	10.2	99.1	18.0	45.6	81.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	8.8	23.3	10.2	99.1	18.0	45.6	81.8
LOS	E	A	C	B	F	B	D	F
Approach Delay		45.7		13.7		23.2		81.4
Approach LOS		D		B		C		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 88.2	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 54.6	Intersection LOS: D
Intersection Capacity Utilization 92.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	35	87	23	17	44	81	1160	26	20	1362	374
Future Volume (veh/h)	328	35	87	23	17	44	81	1160	26	20	1362	374
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		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	349	37	87	24	18	30	86	1234	24	21	1449	329
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	466	500	445	402	500	446	104	1846	36	41	1396	309
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.06	0.51	0.51	0.02	0.48	0.48
Sat Flow, veh/h	1455	1805	1607	1356	1805	1610	1810	3622	70	1810	2938	650
Grp Volume(v), veh/h	349	37	87	24	18	30	86	615	643	21	875	903
Grp Sat Flow(s),veh/h/ln	1455	1805	1607	1356	1805	1610	1810	1805	1887	1810	1805	1783
Q Serve(g_s), s	20.2	1.3	3.6	1.2	0.6	1.2	4.1	22.1	22.1	1.0	41.4	41.4
Cycle Q Clear(g_c), s	21.4	1.3	3.6	4.8	0.6	1.2	4.1	22.1	22.1	1.0	41.4	41.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.36
Lane Grp Cap(c), veh/h	466	500	445	402	500	446	104	920	962	41	858	847
V/C Ratio(X)	0.75	0.07	0.20	0.06	0.04	0.07	0.83	0.67	0.67	0.51	1.02	1.07
Avail Cap(c_a), veh/h	514	559	498	447	559	499	104	920	962	104	858	847
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	31.1	23.3	24.1	25.9	23.0	23.2	40.6	15.9	15.9	42.1	22.9	22.9
Incr Delay (d2), s/veh	5.5	0.1	0.2	0.1	0.0	0.1	38.2	3.8	3.7	3.5	36.0	49.9
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	7.3	0.5	1.3	0.4	0.3	0.4	2.8	8.5	8.9	0.5	23.2	26.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.6	23.3	24.3	26.0	23.0	23.3	78.9	19.7	19.6	45.6	58.9	72.8
LnGrp LOS	D	C	C	C	C	C	E	B	B	D	F	F
Approach Vol, veh/h		473			72			1344			1799	
Approach Delay, s/veh		33.3			24.1			23.4			65.7	
Approach LOS		C			C			C			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	50.6		29.9	9.6	47.6		29.9				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	41.4		27.0	5.0	41.4		27.0				
Max Q Clear Time (g_c+I1), s	3.0	24.1		23.4	6.1	43.4		6.8				
Green Ext Time (p_c), s	0.0	7.1		0.6	0.0	0.0		0.2				

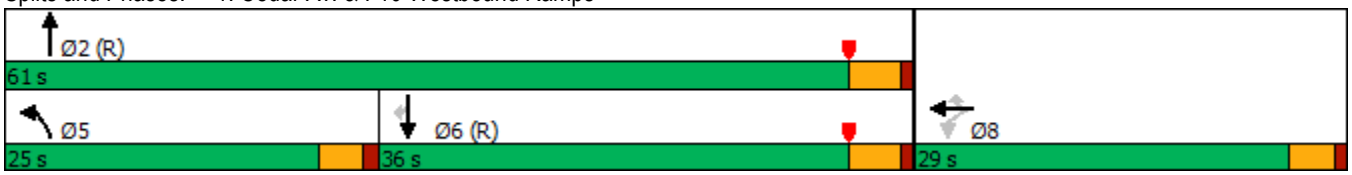
Intersection Summary			
HCM 6th Ctrl Delay		45.3	
HCM 6th LOS		D	

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	409	302	1528	1230	557
Future Volume (vph)	4	409	302	1528	1230	557
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	29.0	29.0	25.0	61.0	36.0	36.0
Total Split (%)	32.2%	32.2%	27.8%	67.8%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	232	4	409	302	1528	0	0	1230	557
Future Volume (veh/h)	0	0	0	232	4	409	302	1528	0	0	1230	557
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				239	134	329	311	1575	0	0	1268	380
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				279	156	380	348	2416	0	0	2245	687
Arrive On Green				0.24	0.24	0.24	0.26	0.89	0.00	0.00	0.43	0.43
Sat Flow, veh/h				1180	661	1610	1810	3705	0	0	5358	1588
Grp Volume(v), veh/h				373	0	329	311	1575	0	0	1268	380
Grp Sat Flow(s),veh/h/ln				1841	0	1610	1810	1805	0	0	1729	1588
Q Serve(g_s), s				17.5	0.0	17.7	14.9	10.3	0.0	0.0	16.5	16.1
Cycle Q Clear(g_c), s				17.5	0.0	17.7	14.9	10.3	0.0	0.0	16.5	16.1
Prop In Lane				0.64		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				435	0	380	348	2416	0	0	2245	687
V/C Ratio(X)				0.86	0.00	0.86	0.89	0.65	0.00	0.00	0.56	0.55
Avail Cap(c_a), veh/h				511	0	447	422	2416	0	0	2245	687
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.44	0.44	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				32.9	0.0	33.0	32.6	2.2	0.0	0.0	19.2	19.0
Incr Delay (d2), s/veh				12.1	0.0	14.4	9.5	0.6	0.0	0.0	1.0	3.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.7	0.0	7.9	6.7	1.7	0.0	0.0	6.3	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				45.0	0.0	47.3	42.1	2.8	0.0	0.0	20.2	22.2
LnGrp LOS				D	A	D	D	A	A	A	C	C
Approach Vol, veh/h					702			1886			1648	
Approach Delay, s/veh					46.1			9.3			20.7	
Approach LOS					D			A			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	64.7		21.3	43.5		25.3						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	56.5		21.0	31.5		25.0						
Max Q Clear Time (g_c+I1), s	12.3		16.9	18.5		19.7						
Green Ext Time (p_c), s	17.0		0.4	7.8		1.6						

Intersection Summary		
HCM 6th Ctrl Delay	19.8	
HCM 6th LOS	B	

Notes

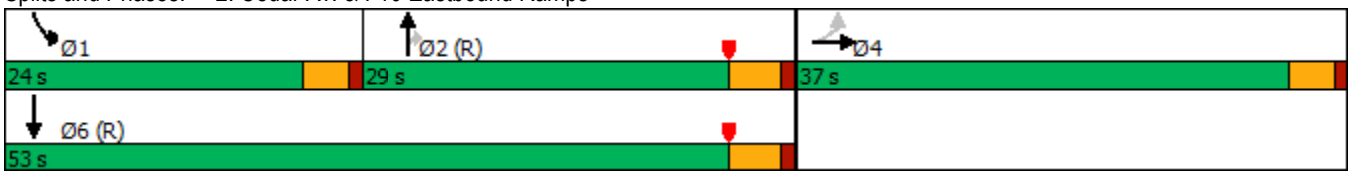
User approved volume balancing among the lanes for turning movement.

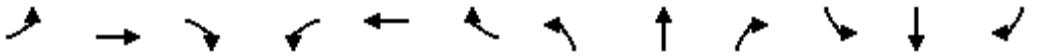
Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	763	1	1068	430	454	1008
Future Volume (vph)	763	1	1068	430	454	1008
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	37.0	37.0	29.0	29.0	24.0	53.0
Total Split (%)	41.1%	41.1%	32.2%	32.2%	26.7%	58.9%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	763	1	283	0	0	0	0	1068	430	454	1008	0
Future Volume (veh/h)	763	1	283	0	0	0	0	1068	430	454	1008	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	534	366	272				0	1112	361	473	1050	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	663	371	276				0	1412	438	402	1945	0
Arrive On Green	0.37	0.37	0.37				0.00	0.27	0.27	0.07	0.18	0.00
Sat Flow, veh/h	1810	1012	752				0	5358	1608	1810	3705	0
Grp Volume(v), veh/h	534	0	638				0	1112	361	473	1050	0
Grp Sat Flow(s),veh/h/ln	1810	0	1765				0	1729	1608	1810	1805	0
Q Serve(g_s), s	23.9	0.0	32.3				0.0	17.9	19.0	20.0	23.8	0.0
Cycle Q Clear(g_c), s	23.9	0.0	32.3				0.0	17.9	19.0	20.0	23.8	0.0
Prop In Lane	1.00		0.43				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	663	0	647				0	1412	438	402	1945	0
V/C Ratio(X)	0.80	0.00	0.99				0.00	0.79	0.82	1.18	0.54	0.00
Avail Cap(c_a), veh/h	663	0	647				0	1412	438	402	1945	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.72	0.72	0.77	0.77	0.00
Uniform Delay (d), s/veh	25.6	0.0	28.3				0.0	30.3	30.7	41.7	26.8	0.0
Incr Delay (d2), s/veh	7.2	0.0	31.8				0.0	3.3	12.1	98.0	0.8	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
%ile BackOfQ(50%),veh/ln	10.6	0.0	18.0				0.0	7.4	8.4	20.5	11.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	0.0	60.0				0.0	33.6	42.8	139.7	27.7	0.0
LnGrp LOS	C	A	E				A	C	D	F	C	A
Approach Vol, veh/h		1172						1473			1523	
Approach Delay, s/veh		47.6						35.9			62.5	
Approach LOS		D						D			E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.0	29.0		37.0		53.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	20.0	24.5		33.0		48.5
Max Q Clear Time (g_c+I1), s	22.0	21.0		34.3		25.8
Green Ext Time (p_c), s	0.0	2.0		0.0		4.9

Intersection Summary	
HCM 6th Ctrl Delay	48.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	158	49	3	2	8	1095	46	1004	240
Future Volume (vph)	158	49	3	2	8	1095	46	1004	240
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	46.0	46.0	46.0	46.0	10.0	63.0	11.0	64.0	64.0
Total Split (%)	38.3%	38.3%	38.3%	38.3%	8.3%	52.5%	9.2%	53.3%	53.3%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.9
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	49	10	3	2	245	8	1095	2	46	1004	240
Future Volume (veh/h)	158	49	10	3	2	245	8	1095	2	46	1004	240
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		1.00	1.00		0.98	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	165	51	7	3	2	190	8	1141	2	48	1046	155
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	264	348	48	39	7	335	289	2060	4	317	2104	937
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.01	0.59	0.59	0.04	0.62	0.62
Sat Flow, veh/h	1143	1549	213	6	33	1491	1619	3503	6	1619	3420	1523
Grp Volume(v), veh/h	165	0	58	195	0	0	8	557	586	48	1046	155
Grp Sat Flow(s),veh/h/ln	1143	0	1761	1530	0	0	1619	1710	1799	1619	1710	1523
Q Serve(g_s), s	8.3	0.0	2.6	0.0	0.0	0.0	0.2	19.5	19.5	1.1	16.6	4.3
Cycle Q Clear(g_c), s	19.4	0.0	2.6	11.1	0.0	0.0	0.2	19.5	19.5	1.1	16.6	4.3
Prop In Lane	1.00		0.12	0.02		0.97	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	264	0	396	381	0	0	289	1006	1058	317	2104	937
V/C Ratio(X)	0.62	0.00	0.15	0.51	0.00	0.00	0.03	0.55	0.55	0.15	0.50	0.17
Avail Cap(c_a), veh/h	490	0	743	683	0	0	362	1006	1058	363	2104	937
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	30.4	33.7	0.0	0.0	9.0	12.3	12.3	9.2	10.4	8.1
Incr Delay (d2), s/veh	0.9	0.0	0.1	0.4	0.0	0.0	0.0	2.2	2.1	0.1	0.8	0.4
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	3.9	0.0	1.1	4.2	0.0	0.0	0.1	7.1	7.5	0.3	5.6	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	0.0	30.5	34.1	0.0	0.0	9.0	14.5	14.4	9.3	11.3	8.4
LnGrp LOS	D	A	C	C	A	A	A	B	B	A	B	A
Approach Vol, veh/h		223			195			1151			1249	
Approach Delay, s/veh		37.2			34.1			14.4			10.9	
Approach LOS		D			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	63.0		26.7	5.6	65.7		26.7				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	6.4	57.6		* 41	5.4	58.6		* 41				
Max Q Clear Time (g_c+I1), s	3.1	21.5		21.4	2.2	18.6		13.1				
Green Ext Time (p_c), s	0.0	8.6		0.5	0.0	9.5		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		16.0	
HCM 6th LOS		B	

Notes

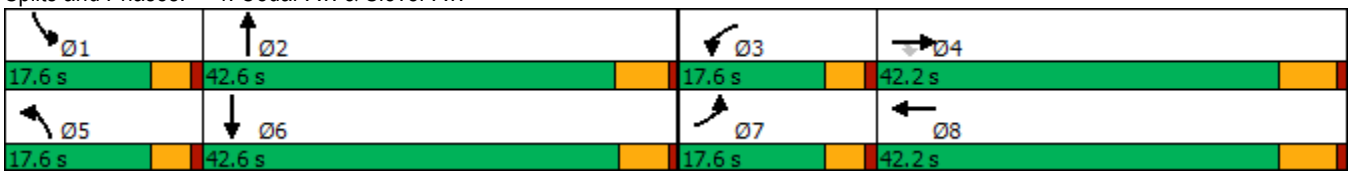
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	225	473	130	38	264	86	756	139	784
Future Volume (vph)	225	473	130	38	264	86	756	139	784
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 94.4
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	473	130	38	264	125	86	756	72	139	784	94
Future Volume (veh/h)	225	473	130	38	264	125	86	756	72	139	784	94
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	1.00		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	239	503	89	40	281	99	91	804	75	148	834	97
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	254	971	426	59	406	140	114	993	93	179	1091	127
Arrive On Green	0.16	0.28	0.28	0.04	0.16	0.16	0.07	0.31	0.31	0.11	0.35	0.35
Sat Flow, veh/h	1619	3420	1501	1619	2486	855	1619	3162	295	1619	3080	358
Grp Volume(v), veh/h	239	503	89	40	191	189	91	435	444	148	463	468
Grp Sat Flow(s),veh/h/ln	1619	1710	1501	1619	1710	1631	1619	1710	1747	1619	1710	1729
Q Serve(g_s), s	12.1	10.2	3.7	2.0	8.7	9.1	4.6	19.4	19.4	7.4	19.9	19.9
Cycle Q Clear(g_c), s	12.1	10.2	3.7	2.0	8.7	9.1	4.6	19.4	19.4	7.4	19.9	19.9
Prop In Lane	1.00		1.00	1.00		0.52	1.00		0.17	1.00		0.21
Lane Grp Cap(c), veh/h	254	971	426	59	279	267	114	537	548	179	606	612
V/C Ratio(X)	0.94	0.52	0.21	0.68	0.68	0.71	0.80	0.81	0.81	0.83	0.76	0.76
Avail Cap(c_a), veh/h	254	1484	651	254	742	708	254	758	775	254	767	775
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	34.6	25.0	22.6	39.5	32.7	32.8	38.0	26.2	26.2	36.1	23.7	23.7
Incr Delay (d2), s/veh	40.5	0.4	0.2	5.1	3.0	3.5	4.9	4.5	4.4	10.0	3.5	3.5
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	7.2	3.8	1.2	0.8	3.6	3.6	1.9	7.8	8.0	3.3	7.9	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.1	25.4	22.9	44.6	35.6	36.3	42.9	30.7	30.6	46.1	27.3	27.2
LnGrp LOS	E	C	C	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		831			420			970			1079	
Approach Delay, s/veh		39.4			36.8			31.8			29.8	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	31.9	7.6	29.8	10.4	35.2	17.6	19.8
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	9.4	21.4	4.0	12.2	6.6	21.9	14.1	11.1
Green Ext Time (p_c), s	0.1	4.5	0.0	3.2	0.0	5.0	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	33.7
HCM 6th LOS	C

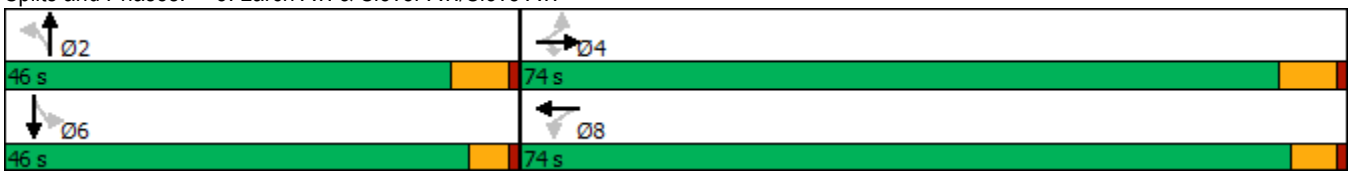
Notes

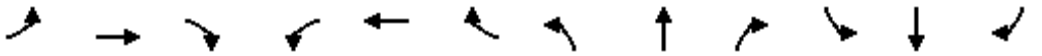
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	37	593	54	61	345	54	149	52	44
Future Volume (vph)	37	593	54	61	345	54	149	52	44
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	74.0	74.0	74.0	74.0	74.0	46.0	46.0	46.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 105.5
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	593	54	61	345	70	54	149	79	52	44	29
Future Volume (veh/h)	37	593	54	61	345	70	54	149	79	52	44	29
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		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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	41	659	46	68	383	64	60	166	69	58	49	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	634	1210	1005	414	1974	327	97	207	80	138	107	34
Arrive On Green	0.67	0.67	0.67	0.67	0.67	0.67	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	905	1800	1494	713	2936	486	265	1004	387	418	518	166
Grp Volume(v), veh/h	41	659	46	68	222	225	295	0	0	126	0	0
Grp Sat Flow(s),veh/h/ln	905	1800	1494	713	1710	1712	1656	0	0	1103	0	0
Q Serve(g_s), s	1.8	19.4	1.1	5.6	5.0	5.1	7.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.9	19.4	1.1	25.0	5.0	5.1	17.5	0.0	0.0	10.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.28	0.20		0.23	0.46		0.15
Lane Grp Cap(c), veh/h	634	1210	1005	414	1150	1151	384	0	0	279	0	0
V/C Ratio(X)	0.06	0.54	0.05	0.16	0.19	0.20	0.77	0.00	0.00	0.45	0.00	0.00
Avail Cap(c_a), veh/h	634	1210	1005	414	1150	1151	679	0	0	557	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	7.6	8.7	5.7	15.1	6.3	6.3	39.1	0.0	0.0	35.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.8	0.1	0.9	0.4	0.4	3.2	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	0.3	6.3	0.3	0.9	1.5	1.6	7.3	0.0	0.0	2.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	10.4	5.8	16.0	6.7	6.7	42.3	0.0	0.0	36.9	0.0	0.0
LnGrp LOS	A	B	A	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		746			515			295			126	
Approach Delay, s/veh		10.0			7.9			42.3			36.9	
Approach LOS		B			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		27.4		75.1		27.4		75.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		39.8		67.8		* 41		* 69				
Max Q Clear Time (g_c+I1), s		19.5		21.4		12.4		27.0				
Green Ext Time (p_c), s		1.6		4.8		0.8		3.0				

Intersection Summary		
HCM 6th Ctrl Delay		17.1
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	489	4	2	392	12	6
Future Vol, veh/h	489	4	2	392	12	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	532	4	2	426	13	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	536	0	751	268
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1042	-	351	736
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1042	-	350	736
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	802	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	517	-	-	1042	-
HCM Lane V/C Ratio	0.038	-	-	0.002	-
HCM Control Delay (s)	12.2	-	-	8.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	494	2	2	389	5	5
Future Vol, veh/h	494	2	2	389	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	537	2	2	423	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	539	0	754	270
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1040	-	349	734
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	805	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1040	-	348	734
Mov Cap-2 Maneuver	-	-	-	-	448	-
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	803	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	556	-	-	1040	-
HCM Lane V/C Ratio	0.02	-	-	0.002	-
HCM Control Delay (s)	11.6	-	-	8.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	437	62	75	289	102	76
Future Vol, veh/h	437	62	75	289	102	76
Conflicting Peds, #/hr	0	1	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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	455	65	78	301	106	79

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	521	0	796	261
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	307	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1056	-	328	744
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1055	-	298	743
Mov Cap-2 Maneuver	-	-	-	-	419	-
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	660	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	515	-	-	1055	-
HCM Lane V/C Ratio	0.36	-	-	0.074	-
HCM Control Delay (s)	15.9	-	-	8.7	0.3
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	0	0	165	132	5
Future Vol, veh/h	13	0	0	165	132	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	0	0	179	143	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	325	146	148	0	-	0
Stage 1	146	-	-	-	-	-
Stage 2	179	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	673	906	1446	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	673	906	1446	-	-	-
Mov Cap-2 Maneuver	673	-	-	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	857	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1446	-	673	-	-
HCM Lane V/C Ratio	-	-	0.021	-	-
HCM Control Delay (s)	0	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1	1	161	130	2
Future Vol, veh/h	4	1	1	161	130	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	1	1	175	141	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	319	142	143	0	-	0
Stage 1	142	-	-	-	-	-
Stage 2	177	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	678	911	1452	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	677	911	1452	-	-	-
Mov Cap-2 Maneuver	677	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	859	-	-	-	-	-

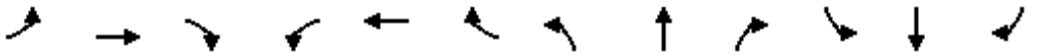
Approach	EB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1452	-	714	-	-
HCM Lane V/C Ratio	0.001	-	0.008	-	-
HCM Control Delay (s)	7.5	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	454	2	522	355	1479	1052	430
Future Volume (vph)	454	2	522	355	1479	1052	430
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.8	10.8	10.8	9.6	23.2	11.2	11.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	23.1	23.1	23.1	13.0	50.9	33.4	33.4
Actuated g/C Ratio	0.27	0.27	0.27	0.15	0.59	0.39	0.39
v/c Ratio	0.78	0.79	0.68	0.71	0.51	0.44	0.50
Control Delay	41.5	41.2	27.5	43.0	11.5	21.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Total Delay	41.5	41.2	27.5	43.0	13.2	21.2	4.4
LOS	D	D	C	D	B	C	A
Approach Delay		36.9			19.0	16.3	
Approach LOS		D			B	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 86.1	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 120.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	454	2	522	355	1479	0	0	1052	430
Future Volume (veh/h)	0	0	0	454	2	522	355	1479	0	0	1052	430
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				591	0	241	374	1557	0	0	1107	318
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				764	0	340	467	3310	0	0	2924	720
Arrive On Green				0.21	0.00	0.21	0.13	0.64	0.00	0.00	0.45	0.45
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				591	0	241	374	1557	0	0	1107	318
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				12.3	0.0	11.1	8.2	12.4	0.0	0.0	9.0	10.8
Cycle Q Clear(g_c), s				12.3	0.0	11.1	8.2	12.4	0.0	0.0	9.0	10.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				764	0	340	467	3310	0	0	2924	720
V/C Ratio(X)				0.77	0.00	0.71	0.80	0.47	0.00	0.00	0.38	0.44
Avail Cap(c_a), veh/h				1237	0	550	679	3310	0	0	2924	720
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.6	0.0	29.1	33.5	7.4	0.0	0.0	14.6	15.1
Incr Delay (d2), s/veh				1.7	0.0	2.7	2.6	0.5	0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln				5.1	0.0	4.2	3.4	3.3	0.0	0.0	2.9	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.3	0.0	31.9	36.1	7.9	0.0	0.0	15.0	17.1
LnGrp LOS				C	A	C	D	A	A	A	B	B
Approach Vol, veh/h					832			1931			1425	
Approach Delay, s/veh					31.5			13.4			15.5	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.0		15.2	41.8		22.6						
Change Period (Y+Rc), s	6.2		4.6	6.2		5.8						
Max Green Setting (Gmax), s	50.8		15.4	30.8		27.2						
Max Q Clear Time (g_c+I1), s	14.4		10.2	12.8		14.3						
Green Ext Time (p_c), s	13.6		0.4	7.8		2.5						

Intersection Summary	
HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

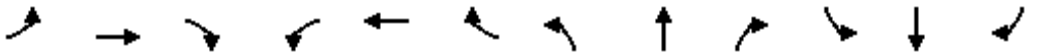
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	624	3	362	1210	421	1083
Future Volume (vph)	624	3	362	1210	421	1083
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.0	18.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	48.9%	20.0%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	21.4	21.4	21.4	38.1	13.0	55.8
Actuated g/C Ratio	0.24	0.24	0.24	0.43	0.15	0.63
v/c Ratio	0.88	0.90	0.74	0.90	0.87	0.50
Control Delay	56.3	59.2	33.2	28.6	55.8	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.5
Total Delay	56.3	59.2	33.2	28.6	55.8	13.8
LOS	E	E	C	C	E	B
Approach Delay		50.1		28.6		25.5
Approach LOS		D		C		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.2	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 32.4	Intersection LOS: C
Intersection Capacity Utilization 120.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	624	3	362	0	0	0	0	1210	680	421	1083	0
Future Volume (veh/h)	624	3	362	0	0	0	0	1210	680	421	1083	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	745	0	186				0	1274	605	443	1140	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	844	0	375				0	1496	696	514	2278	0
Arrive On Green	0.23	0.00	0.23				0.00	0.43	0.43	0.15	0.63	0.00
Sat Flow, veh/h	3619	0	1610				0	3629	1610	3510	3705	0
Grp Volume(v), veh/h	745	0	186				0	1274	605	443	1140	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1610	1755	1805	0
Q Serve(g_s), s	17.6	0.0	8.9				0.0	29.3	30.2	10.9	15.1	0.0
Cycle Q Clear(g_c), s	17.6	0.0	8.9				0.0	29.3	30.2	10.9	15.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	844	0	375				0	1496	696	514	2278	0
V/C Ratio(X)	0.88	0.00	0.50				0.00	0.85	0.87	0.86	0.50	0.00
Avail Cap(c_a), veh/h	909	0	404				0	1496	696	532	2278	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.7	0.0	29.4				0.0	22.5	22.8	36.8	8.8	0.0
Incr Delay (d2), s/veh	9.7	0.0	1.0				0.0	6.3	13.9	12.5	0.8	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
%ile BackOfQ(50%),veh/ln	8.3	0.0	3.3				0.0	11.5	12.5	5.2	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	0.0	30.4				0.0	28.9	36.7	49.4	9.6	0.0
LnGrp LOS	D	A	C				A	C	D	D	A	A
Approach Vol, veh/h		931						1879			1583	
Approach Delay, s/veh		40.1						31.4			20.7	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	17.6	44.4		26.4		62.0						
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2						
Max Green Setting (Gmax), s	13.4	37.8		22.2		55.8						
Max Q Clear Time (g_c+I1), s	12.9	32.2		19.6		17.1						
Green Ext Time (p_c), s	0.1	4.5		1.0		9.0						

Intersection Summary												
HCM 6th Ctrl Delay			29.4									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	493	127	35	10	26	1276	26	1078
Future Volume (vph)	493	127	35	10	26	1276	26	1078
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	38.0	38.0	38.0	38.0	9.6	42.4	9.6	42.4
Total Split (%)	42.2%	42.2%	42.2%	42.2%	10.7%	47.1%	10.7%	47.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	32.3	32.3	32.3	32.3	5.0	36.3	5.0	36.3
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.06	0.43	0.06	0.43
v/c Ratio	1.01	0.21	0.09	0.08	0.25	0.86	0.25	0.96
Control Delay	71.5	9.0	18.9	5.8	45.7	29.5	45.7	39.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	9.0	18.9	5.8	45.7	29.5	45.7	39.3
LOS	E	A	B	A	D	C	D	D
Approach Delay		49.1		9.4		29.8		39.5
Approach LOS		D		A		C		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 84.2	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 37.0	Intersection LOS: D
Intersection Capacity Utilization 84.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	493	127	147	35	10	82	26	1276	17	26	1078	342
Future Volume (veh/h)	493	127	147	35	10	82	26	1276	17	26	1078	342
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	508	131	132	36	10	66	27	1315	18	27	1111	320
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	567	665	593	456	665	593	50	1510	21	50	1145	326
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1419	1805	1610	1197	1805	1610	1810	3646	50	1810	2764	787
Grp Volume(v), veh/h	508	131	132	36	10	66	27	651	682	27	721	710
Grp Sat Flow(s),veh/h/ln	1419	1805	1610	1197	1805	1610	1810	1805	1891	1810	1805	1746
Q Serve(g_s), s	29.8	4.3	4.9	1.9	0.3	2.4	1.3	28.9	28.9	1.3	34.0	35.1
Cycle Q Clear(g_c), s	32.2	4.3	4.9	6.8	0.3	2.4	1.3	28.9	28.9	1.3	34.0	35.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.45
Lane Grp Cap(c), veh/h	567	665	593	456	665	593	50	748	783	50	748	723
V/C Ratio(X)	0.90	0.20	0.22	0.08	0.02	0.11	0.54	0.87	0.87	0.54	0.96	0.98
Avail Cap(c_a), veh/h	567	665	593	456	665	593	104	748	783	104	748	723
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	29.5	18.8	19.0	21.3	17.5	18.2	42.0	23.5	23.5	42.0	25.0	25.3
Incr Delay (d2), s/veh	16.9	0.1	0.2	0.1	0.0	0.1	3.4	13.2	12.7	3.4	25.3	29.3
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	12.5	1.7	1.7	0.5	0.1	0.8	0.6	13.4	13.9	0.6	17.8	18.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	18.9	19.2	21.4	17.5	18.3	45.3	36.7	36.2	45.3	50.2	54.6
LnGrp LOS	D	B	B	C	B	B	D	D	D	D	D	D
Approach Vol, veh/h		771			112			1360			1458	
Approach Delay, s/veh		37.0			19.2			36.6			52.3	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	42.4		38.0	7.0	42.4		38.0				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	36.2		32.2	5.0	36.2		32.2				
Max Q Clear Time (g_c+I1), s	3.3	30.9		34.2	3.3	37.1		8.8				
Green Ext Time (p_c), s	0.0	3.3		0.0	0.0	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		42.3	
HCM 6th LOS		D	

APPENDIX 5.2:

E+P CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST ___ CO ___ RTE ___ PM ___ TRAFFIC CONDITIONS **E+P**

CALC CS DATE 04/10/19

Jurisdiction: **County of San Bernardino** CHK CS DATE 04/10/19

Major Street: **Slover Av.** Critical Approach Speed (Major) 45 mph

Minor Street: **Driveway 1** Critical Approach Speed (Minor) 25 mph

Major Street Approach Lanes = **2** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **11,384** vpd Minor Street Future ADT = **114** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... √

or **RURAL (R)**

In built up area of isolated community of < 10,000 population ……..

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX / XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 / *1*	8,000	5,600	2,400	1,680
2 + **11,384** / *1* **114**	9,600	6,720 *	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 / *1*	12,000	8,400	1,200	850
2 + **11,384** / *1* **114**	14,400	10,080 *	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 7% B: 13%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST ___ CO ___ RTE ___ PM ___ TRAFFIC CONDITIONS **E+P**

Jurisdiction: **County of San Bernardino** CALC CS DATE 04/10/19

Major Street: **Slover Av.** CHK CS DATE 04/10/19

Minor Street: **Driveway 2** Critical Approach Speed (Major) 45 mph

Critical Approach Speed (Minor) 25 mph

Major Street Approach Lanes = **2** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **11,352** vpd Minor Street Future ADT = **63** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... √

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …….. ____

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX / XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 / *1*	8,000	5,600	2,400	1,680
2 + **11,352** / *1* **63**	9,600	6,720 *	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 / *1*	12,000	8,400	1,200	850
2 + **11,352** / *1* **63**	14,400	10,080 *	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 4% B: 7%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		E+P
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Cactus Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 3**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane

Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **3,890** vpd

Minor Street Future ADT = **81** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or

In built up area of isolated community of < 10,000 population …….. [ ]

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL: XX

CONDITION A - Minimum Vehicular Volume

Satisfied / Not Satisfied: XX

Number of lanes for moving traffic on each approach		Minimum Requirements EADT			
Major Street	Minor Street	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
		Urban	Rural	Urban	Rural
1 **3,890**	*1* **81**	8,000	5,600	2,400	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied / Not Satisfied: XX

Number of lanes for moving traffic on each approach		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **3,890**	*1* **81**	12,000	8,400	1,200	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,400	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120

Combination of CONDITIONS A + B

Satisfied / Not Satisfied: XX

No one condition satisfied, but following conditions fulfilled 80% of more ….. **A** 5% **B** 9%

2 CONDITIONS 80%

2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		E+P
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Cactus Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 4**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **3,791** vpd Minor Street Future ADT = **36** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **3,791** / *1* **36**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **3,791** / *1* **36**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 2% B: 4%				

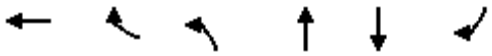
Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

APPENDIX 5.3:

E+P CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

This Page Intentionally Left Blank



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	432	309	361	1269	1507	855
v/c Ratio	0.98	0.68	1.00	0.54	0.72	0.84
Control Delay	74.2	30.8	65.9	4.1	24.8	15.5
Queue Delay	38.0	0.0	0.0	2.2	1.1	0.0
Total Delay	112.2	30.8	65.9	6.3	25.9	15.5
Queue Length 50th (ft)	254	123	~147	1	257	114
Queue Length 95th (ft)	#457	222	m#338	m1	311	#367
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	439	452	361	2346	2103	1020
Starvation Cap Reductn	0	0	0	896	0	0
Spillback Cap Reductn	86	0	0	0	334	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.68	1.00	0.88	0.85	0.84

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

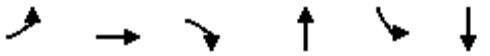
Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	425	449	1141	452	461	1410
v/c Ratio	0.88	0.95	0.71	0.56	0.94	0.63
Control Delay	52.4	59.6	30.9	5.5	48.3	18.7
Queue Delay	0.0	0.0	0.1	0.0	0.0	48.9
Total Delay	52.4	59.6	31.0	5.5	48.3	67.6
Queue Length 50th (ft)	240	233	213	0	273	388
Queue Length 95th (ft)	#411	#431	264	69	m#407	m460
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	495	486	1605	812	501	2254
Starvation Cap Reductn	0	0	0	0	0	991
Spillback Cap Reductn	0	0	43	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.92	0.73	0.56	0.92	1.12

Intersection Summary

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	351	347	312	421	866	1308	614
v/c Ratio	0.77	0.69	0.61	0.76	0.28	0.52	0.62
Control Delay	41.0	28.0	19.6	44.7	9.3	22.5	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	41.0	28.0	19.6	44.7	9.6	22.5	5.0
Queue Length 50th (ft)	183	134	80	115	82	167	0
Queue Length 95th (ft)	285	236	168	167	112	211	73
Internal Link Dist (ft)		1238			270	316	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	544	578	585	630	3077	2496	996
Starvation Cap Reductn	0	0	0	0	1435	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.60	0.53	0.67	0.53	0.52	0.62

Intersection Summary

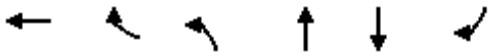


Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	276	264	258	1613	567	1424
v/c Ratio	0.75	0.66	0.64	0.71	1.05	0.61
Control Delay	45.0	27.9	26.7	19.5	91.1	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	5.5
Total Delay	45.0	27.9	26.7	19.5	91.1	16.4
Queue Length 50th (ft)	148	91	83	231	~184	231
Queue Length 95th (ft)	238	181	167	295	#292	308
Internal Link Dist (ft)		1268		1816		270
Turn Bay Length (ft)			290			
Base Capacity (vph)	441	459	464	2256	539	2332
Starvation Cap Reductn	0	0	0	0	0	839
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.58	0.56	0.71	1.05	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	344	321	311	1575	1268	574
v/c Ratio	0.82	0.77	0.82	0.66	0.60	0.58
Control Delay	46.8	37.3	39.0	14.5	23.4	4.6
Queue Delay	0.0	0.0	0.0	25.7	0.1	0.0
Total Delay	46.8	37.3	39.0	40.2	23.5	4.6
Queue Length 50th (ft)	177	137	166	417	217	0
Queue Length 95th (ft)	#281	234	m206	m525	275	70
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	479	474	421	2402	2126	991
Starvation Cap Reductn	0	0	0	893	0	0
Spillback Cap Reductn	0	0	0	0	93	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.68	0.74	1.04	0.62	0.58

Intersection Summary

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	564	527	1113	448	473	1050
v/c Ratio	0.93	0.84	0.79	0.59	1.12	0.53
Control Delay	51.2	36.2	35.2	6.3	102.2	9.4
Queue Delay	48.7	39.6	0.2	0.0	0.0	1.9
Total Delay	99.9	75.8	35.3	6.3	102.2	11.3
Queue Length 50th (ft)	313	242	214	0	~330	260
Queue Length 95th (ft)	#523	#429	266	72	#506	343
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	628	644	1412	759	421	1985
Starvation Cap Reductn	0	0	0	0	0	738
Spillback Cap Reductn	159	151	28	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.20	1.07	0.80	0.59	1.12	0.84

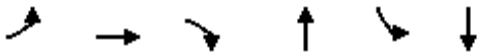
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	358	342	329	374	1557	1107	453
v/c Ratio	0.78	0.79	0.68	0.71	0.51	0.44	0.50
Control Delay	41.5	41.2	27.5	43.0	11.5	21.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Total Delay	41.5	41.2	27.5	43.0	13.2	21.2	4.4
Queue Length 50th (ft)	187	174	117	103	180	135	0
Queue Length 95th (ft)	293	285	215	149	227	175	63
Internal Link Dist (ft)		1163			240	366	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	543	504	550	628	3068	2532	903
Starvation Cap Reductn	0	0	0	0	1269	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.68	0.60	0.60	0.87	0.44	0.50

Intersection Summary



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	361	356	324	1990	443	1140
v/c Ratio	0.88	0.90	0.74	0.90	0.87	0.50
Control Delay	56.3	59.2	33.2	28.6	55.8	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.5
Total Delay	56.3	59.2	33.2	28.6	55.8	13.8
Queue Length 50th (ft)	206	208	126	350	127	172
Queue Length 95th (ft)	#366	#382	#238	#440	#206	220
Internal Link Dist (ft)		1277		1822		240
Turn Bay Length (ft)			290			
Base Capacity (vph)	427	410	452	2209	526	2258
Starvation Cap Reductn	0	0	0	0	0	999
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.87	0.72	0.90	0.84	0.91

Intersection Summary

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

APPENDIX 5.4:

E+P CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7003	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2094
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.87
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	34.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6580	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1574
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6582	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1968
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.82
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	31.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6387	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1472
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	69.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6446	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1858
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	28.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6713	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1951
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7202	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2153
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.90
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	36.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7000	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1674
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7130	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2132
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	35.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6485	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1465
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	69.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6384	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1786
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6481	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1814
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.76
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

APPENDIX 5.5:

E+P CONDITIONS RAMP JUNCTION ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Freeway Merge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5970	1033
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	12.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.893
Flow Rate (vi),pc/h	7139	1257
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.87	0.60

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	30.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.461
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2142
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	57.1
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.061	Outer Lanes Freeway Speed (SO), mi/h	64.1
Flow in Lanes 1 and 2 (v12), pc/h	2856	Ramp Junction Speed (S), mi/h	60.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	4113	Average Density (D), pc/mi/ln	34.7
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6580	610
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.901
Flow Rate (vi),pc/h	7868	736
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.66	0.35

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	17.9
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.364
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1568
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.8
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.6
Flow in Lanes 1 and 2 (v12), pc/h	3159	Ramp Junction Speed (S), mi/h	66.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.7
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6582	791
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	14.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.877
Flow Rate (vi),pc/h	7871	980
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.66	0.47

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	22.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.386
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1499
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.2
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.8
Flow in Lanes 1 and 2 (v12), pc/h	3298	Ramp Junction Speed (S), mi/h	65.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.0
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6387	717
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	6.00	17.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.943	0.855
Flow Rate (vi),pc/h	7362	912
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.61	0.43

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	17.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.380
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1404
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.4
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.2
Flow in Lanes 1 and 2 (v12), pc/h	3082	Ramp Junction Speed (S), mi/h	66.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.3
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5670	776
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.885
Flow Rate (vi),pc/h	6474	953
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.77	0.45

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	27.6
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.382
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1942
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	59.3
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.099	Outer Lanes Freeway Speed (SO), mi/h	64.8
Flow in Lanes 1 and 2 (v12), pc/h	2590	Ramp Junction Speed (S), mi/h	62.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3543	Average Density (D), pc/mi/ln	29.9
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5826	887
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	17.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.855
Flow Rate (vi),pc/h	6652	1128
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.81	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	27.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.389
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1996
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	59.1
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.077	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	2661	Ramp Junction Speed (S), mi/h	61.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3789	Average Density (D), pc/mi/ln	31.5
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6409	793
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	8.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.926
Flow Rate (vi),pc/h	7664	931
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.90	0.44

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	29.5
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.435
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2299
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.101	Outer Lanes Freeway Speed (SO), mi/h	63.5
Flow in Lanes 1 and 2 (v12), pc/h	3066	Ramp Junction Speed (S), mi/h	60.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	3997	Average Density (D), pc/mi/ln	35.4
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7000	591
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.917
Flow Rate (vi),pc/h	8370	701
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.70	0.33

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	19.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.361
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1691
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.9
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.1
Flow in Lanes 1 and 2 (v12), pc/h	3315	Ramp Junction Speed (S), mi/h	66.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.2
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7130	828
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	12.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.893
Flow Rate (vi),pc/h	8526	1008
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.71	0.48

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	24.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.389
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1639
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	59.1
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.3
Flow in Lanes 1 and 2 (v12), pc/h	3542	Ramp Junction Speed (S), mi/h	65.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.0
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6485	922
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.885
Flow Rate (vi),pc/h	7327	1132
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.61	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	18.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.400
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1334
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.5
Flow in Lanes 1 and 2 (v12), pc/h	3194	Ramp Junction Speed (S), mi/h	65.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.4
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	CS	Date	4/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5563	821
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	8.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.926
Flow Rate (vi),pc/h	6227	964
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.75	0.46

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	26.9
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.371
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1868
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	59.6
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.097	Outer Lanes Freeway Speed (SO), mi/h	65.1
Flow in Lanes 1 and 2 (v12), pc/h	2491	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3455	Average Density (D), pc/mi/ln	28.9
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information			
Analyst	cP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5531	950
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	2.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.980	0.909
Flow Rate (vi),pc/h	6135	1136
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.76	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	25.8
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.358
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1841
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	60.0
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.076	Outer Lanes Freeway Speed (SO), mi/h	65.2
Flow in Lanes 1 and 2 (v12), pc/h	2454	Ramp Junction Speed (S), mi/h	62.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	3590	Average Density (D), pc/mi/ln	29.1
Level of Service (LOS)	C		

APPENDIX 6.1:

OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	341	426	1378	1528	865
Future Volume (vph)	14	341	426	1378	1528	865
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	26.0	26.0	22.0	64.0	42.0	42.0
Total Split (%)	28.9%	28.9%	24.4%	71.1%	46.7%	46.7%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	22.0	22.0	18.0	59.5	37.5	37.5
Actuated g/C Ratio	0.24	0.24	0.20	0.66	0.42	0.42
v/c Ratio	1.35	0.76	1.24	0.61	0.74	0.90
Control Delay	203.4	38.0	145.5	2.8	24.8	22.5
Queue Delay	2.3	0.0	0.0	13.6	9.2	0.0
Total Delay	205.7	38.0	145.5	16.4	34.0	22.5
LOS	F	D	F	B	C	C
Approach Delay	145.0			46.9	29.8	
Approach LOS	F			D	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 59 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.35	
Intersection Signal Delay: 55.3	Intersection LOS: E
Intersection Capacity Utilization 122.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	492	14	341	426	1378	0	0	1528	865
Future Volume (veh/h)	0	0	0	492	14	341	426	1378	0	0	1528	865
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				518	15	219	448	1451	0	0	1608	655
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				430	12	394	362	2387	0	0	2161	671
Arrive On Green				0.24	0.24	0.24	0.13	0.44	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1761	51	1610	1810	3705	0	0	5358	1610
Grp Volume(v), veh/h				533	0	219	448	1451	0	0	1608	655
Grp Sat Flow(s),veh/h/ln				1812	0	1610	1810	1805	0	0	1729	1610
Q Serve(g_s), s				22.0	0.0	10.7	18.0	27.6	0.0	0.0	23.6	36.0
Cycle Q Clear(g_c), s				22.0	0.0	10.7	18.0	27.6	0.0	0.0	23.6	36.0
Prop In Lane				0.97		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				443	0	394	362	2387	0	0	2161	671
V/C Ratio(X)				1.20	0.00	0.56	1.24	0.61	0.00	0.00	0.74	0.98
Avail Cap(c_a), veh/h				443	0	394	362	2387	0	0	2161	671
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.30	0.30	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.0	0.0	29.7	39.0	16.2	0.0	0.0	22.2	25.8
Incr Delay (d2), s/veh				111.3	0.0	1.7	114.3	0.4	0.0	0.0	2.4	29.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				22.7	0.0	4.1	19.6	11.7	0.0	0.0	9.2	17.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				145.3	0.0	31.5	153.3	16.5	0.0	0.0	24.6	55.2
LnGrp LOS				F	A	C	F	B	A	A	C	E
Approach Vol, veh/h					752			1899			2263	
Approach Delay, s/veh					112.1			48.8			33.4	
Approach LOS					F			D			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	64.0		22.0	42.0		26.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	59.5		18.0	37.5		22.0						
Max Q Clear Time (g_c+I1), s	29.6		20.0	38.0		24.0						
Green Ext Time (p_c), s	12.9		0.0	0.0		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	51.4	
HCM 6th LOS	D	

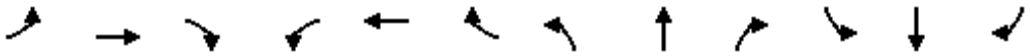
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	567	4	1237	584	460	1560
Future Volume (vph)	567	4	1237	584	460	1560
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	26.0	26.0	26.7	26.7	24.8	55.5
Actuated g/C Ratio	0.29	0.29	0.30	0.30	0.28	0.62
v/c Ratio	1.07	1.21	0.84	0.67	0.97	0.73
Control Delay	94.8	142.5	35.6	6.7	48.4	20.4
Queue Delay	0.0	0.0	0.5	0.0	0.0	48.7
Total Delay	94.8	142.5	36.1	6.7	48.4	69.2
LOS	F	F	D	A	D	E
Approach Delay		119.5	26.7			64.4
Approach LOS		F	C			E

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 62.3	Intersection LOS: E
Intersection Capacity Utilization 122.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	567	4	487	0	0	0	0	1237	584	460	1560	0
Future Volume (veh/h)	567	4	487	0	0	0	0	1237	584	460	1560	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	522	101	449				0	1289	532	479	1625	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	523	88	391				0	1527	474	503	2226	0
Arrive On Green	0.29	0.29	0.29				0.00	0.29	0.29	0.28	0.62	0.00
Sat Flow, veh/h	1810	304	1352				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	522	0	550				0	1289	532	479	1625	0
Grp Sat Flow(s),veh/h/ln	1810	0	1657				0	1729	1610	1810	1805	0
Q Serve(g_s), s	25.9	0.0	26.0				0.0	21.0	26.5	23.4	28.2	0.0
Cycle Q Clear(g_c), s	25.9	0.0	26.0				0.0	21.0	26.5	23.4	28.2	0.0
Prop In Lane	1.00		0.82				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	523	0	479				0	1527	474	503	2226	0
V/C Ratio(X)	1.00	0.00	1.15				0.00	0.84	1.12	0.95	0.73	0.00
Avail Cap(c_a), veh/h	523	0	479				0	1527	474	503	2226	0
HCM Platoon Ratio	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				0.00	0.24	0.24	0.59	0.59	0.00
Uniform Delay (d), s/veh	32.0	0.0	32.0				0.0	29.8	31.8	31.9	12.0	0.0
Incr Delay (d2), s/veh	39.0	0.0	89.0				0.0	1.5	62.3	20.1	1.3	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
%ile BackOfQ(50%),veh/ln	16.1	0.0	21.4				0.0	8.4	17.8	12.4	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.0	0.0	121.0				0.0	31.3	94.1	52.0	13.3	0.0
LnGrp LOS	E	A	F				A	C	F	D	B	A
Approach Vol, veh/h		1072						1821			2104	
Approach Delay, s/veh		96.6						49.6			22.1	
Approach LOS		F						D			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.0	31.0		30.0		60.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	25.4	28.5		28.0		30.2
Green Ext Time (p_c), s	0.0	0.0		0.0		9.3

Intersection Summary	
HCM 6th Ctrl Delay	48.1
HCM 6th LOS	D

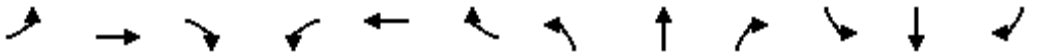
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	311	6	9	1	17	1410	143	1405	500
Future Volume (vph)	311	6	9	1	17	1410	143	1405	500
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	43.0	43.0	43.0	43.0	9.6	63.0	14.0	67.4	67.4
Total Split (%)	35.8%	35.8%	35.8%	35.8%	8.0%	52.5%	11.7%	56.2%	56.2%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	36.8	36.8		36.9	63.5	57.7	72.0	67.5	67.5
Actuated g/C Ratio	0.31	0.31		0.31	0.54	0.49	0.61	0.57	0.57
v/c Ratio	0.98	0.07		0.22	0.13	0.93	0.85	0.77	0.50
Control Delay	84.2	12.7		9.0	11.9	39.8	64.8	23.9	4.3
Queue Delay	0.0	0.0		0.0	0.0	11.1	0.0	0.0	0.0
Total Delay	84.2	12.7		9.0	11.9	50.9	64.8	23.9	4.3
LOS	F	B		A	B	D	E	C	A
Approach Delay		77.7		9.0		50.4		22.0	
Approach LOS		E		A		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 118.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 36.9	Intersection LOS: D
Intersection Capacity Utilization 89.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	6	25	9	1	102	17	1410	41	143	1405	500
Future Volume (veh/h)	311	6	25	9	1	102	17	1410	41	143	1405	500
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		1.00	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	331	6	25	10	1	58	18	1500	43	152	1495	368
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	421	81	337	75	28	342	157	1828	52	218	1976	881
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.02	0.54	0.54	0.06	0.58	0.58
Sat Flow, veh/h	1289	304	1266	138	106	1285	1619	3395	97	1619	3420	1525
Grp Volume(v), veh/h	331	0	31	69	0	0	18	754	789	152	1495	368
Grp Sat Flow(s),veh/h/ln	1289	0	1570	1529	0	0	1619	1710	1783	1619	1710	1525
Q Serve(g_s), s	22.3	0.0	1.6	0.0	0.0	0.0	0.5	39.1	39.3	4.3	35.2	14.4
Cycle Q Clear(g_c), s	26.0	0.0	1.6	3.6	0.0	0.0	0.5	39.1	39.3	4.3	35.2	14.4
Prop In Lane	1.00		0.81	0.14		0.84	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	421	0	417	445	0	0	157	921	960	218	1976	881
V/C Ratio(X)	0.79	0.00	0.07	0.16	0.00	0.00	0.11	0.82	0.82	0.70	0.76	0.42
Avail Cap(c_a), veh/h	539	0	561	584	0	0	202	921	960	264	1976	881
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	0.0	29.5	30.3	0.0	0.0	15.4	20.4	20.5	22.0	17.0	12.6
Incr Delay (d2), s/veh	4.4	0.0	0.0	0.1	0.0	0.0	0.1	8.1	7.9	4.1	2.8	1.5
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	9.0	0.0	0.6	1.4	0.0	0.0	0.2	16.1	16.9	2.2	13.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	29.5	30.3	0.0	0.0	15.6	28.5	28.4	26.0	19.7	14.1
LnGrp LOS	D	A	C	C	A	A	B	C	C	C	B	B
Approach Vol, veh/h		362			69			1561			2015	
Approach Delay, s/veh		41.3			30.3			28.3			19.2	
Approach LOS		D			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	63.2		33.2	6.7	67.4		33.2				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	9.4	57.6		* 38	5.0	62.0		* 38				
Max Q Clear Time (g_c+I1), s	6.3	41.3		28.0	2.5	37.2		5.6				
Green Ext Time (p_c), s	0.1	9.4		0.6	0.0	14.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		24.9	
HCM 6th LOS		C	

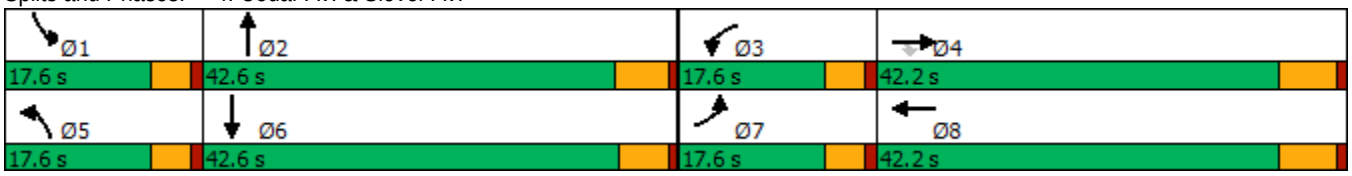
Notes

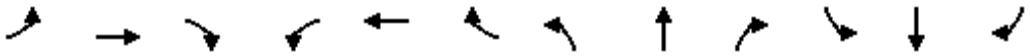
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	241	141	49	18	172	85	1072	127	1110
Future Volume (vph)	241	141	49	18	172	85	1072	127	1110
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	13.1	27.3	27.3	5.9	14.0	9.5	37.0	11.8	42.0
Actuated g/C Ratio	0.13	0.28	0.28	0.06	0.14	0.10	0.38	0.12	0.43
v/c Ratio	1.21	0.16	0.11	0.20	0.59	0.59	0.93	0.71	0.98
Control Delay	167.3	28.3	0.4	50.9	23.9	58.5	43.6	62.5	49.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	167.3	28.3	0.4	50.9	23.9	58.5	43.6	62.5	49.7
LOS	F	C	A	D	C	E	D	E	D
Approach Delay		103.0			25.3		44.6		50.8
Approach LOS		F			C		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 97.2	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 52.7	Intersection LOS: D
Intersection Capacity Utilization 87.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	141	49	18	172	155	85	1072	39	127	1110	204
Future Volume (veh/h)	241	141	49	18	172	155	85	1072	39	127	1110	204
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		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	262	153	40	20	187	146	92	1165	42	138	1207	219
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	229	901	402	35	269	199	115	1282	46	166	1195	215
Arrive On Green	0.14	0.26	0.26	0.02	0.14	0.14	0.07	0.38	0.38	0.10	0.41	0.41
Sat Flow, veh/h	1619	3420	1524	1619	1876	1385	1619	3367	121	1619	2894	522
Grp Volume(v), veh/h	262	153	40	20	169	164	92	592	615	138	710	716
Grp Sat Flow(s),veh/h/ln	1619	1710	1524	1619	1710	1551	1619	1710	1778	1619	1710	1706
Q Serve(g_s), s	13.0	3.2	1.8	1.1	8.6	9.3	5.1	30.0	30.1	7.7	37.9	37.9
Cycle Q Clear(g_c), s	13.0	3.2	1.8	1.1	8.6	9.3	5.1	30.0	30.1	7.7	37.9	37.9
Prop In Lane	1.00		1.00	1.00		0.89	1.00		0.07	1.00		0.31
Lane Grp Cap(c), veh/h	229	901	402	35	246	223	115	651	677	166	706	704
V/C Ratio(X)	1.14	0.17	0.10	0.57	0.69	0.73	0.80	0.91	0.91	0.83	1.01	1.02
Avail Cap(c_a), veh/h	229	1342	598	229	671	609	229	686	713	229	706	704
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	39.4	26.0	25.5	44.4	37.3	37.6	42.0	26.9	26.9	40.4	26.9	26.9
Incr Delay (d2), s/veh	102.9	0.1	0.1	5.2	3.4	4.6	4.9	15.6	15.2	12.1	35.2	38.2
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	11.4	1.2	0.6	0.5	3.6	3.6	2.1	13.8	14.3	3.5	20.9	21.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	142.3	26.1	25.7	49.7	40.8	42.2	46.9	42.5	42.1	52.5	62.1	65.1
LnGrp LOS	F	C	C	D	D	D	D	D	D	D	F	F
Approach Vol, veh/h		455			353			1299			1564	
Approach Delay, s/veh		93.0			42.0			42.6			62.7	
Approach LOS		F			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	40.7	6.6	30.4	11.1	43.7	17.6	19.4
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	9.7	32.1	3.1	5.2	7.1	39.9	15.0	11.3
Green Ext Time (p_c), s	0.0	2.9	0.0	0.9	0.0	0.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	57.3
HCM 6th LOS	E

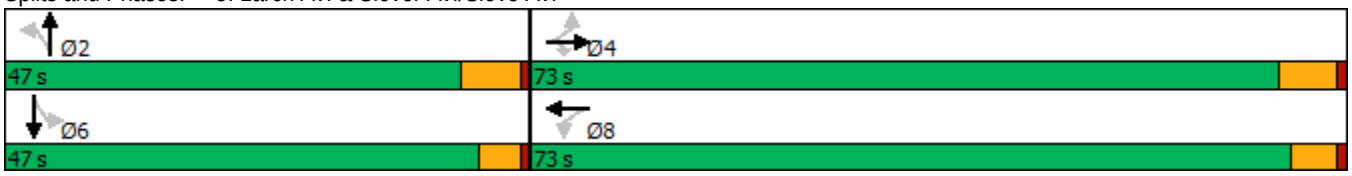
Notes

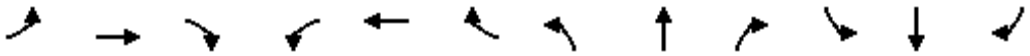
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	250	53	41	289	52	56	41	35
Future Volume (vph)	5	250	53	41	289	52	56	41	35
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	73.0	73.0	73.0	73.0	73.0	47.0	47.0	47.0	47.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	60.8%	39.2%	39.2%	39.2%	39.2%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None
Act Effct Green (s)	67.1	67.1	67.1	68.2	68.2		15.0		16.6
Actuated g/C Ratio	0.71	0.71	0.71	0.72	0.72		0.16		0.18
v/c Ratio	0.01	0.21	0.05	0.06	0.14		0.58		0.33
Control Delay	5.8	6.0	1.9	5.4	4.7		43.2		36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.8	6.0	1.9	5.4	4.7		43.2		36.2
LOS	A	A	A	A	A		D		D
Approach Delay		5.3			4.7		43.2		36.2
Approach LOS		A			A		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 94.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 13.6	Intersection LOS: B
Intersection Capacity Utilization 45.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	250	53	41	289	33	52	56	24	41	35	4
Future Volume (veh/h)	5	250	53	41	289	33	52	56	24	41	35	4
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		1.00	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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	5	266	46	44	307	21	55	60	20	44	37	3
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	813	1354	1148	806	2444	166	119	93	27	134	95	6
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1009	1800	1525	1024	3249	221	567	840	245	663	865	57
Grp Volume(v), veh/h	5	266	46	44	161	167	135	0	0	84	0	0
Grp Sat Flow(s),veh/h/ln	1009	1800	1525	1024	1710	1760	1652	0	0	1584	0	0
Q Serve(g_s), s	0.1	3.9	0.7	1.2	2.3	2.3	2.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	3.9	0.7	5.1	2.3	2.3	7.0	0.0	0.0	4.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.13	0.41		0.15	0.52		0.04
Lane Grp Cap(c), veh/h	813	1354	1148	806	1286	1324	238	0	0	236	0	0
V/C Ratio(X)	0.01	0.20	0.04	0.05	0.13	0.13	0.57	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	813	1354	1148	806	1286	1324	774	0	0	781	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	3.4	3.2	2.9	4.0	3.1	3.1	38.7	0.0	0.0	37.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.1	0.2	0.2	2.1	0.0	0.0	0.9	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	0.9	0.1	0.2	0.5	0.5	3.0	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.4	3.6	2.9	4.1	3.3	3.3	40.8	0.0	0.0	38.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		317			372			135			84	
Approach Delay, s/veh		3.5			3.4			40.8			38.5	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.2		74.1		16.2		74.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		40.8		66.8		* 42		* 68				
Max Q Clear Time (g_c+I1), s		9.0		5.9		6.3		7.1				
Green Ext Time (p_c), s		0.7		1.6		0.5		1.9				

Intersection Summary		
HCM 6th Ctrl Delay		12.2
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	202	66	87	185	77	51
Future Vol, veh/h	202	66	87	185	77	51
Conflicting Peds, #/hr	0	1	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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	227	74	98	208	87	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	302	0	565	152
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	300	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1270	-	460	873
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1269	-	420	872
Mov Cap-2 Maneuver	-	-	-	-	493	-
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	731	-

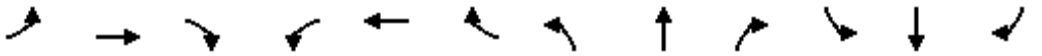
Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	596	-	-	1269	-
HCM Lane V/C Ratio	0.241	-	-	0.077	-
HCM Control Delay (s)	13	-	-	8.1	0.2
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.2	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	839	0	434	549	995	1340	627
Future Volume (vph)	839	0	434	549	995	1340	627
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	15.8	15.8	15.8	9.6	23.2	16.2	16.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	26.6	26.6	26.6	15.4	50.8	30.8	30.8
Actuated g/C Ratio	0.30	0.30	0.30	0.17	0.57	0.34	0.34
v/c Ratio	0.92	0.84	0.79	0.96	0.36	0.63	0.67
Control Delay	56.1	38.5	34.4	65.9	10.9	26.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	56.1	38.5	34.4	65.9	11.5	26.1	5.7
LOS	E	D	C	E	B	C	A
Approach Delay		43.4			30.8	19.6	
Approach LOS		D			C	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.4	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 29.5	Intersection LOS: C
Intersection Capacity Utilization 145.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	839	0	434	549	995	0	0	1340	627
Future Volume (veh/h)	0	0	0	839	0	434	549	995	0	0	1340	627
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				957	0	159	578	1047	0	0	1411	495
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1055	0	469	610	2973	0	0	2271	560
Arrive On Green				0.29	0.00	0.29	0.17	0.57	0.00	0.00	0.35	0.35
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				957	0	159	578	1047	0	0	1411	495
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				22.6	0.0	6.9	14.4	9.6	0.0	0.0	15.9	25.7
Cycle Q Clear(g_c), s				22.6	0.0	6.9	14.4	9.6	0.0	0.0	15.9	25.7
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1055	0	469	610	2973	0	0	2271	560
V/C Ratio(X)				0.91	0.00	0.34	0.95	0.35	0.00	0.00	0.62	0.88
Avail Cap(c_a), veh/h				1111	0	494	610	2973	0	0	2271	560
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.2	0.0	24.7	36.2	10.1	0.0	0.0	24.1	27.2
Incr Delay (d2), s/veh				10.5	0.0	0.4	23.9	0.3	0.0	0.0	1.3	18.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.6	0.0	2.5	7.8	3.0	0.0	0.0	5.7	11.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				40.7	0.0	25.1	60.1	10.4	0.0	0.0	25.3	45.5
LnGrp LOS				D	A	C	E	B	A	A	C	D
Approach Vol, veh/h					1116			1625			1906	
Approach Delay, s/veh					38.5			28.1			30.6	
Approach LOS					D			C			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		57.0			20.0	37.0		31.6				
Change Period (Y+Rc), s		6.2			4.6	6.2		5.8				
Max Green Setting (Gmax), s		50.8			15.4	30.8		27.2				
Max Q Clear Time (g_c+I1), s		11.6			16.4	27.7		24.6				
Green Ext Time (p_c), s		7.8			0.0	2.5		1.3				

Intersection Summary		
HCM 6th Ctrl Delay	31.6	
HCM 6th LOS	C	

Notes

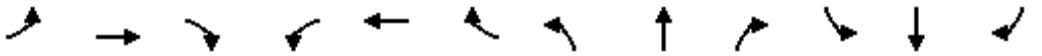
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	429	0	703	1115	559	1620
Future Volume (vph)	429	0	703	1115	559	1620
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.0	18.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	48.9%	20.0%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	22.2	22.2	22.2	37.8	13.4	55.8
Actuated g/C Ratio	0.25	0.25	0.25	0.42	0.15	0.62
v/c Ratio	0.98	0.91	0.89	0.98dr	1.15	0.78
Control Delay	75.1	52.9	49.3	30.6	125.5	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.7
Total Delay	75.1	52.9	49.3	30.6	125.5	63.4
LOS	E	D	D	C	F	E
Approach Delay		59.3		30.6		79.4
Approach LOS		E		C		E

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 57.4	Intersection LOS: E
Intersection Capacity Utilization 145.9%	ICU Level of Service H
Analysis Period (min) 15	

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

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	0	703	0	0	0	0	1115	751	559	1620	0
Future Volume (veh/h)	429	0	703	0	0	0	0	1115	751	559	1620	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	674	0	382				0	1199	731	601	1742	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	893	0	397				0	1452	676	523	2238	0
Arrive On Green	0.25	0.00	0.25				0.00	0.42	0.42	0.15	0.62	0.00
Sat Flow, veh/h	3619	0	1610				0	3629	1609	3510	3705	0
Grp Volume(v), veh/h	674	0	382				0	1199	731	601	1742	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1755	1805	0
Q Serve(g_s), s	15.5	0.0	21.1				0.0	27.7	37.8	13.4	31.9	0.0
Cycle Q Clear(g_c), s	15.5	0.0	21.1				0.0	27.7	37.8	13.4	31.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	893	0	397				0	1452	676	523	2238	0
V/C Ratio(X)	0.76	0.00	0.96				0.00	0.83	1.08	1.15	0.78	0.00
Avail Cap(c_a), veh/h	893	0	397				0	1452	676	523	2238	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.4	0.0	33.5				0.0	23.2	26.1	38.3	12.6	0.0
Incr Delay (d2), s/veh	3.7	0.0	35.2				0.0	5.5	58.8	87.7	2.7	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
%ile BackOfQ(50%),veh/ln	6.8	0.0	11.5				0.0	10.9	23.5	11.7	10.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	0.0	68.7				0.0	28.7	84.9	126.0	15.3	0.0
LnGrp LOS	D	A	E				A	C	F	F	B	A
Approach Vol, veh/h		1056						1930			2343	
Approach Delay, s/veh		47.2						50.0			43.7	
Approach LOS		D						D			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	18.0	44.0		28.0		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.4	37.8		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.4	39.8		23.1		33.9
Green Ext Time (p_c), s	0.0	0.0		0.0		13.0

Intersection Summary		
HCM 6th Ctrl Delay		46.7
HCM 6th LOS		D

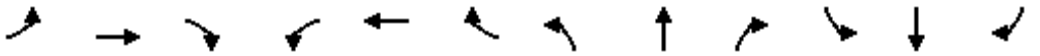
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	365	36	23	16	105	1485	31	1900
Future Volume (vph)	365	36	23	16	105	1485	31	1900
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	32.8	32.8	32.8	32.8	9.6	47.6	9.6	47.6
Total Split (%)	36.4%	36.4%	36.4%	36.4%	10.7%	52.9%	10.7%	52.9%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	26.9	26.9	26.9	26.9	5.0	45.2	5.0	41.4
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.06	0.50	0.06	0.46
v/c Ratio	0.96	0.16	0.07	0.07	1.12	0.89	0.33	1.49
Control Delay	69.6	8.2	23.3	9.7	168.1	29.0	50.1	247.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	8.2	23.3	9.7	168.1	29.0	50.1	247.6
LOS	E	A	C	A	F	C	D	F
Approach Delay		51.3		13.3		38.0		245.0
Approach LOS		D		B		D		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.9	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.49	
Intersection Signal Delay: 144.9	Intersection LOS: F
Intersection Capacity Utilization 111.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	36	119	23	16	48	105	1485	26	31	1900	394
Future Volume (veh/h)	365	36	119	23	16	48	105	1485	26	31	1900	394
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		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	388	38	121	24	17	34	112	1580	24	33	2021	350
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	492	540	481	398	540	482	101	1765	27	56	1424	239
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.06	0.48	0.48	0.03	0.46	0.46
Sat Flow, veh/h	1452	1805	1607	1314	1805	1610	1810	3640	55	1810	3091	520
Grp Volume(v), veh/h	388	38	121	24	17	34	112	783	821	33	1155	1216
Grp Sat Flow(s),veh/h/ln	1452	1805	1607	1314	1805	1610	1810	1805	1890	1810	1805	1806
Q Serve(g_s), s	23.5	1.4	5.1	1.3	0.6	1.4	5.0	35.4	35.6	1.6	41.4	41.4
Cycle Q Clear(g_c), s	24.8	1.4	5.1	6.4	0.6	1.4	5.0	35.4	35.6	1.6	41.4	41.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.29
Lane Grp Cap(c), veh/h	492	540	481	398	540	482	101	875	917	56	831	832
V/C Ratio(X)	0.79	0.07	0.25	0.06	0.03	0.07	1.11	0.89	0.90	0.58	1.39	1.46
Avail Cap(c_a), veh/h	494	542	483	400	542	484	101	875	917	101	831	832
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	31.4	22.6	23.9	26.3	22.3	22.6	42.4	21.0	21.1	43.0	24.2	24.2
Incr Delay (d2), s/veh	8.3	0.1	0.3	0.1	0.0	0.1	123.3	13.5	13.2	3.5	182.6	214.3
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	8.7	0.5	1.9	0.4	0.2	0.5	5.6	15.8	16.5	0.7	57.1	64.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.7	22.6	24.1	26.4	22.3	22.6	165.8	34.6	34.3	46.5	206.9	238.5
LnGrp LOS	D	C	C	C	C	C	F	C	C	D	F	F
Approach Vol, veh/h		547			75			1716			2404	
Approach Delay, s/veh		35.1			23.7			43.0			220.7	
Approach LOS		D			C			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	49.8		32.7	9.6	47.6		32.7				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	41.4		27.0	5.0	41.4		27.0				
Max Q Clear Time (g_c+I1), s	3.6	37.6		26.8	7.0	43.4		8.4				
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	0.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		131.9	
HCM 6th LOS		F	

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	424	422	1667	1314	673
Future Volume (vph)	4	424	422	1667	1314	673
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	29.0	29.0	25.0	61.0	36.0	36.0
Total Split (%)	32.2%	32.2%	27.8%	67.8%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	24.9	24.9	21.1	56.6	31.5	31.5
Actuated g/C Ratio	0.28	0.28	0.23	0.63	0.35	0.35
v/c Ratio	0.96	0.83	1.03	0.76	0.75	0.72
Control Delay	65.8	42.3	50.1	18.3	28.8	8.3
Queue Delay	0.0	0.0	0.0	48.5	0.2	0.0
Total Delay	65.8	42.3	50.1	66.8	29.1	8.3
LOS	E	D	D	E	C	A
Approach Delay	54.9			63.4	22.0	
Approach LOS	D			E	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 45.2	Intersection LOS: D
Intersection Capacity Utilization 147.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	394	4	424	422	1667	0	0	1314	673
Future Volume (veh/h)	0	0	0	394	4	424	422	1667	0	0	1314	673
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				406	20	420	435	1719	0	0	1355	500
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				480	24	447	422	2267	0	0	1817	556
Arrive On Green				0.28	0.28	0.28	0.31	0.84	0.00	0.00	0.35	0.35
Sat Flow, veh/h				1728	85	1610	1810	3705	0	0	5358	1587
Grp Volume(v), veh/h				426	0	420	435	1719	0	0	1355	500
Grp Sat Flow(s),veh/h/ln				1814	0	1610	1810	1805	0	0	1729	1587
Q Serve(g_s), s				20.0	0.0	22.9	21.0	19.2	0.0	0.0	20.7	26.9
Cycle Q Clear(g_c), s				20.0	0.0	22.9	21.0	19.2	0.0	0.0	20.7	26.9
Prop In Lane				0.95		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				503	0	447	422	2267	0	0	1817	556
V/C Ratio(X)				0.85	0.00	0.94	1.03	0.76	0.00	0.00	0.75	0.90
Avail Cap(c_a), veh/h				504	0	447	422	2267	0	0	1817	556
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.7	0.0	31.8	31.0	4.3	0.0	0.0	25.7	27.7
Incr Delay (d2), s/veh				12.6	0.0	28.0	21.8	0.2	0.0	0.0	2.8	20.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.8	0.0	11.7	10.4	2.9	0.0	0.0	8.4	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				43.3	0.0	59.8	52.8	4.6	0.0	0.0	28.5	47.8
LnGrp LOS				D	A	E	F	A	A	A	C	D
Approach Vol, veh/h					846			2154			1855	
Approach Delay, s/veh					51.5			14.3			33.7	
Approach LOS					D			B			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	61.0		25.0	36.0		29.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	56.5		21.0	31.5		25.0						
Max Q Clear Time (g_c+I1), s	21.2		23.0	28.9		24.9						
Green Ext Time (p_c), s	17.8		0.0	2.2		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	28.2	
HCM 6th LOS	C	

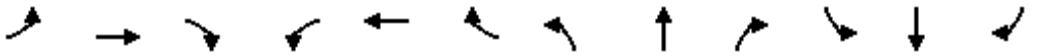
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	820	1	1268	621	471	1234
Future Volume (vph)	820	1	1268	621	471	1234
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	33.0	33.0	29.0	29.0	28.0	57.0
Total Split (%)	36.7%	36.7%	32.2%	32.2%	31.1%	63.3%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	29.0	29.0	24.5	24.5	24.0	52.5
Actuated g/C Ratio	0.32	0.32	0.27	0.27	0.27	0.58
v/c Ratio	1.16	1.08	0.94	0.72	1.02	0.61
Control Delay	120.9	90.2	45.6	7.9	59.3	5.6
Queue Delay	4.5	12.0	7.0	0.0	0.0	4.2
Total Delay	125.4	102.2	52.5	7.9	59.3	9.9
LOS	F	F	D	A	E	A
Approach Delay		114.2	37.9			23.6
Approach LOS		F	D			C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 51.7	Intersection LOS: D
Intersection Capacity Utilization 147.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	820	1	368	0	0	0	0	1268	621	471	1234	0
Future Volume (veh/h)	820	1	368	0	0	0	0	1268	621	471	1234	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	608	346	360				0	1321	560	491	1285	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	583	275	286				0	1412	438	483	2106	0
Arrive On Green	0.32	0.32	0.32				0.00	0.27	0.27	0.18	0.39	0.00
Sat Flow, veh/h	1810	853	887				0	5358	1608	1810	3705	0
Grp Volume(v), veh/h	608	0	706				0	1321	560	491	1285	0
Grp Sat Flow(s),veh/h/ln	1810	0	1740				0	1729	1608	1810	1805	0
Q Serve(g_s), s	29.0	0.0	29.0				0.0	22.4	24.5	24.0	25.6	0.0
Cycle Q Clear(g_c), s	29.0	0.0	29.0				0.0	22.4	24.5	24.0	25.6	0.0
Prop In Lane	1.00		0.51				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	583	0	561				0	1412	438	483	2106	0
V/C Ratio(X)	1.04	0.00	1.26				0.00	0.94	1.28	1.02	0.61	0.00
Avail Cap(c_a), veh/h	583	0	561				0	1412	438	483	2106	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.43	0.43	0.58	0.58	0.00
Uniform Delay (d), s/veh	30.5	0.0	30.5				0.0	32.0	32.8	37.0	19.2	0.0
Incr Delay (d2), s/veh	48.9	0.0	130.5				0.0	6.5	133.2	35.7	0.8	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
%ile BackOfQ(50%),veh/ln	19.4	0.0	31.4				0.0	9.6	25.1	15.5	11.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	0.0	161.0				0.0	38.5	165.9	72.6	20.0	0.0
LnGrp LOS	F	A	F				A	D	F	F	C	A
Approach Vol, veh/h		1314						1881			1776	
Approach Delay, s/veh		123.2						76.4			34.5	
Approach LOS		F						E			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	28.0	29.0		33.0		57.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	24.0	24.5		29.0		52.5
Max Q Clear Time (g_c+I1), s	26.0	26.5		31.0		27.6
Green Ext Time (p_c), s	0.0	0.0		0.0		6.6

Intersection Summary	
HCM 6th Ctrl Delay	73.8
HCM 6th LOS	E

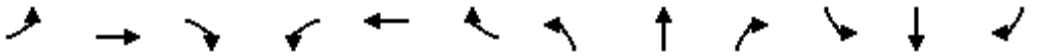
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	193	50	37	2	13	1413	57	1287	258
Future Volume (vph)	193	50	37	2	13	1413	57	1287	258
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	46.7	46.7	46.7	46.7	9.6	63.5	9.8	63.7	63.7
Total Split (%)	38.9%	38.9%	38.9%	38.9%	8.0%	52.9%	8.2%	53.1%	53.1%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	33.4	33.4		33.5	63.7	59.1	65.7	63.0	63.0
Actuated g/C Ratio	0.30	0.30		0.30	0.58	0.54	0.60	0.57	0.57
v/c Ratio	1.03	0.15		0.63	0.08	0.81	0.41	0.69	0.28
Control Delay	110.2	20.5		27.9	11.8	28.1	19.6	21.6	3.7
Queue Delay	0.0	0.0		0.0	0.0	1.1	0.0	0.0	0.0
Total Delay	110.2	20.5		27.9	11.8	29.2	19.6	21.6	3.7
LOS	F	C		C	B	C	B	C	A
Approach Delay		84.9		27.9		29.1		18.7	
Approach LOS		F		C		C		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 110.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 28.5	Intersection LOS: C
Intersection Capacity Utilization 95.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	50	26	37	2	284	13	1413	13	57	1287	258
Future Volume (veh/h)	193	50	26	37	2	284	13	1413	13	57	1287	258
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		1.00	1.00		0.98	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	201	52	24	39	2	231	14	1472	14	59	1341	174
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	289	336	155	80	24	372	183	1864	18	195	1914	852
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.54	0.54	0.04	0.56	0.56
Sat Flow, veh/h	1101	1164	537	145	83	1289	1619	3470	33	1619	3420	1523
Grp Volume(v), veh/h	201	0	76	272	0	0	14	725	761	59	1341	174
Grp Sat Flow(s),veh/h/ln	1101	0	1702	1518	0	0	1619	1710	1793	1619	1710	1523
Q Serve(g_s), s	12.1	0.0	3.6	6.5	0.0	0.0	0.4	36.9	36.9	1.7	30.7	6.1
Cycle Q Clear(g_c), s	28.6	0.0	3.6	16.6	0.0	0.0	0.4	36.9	36.9	1.7	30.7	6.1
Prop In Lane	1.00		0.32	0.14		0.85	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	289	0	491	476	0	0	183	918	963	195	1914	852
V/C Ratio(X)	0.70	0.00	0.15	0.57	0.00	0.00	0.08	0.79	0.79	0.30	0.70	0.20
Avail Cap(c_a), veh/h	399	0	661	627	0	0	233	918	963	211	1914	852
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.4	0.0	28.6	33.2	0.0	0.0	14.8	20.1	20.1	17.7	17.3	11.8
Incr Delay (d2), s/veh	1.2	0.0	0.1	0.4	0.0	0.0	0.1	6.9	6.6	0.3	2.2	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	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	1.5	6.2	0.0	0.0	0.1	15.1	15.7	0.6	11.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.6	0.0	28.7	33.6	0.0	0.0	14.8	27.0	26.7	18.1	19.4	12.4
LnGrp LOS	D	A	C	C	A	A	B	C	C	B	B	B
Approach Vol, veh/h		277			272			1500			1574	
Approach Delay, s/veh		38.1			33.6			26.7			18.6	
Approach LOS		D			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	63.5		35.9	6.3	65.9		35.9				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	5.2	58.1		* 42	5.0	58.3		* 42				
Max Q Clear Time (g_c+I1), s	3.7	38.9		30.6	2.4	32.7		18.6				
Green Ext Time (p_c), s	0.0	9.9		0.6	0.0	11.6		1.3				

Intersection Summary			
HCM 6th Ctrl Delay		24.6	
HCM 6th LOS		C	

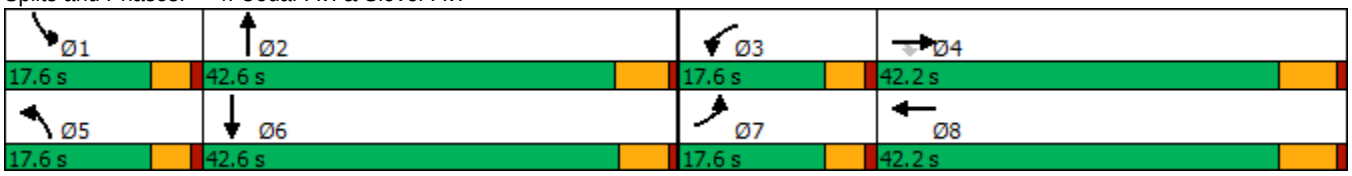
Notes

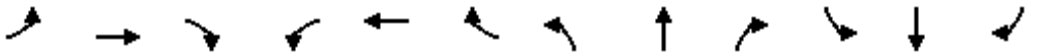
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	344	497	143	43	282	97	972	153	1039
Future Volume (vph)	344	497	143	43	282	97	972	153	1039
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	13.0	28.1	28.1	7.5	18.2	10.3	36.9	12.9	39.9
Actuated g/C Ratio	0.13	0.27	0.27	0.07	0.18	0.10	0.36	0.13	0.39
v/c Ratio	1.79	0.56	0.29	0.39	0.69	0.64	0.91	0.80	0.97
Control Delay	399.6	35.8	6.8	56.1	39.6	62.9	44.2	73.5	50.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	399.6	35.8	6.8	56.1	39.6	62.9	44.2	73.5	50.9
LOS	F	D	A	E	D	E	D	E	D
Approach Delay		158.8			41.2		45.8		53.5
Approach LOS		F			D		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 102.3	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.79	
Intersection Signal Delay: 76.2	Intersection LOS: E
Intersection Capacity Utilization 92.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	344	497	143	43	282	123	97	972	78	153	1039	160
Future Volume (veh/h)	344	497	143	43	282	123	97	972	78	153	1039	160
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	1.00		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	366	529	103	46	300	97	103	1034	81	163	1105	167
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	222	897	394	60	413	131	127	1153	90	192	1186	179
Arrive On Green	0.14	0.26	0.26	0.04	0.16	0.16	0.08	0.36	0.36	0.12	0.40	0.40
Sat Flow, veh/h	1619	3420	1501	1619	2545	806	1619	3213	252	1619	2973	448
Grp Volume(v), veh/h	366	529	103	46	199	198	103	550	565	163	634	638
Grp Sat Flow(s),veh/h/ln	1619	1710	1501	1619	1710	1641	1619	1710	1754	1619	1710	1711
Q Serve(g_s), s	13.0	12.8	5.2	2.7	10.5	10.9	5.9	28.9	28.9	9.4	33.7	33.9
Cycle Q Clear(g_c), s	13.0	12.8	5.2	2.7	10.5	10.9	5.9	28.9	28.9	9.4	33.7	33.9
Prop In Lane	1.00		1.00	1.00		0.49	1.00		0.14	1.00		0.26
Lane Grp Cap(c), veh/h	222	897	394	60	278	266	127	614	630	192	682	682
V/C Ratio(X)	1.65	0.59	0.26	0.77	0.72	0.74	0.81	0.90	0.90	0.85	0.93	0.93
Avail Cap(c_a), veh/h	222	1297	569	222	648	622	222	663	680	222	682	682
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	41.0	30.6	27.7	45.3	37.7	37.9	43.0	28.8	28.8	41.0	27.3	27.3
Incr Delay (d2), s/veh	312.3	0.6	0.3	7.4	3.5	4.0	4.6	14.3	14.0	20.8	19.3	20.1
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	24.1	5.0	1.8	1.1	4.4	4.4	2.4	13.3	13.6	4.7	16.3	16.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	353.2	31.2	28.1	52.7	41.2	41.9	47.6	43.0	42.8	61.8	46.6	47.4
LnGrp LOS	F	C	C	D	D	D	D	D	D	E	D	D
Approach Vol, veh/h		998			443			1218			1435	
Approach Delay, s/veh		149.0			42.7			43.3			48.7	
Approach LOS		F			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	39.9	8.1	31.1	12.1	43.7	17.6	21.6
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	11.4	30.9	4.7	14.8	7.9	35.9	15.0	12.9
Green Ext Time (p_c), s	0.0	3.2	0.0	3.4	0.0	0.9	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	70.9
HCM 6th LOS	E

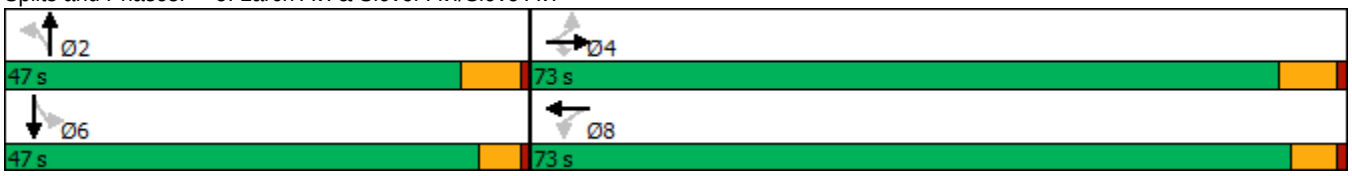
Notes

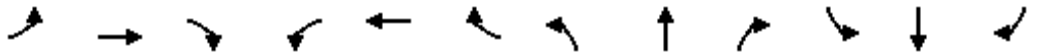
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	38	630	59	62	359	60	153	54	45
Future Volume (vph)	38	630	59	62	359	60	153	54	45
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	73.0	73.0	73.0	73.0	73.0	47.0	47.0	47.0	47.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	60.8%	39.2%	39.2%	39.2%	39.2%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None
Act Effct Green (s)	67.1	67.1	67.1	68.2	68.2		26.0		27.6
Actuated g/C Ratio	0.64	0.64	0.64	0.65	0.65		0.25		0.26
v/c Ratio	0.08	0.61	0.07	0.22	0.22		0.84		0.46
Control Delay	9.9	15.8	2.8	11.8	8.3		54.4		33.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	9.9	15.8	2.8	11.8	8.3		54.4		33.7
LOS	A	B	A	B	A		D		C
Approach Delay		14.4			8.8		54.4		33.7
Approach LOS		B			A		D		C

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 105.5		
Natural Cycle: 75		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.84		
Intersection Signal Delay: 21.4	Intersection LOS: C	
Intersection Capacity Utilization 76.6%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	630	59	62	359	72	60	153	81	54	45	30
Future Volume (veh/h)	38	630	59	62	359	72	60	153	81	54	45	30
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		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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	700	52	69	399	66	67	170	71	60	50	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	612	1192	990	375	1947	320	105	211	82	142	109	36
Arrive On Green	0.66	0.66	0.66	0.66	0.66	0.66	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	890	1800	1494	682	2940	483	287	975	378	418	503	167
Grp Volume(v), veh/h	42	700	52	69	231	234	308	0	0	130	0	0
Grp Sat Flow(s),veh/h/ln	890	1800	1494	682	1710	1713	1641	0	0	1089	0	0
Q Serve(g_s), s	2.0	22.0	1.2	6.4	5.4	5.5	7.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.5	22.0	1.2	28.4	5.4	5.5	18.5	0.0	0.0	10.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.28	0.22		0.23	0.46		0.15
Lane Grp Cap(c), veh/h	612	1192	990	375	1133	1134	398	0	0	287	0	0
V/C Ratio(X)	0.07	0.59	0.05	0.18	0.20	0.21	0.77	0.00	0.00	0.45	0.00	0.00
Avail Cap(c_a), veh/h	612	1192	990	375	1133	1134	691	0	0	563	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	8.2	9.6	6.1	17.4	6.8	6.8	38.6	0.0	0.0	35.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.1	0.1	1.1	0.4	0.4	3.2	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	0.4	7.4	0.3	1.0	1.7	1.7	7.6	0.0	0.0	3.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.4	11.7	6.2	18.5	7.2	7.2	41.8	0.0	0.0	36.2	0.0	0.0
LnGrp LOS	A	B	A	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		794			534			308			130	
Approach Delay, s/veh		11.2			8.6			41.8			36.2	
Approach LOS		B			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		28.4		74.1		28.4		74.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		40.8		66.8		* 42		* 68				
Max Q Clear Time (g_c+I1), s		20.5		24.0		12.8		30.4				
Green Ext Time (p_c), s		1.7		5.3		0.8		3.2				

Intersection Summary												
HCM 6th Ctrl Delay			17.6									
HCM 6th LOS			B									

Notes

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

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	453	76	89	308	111	86
Future Vol, veh/h	453	76	89	308	111	86
Conflicting Peds, #/hr	0	1	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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	472	79	93	321	116	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	552	0	860	277
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	347	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1028	-	299	726
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1027	-	266	725
Mov Cap-2 Maneuver	-	-	-	-	371	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	693	-

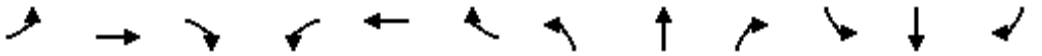
Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	18.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	472	-	-	1027	-
HCM Lane V/C Ratio	0.435	-	-	0.09	-
HCM Control Delay (s)	18.4	-	-	8.9	0.3
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.3	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	601	2	559	607	1592	1187	551
Future Volume (vph)	601	2	559	607	1592	1187	551
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.8	10.8	10.8	9.6	23.2	11.2	11.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	25.6	25.6	25.6	15.4	50.9	30.8	30.8
Actuated g/C Ratio	0.29	0.29	0.29	0.17	0.58	0.35	0.35
v/c Ratio	0.85	0.88	0.76	1.05	0.56	0.55	0.62
Control Delay	47.6	50.7	32.1	87.1	13.0	24.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	4.4	0.0	0.0
Total Delay	47.6	50.7	32.1	87.1	17.5	24.6	5.2
LOS	D	D	C	F	B	C	A
Approach Delay		43.8			36.7	18.5	
Approach LOS		D			D	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 88.5	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 32.1	Intersection LOS: C
Intersection Capacity Utilization 143.4%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	601	2	559	607	1592	0	0	1187	551
Future Volume (veh/h)	0	0	0	601	2	559	607	1592	0	0	1187	551
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				758	0	267	639	1676	0	0	1249	445
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				917	0	408	643	3133	0	0	2394	590
Arrive On Green				0.25	0.00	0.25	0.18	0.60	0.00	0.00	0.37	0.37
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				758	0	267	639	1676	0	0	1249	445
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				16.6	0.0	12.5	15.3	15.9	0.0	0.0	12.6	20.4
Cycle Q Clear(g_c), s				16.6	0.0	12.5	15.3	15.9	0.0	0.0	12.6	20.4
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				917	0	408	643	3133	0	0	2394	590
V/C Ratio(X)				0.83	0.00	0.65	0.99	0.53	0.00	0.00	0.52	0.75
Avail Cap(c_a), veh/h				1170	0	521	643	3133	0	0	2394	590
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.7	0.0	28.1	34.3	9.7	0.0	0.0	20.9	23.3
Incr Delay (d2), s/veh				4.0	0.0	1.9	33.9	0.7	0.0	0.0	0.8	8.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.2	0.0	4.7	9.0	4.7	0.0	0.0	4.4	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.7	0.0	30.1	68.2	10.4	0.0	0.0	21.7	32.0
LnGrp LOS				C	A	C	E	B	A	A	C	C
Approach Vol, veh/h					1025			2315			1694	
Approach Delay, s/veh					32.7			26.4			24.4	
Approach LOS					C			C			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.0		20.0	37.0		27.1						
Change Period (Y+Rc), s	6.2		4.6	6.2		5.8						
Max Green Setting (Gmax), s	50.8		15.4	30.8		27.2						
Max Q Clear Time (g_c+I1), s	17.9		17.3	22.4		18.6						
Green Ext Time (p_c), s	14.5		0.0	5.5		2.7						

Intersection Summary		
HCM 6th Ctrl Delay	27.0	
HCM 6th LOS	C	

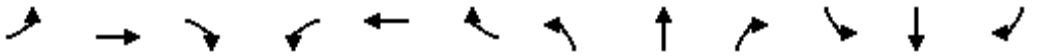
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	677	3	508	1523	504	1284
Future Volume (vph)	677	3	508	1523	504	1284
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.0	18.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	48.9%	20.0%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	22.2	22.2	22.2	37.8	13.4	55.8
Actuated g/C Ratio	0.25	0.25	0.25	0.42	0.15	0.62
v/c Ratio	1.03	1.03	0.87	1.17	1.02	0.60
Control Delay	86.7	86.1	46.1	107.4	83.9	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	17.3
Total Delay	86.7	86.1	46.1	107.4	83.9	29.1
LOS	F	F	D	F	F	C
Approach Delay		73.8		107.4		44.5
Approach LOS		E		F		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 79.2	Intersection LOS: E
Intersection Capacity Utilization 143.4%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	677	3	508	0	0	0	0	1523	899	504	1284	0
Future Volume (veh/h)	677	3	508	0	0	0	0	1523	899	504	1284	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	849	0	289				0	1603	835	531	1352	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	893	0	397				0	1452	676	523	2238	0
Arrive On Green	0.25	0.00	0.25				0.00	0.42	0.42	0.15	0.62	0.00
Sat Flow, veh/h	3619	0	1610				0	3629	1610	3510	3705	0
Grp Volume(v), veh/h	849	0	289				0	1603	835	531	1352	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1610	1755	1805	0
Q Serve(g_s), s	20.8	0.0	14.8				0.0	37.8	37.8	13.4	20.5	0.0
Cycle Q Clear(g_c), s	20.8	0.0	14.8				0.0	37.8	37.8	13.4	20.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	893	0	397				0	1452	676	523	2238	0
V/C Ratio(X)	0.95	0.00	0.73				0.00	1.10	1.23	1.02	0.60	0.00
Avail Cap(c_a), veh/h	893	0	397				0	1452	676	523	2238	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.4	0.0	31.1				0.0	26.1	26.1	38.3	10.4	0.0
Incr Delay (d2), s/veh	19.3	0.0	6.6				0.0	57.4	118.1	43.4	1.2	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
%ile BackOfQ(50%),veh/ln	10.8	0.0	6.1				0.0	25.0	34.7	8.5	6.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	0.0	37.7				0.0	83.5	144.2	81.7	11.6	0.0
LnGrp LOS	D	A	D				A	F	F	F	B	A
Approach Vol, veh/h		1138						2438			1883	
Approach Delay, s/veh		48.9						104.3			31.4	
Approach LOS		D						F			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	18.0	44.0		28.0		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.4	37.8		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.4	39.8		22.8		22.5
Green Ext Time (p_c), s	0.0	0.0		0.0		11.3

Intersection Summary		
HCM 6th Ctrl Delay		67.6
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	517	128	35	9	54	1772	31	1390
Future Volume (vph)	517	128	35	9	54	1772	31	1390
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	38.0	38.0	38.0	38.0	9.6	42.4	9.6	42.4
Total Split (%)	42.2%	42.2%	42.2%	42.2%	10.7%	47.1%	10.7%	47.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	32.3	32.3	32.3	32.3	5.0	38.2	5.0	36.3
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.06	0.43	0.06	0.41
v/c Ratio	1.12	0.24	0.09	0.09	0.55	1.18	0.31	1.24
Control Delay	107.0	11.2	20.1	5.4	62.4	114.3	49.2	141.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.0	11.2	20.1	5.4	62.4	114.3	49.2	141.8
LOS	F	B	C	A	E	F	D	F
Approach Delay		72.0		9.2		112.8		140.2
Approach LOS		E		A		F		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 88.1	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.24	
Intersection Signal Delay: 113.2	Intersection LOS: F
Intersection Capacity Utilization 95.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	517	128	169	35	9	93	54	1772	17	31	1390	373
Future Volume (veh/h)	517	128	169	35	9	93	54	1772	17	31	1390	373
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	533	132	154	36	9	77	56	1827	18	32	1433	352
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	546	655	584	427	655	584	76	1536	15	56	1176	280
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.04	0.42	0.42	0.03	0.41	0.41
Sat Flow, veh/h	1406	1805	1610	1172	1805	1610	1810	3662	36	1810	2884	687
Grp Volume(v), veh/h	533	132	154	36	9	77	56	899	946	32	880	905
Grp Sat Flow(s),veh/h/ln	1406	1805	1610	1172	1805	1610	1810	1805	1894	1810	1805	1766
Q Serve(g_s), s	29.4	4.5	6.0	2.0	0.3	2.8	2.7	37.2	37.2	1.5	36.2	36.2
Cycle Q Clear(g_c), s	32.2	4.5	6.0	8.0	0.3	2.8	2.7	37.2	37.2	1.5	36.2	36.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		0.39
Lane Grp Cap(c), veh/h	546	655	584	427	655	584	76	757	794	56	736	720
V/C Ratio(X)	0.98	0.20	0.26	0.08	0.01	0.13	0.73	1.19	1.19	0.58	1.19	1.26
Avail Cap(c_a), veh/h	546	655	584	427	655	584	102	757	794	102	736	720
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	31.6	19.4	19.9	22.7	18.1	18.9	42.0	25.8	25.8	42.4	26.3	26.3
Incr Delay (d2), s/veh	32.2	0.1	0.2	0.1	0.0	0.1	10.2	97.6	98.4	3.5	100.7	126.7
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	16.0	1.8	2.1	0.5	0.1	1.0	1.4	34.2	36.1	0.7	34.0	38.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.7	19.6	20.2	22.8	18.1	19.0	52.2	123.3	124.1	45.9	127.0	153.0
LnGrp LOS	E	B	C	C	B	B	D	F	F	D	F	F
Approach Vol, veh/h		819			122			1901			1817	
Approach Delay, s/veh		48.4			20.1			121.6			138.5	
Approach LOS		D			C			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	43.4		38.0	8.3	42.4		38.0				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	36.2		32.2	5.0	36.2		32.2				
Max Q Clear Time (g_c+I1), s	3.5	39.2		34.2	4.7	38.2		10.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		112.7	
HCM 6th LOS		F	

APPENDIX 6.2:

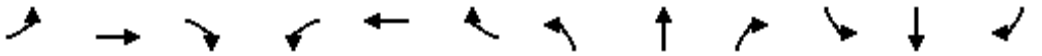
OPENING YEAR CUMULATIVE (2020) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	341	432	1378	1529	865
Future Volume (vph)	14	341	432	1378	1529	865
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	26.0	26.0	22.0	64.0	42.0	42.0
Total Split (%)	28.9%	28.9%	24.4%	71.1%	46.7%	46.7%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	22.0	22.0	18.0	59.5	37.5	37.5
Actuated g/C Ratio	0.24	0.24	0.20	0.66	0.42	0.42
v/c Ratio	1.35	0.76	1.26	0.61	0.74	0.90
Control Delay	203.4	38.0	153.5	2.8	24.8	22.6
Queue Delay	2.3	0.0	0.0	14.0	9.2	0.0
Total Delay	205.7	38.0	153.5	16.8	34.0	22.6
LOS	F	D	F	B	C	C
Approach Delay	145.0			49.4	29.9	
Approach LOS	F			D	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 59 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.35	
Intersection Signal Delay: 56.2	Intersection LOS: E
Intersection Capacity Utilization 122.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	492	14	341	432	1378	0	0	1529	865
Future Volume (veh/h)	0	0	0	492	14	341	432	1378	0	0	1529	865
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				518	15	219	455	1451	0	0	1609	655
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				430	12	394	362	2387	0	0	2161	671
Arrive On Green				0.24	0.24	0.24	0.13	0.44	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1761	51	1610	1810	3705	0	0	5358	1610
Grp Volume(v), veh/h				533	0	219	455	1451	0	0	1609	655
Grp Sat Flow(s),veh/h/ln				1812	0	1610	1810	1805	0	0	1729	1610
Q Serve(g_s), s				22.0	0.0	10.7	18.0	27.6	0.0	0.0	23.6	36.0
Cycle Q Clear(g_c), s				22.0	0.0	10.7	18.0	27.6	0.0	0.0	23.6	36.0
Prop In Lane				0.97		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				443	0	394	362	2387	0	0	2161	671
V/C Ratio(X)				1.20	0.00	0.56	1.26	0.61	0.00	0.00	0.74	0.98
Avail Cap(c_a), veh/h				443	0	394	362	2387	0	0	2161	671
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.30	0.30	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.0	0.0	29.7	39.0	16.2	0.0	0.0	22.2	25.8
Incr Delay (d2), s/veh				111.3	0.0	1.7	122.6	0.4	0.0	0.0	2.4	29.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				22.7	0.0	4.1	20.4	11.7	0.0	0.0	9.2	17.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				145.3	0.0	31.5	161.6	16.5	0.0	0.0	24.6	55.2
LnGrp LOS				F	A	C	F	B	A	A	C	E
Approach Vol, veh/h					752			1906			2264	
Approach Delay, s/veh					112.1			51.2			33.4	
Approach LOS					F			D			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	64.0		22.0	42.0		26.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	59.5		18.0	37.5		22.0						
Max Q Clear Time (g_c+I1), s	29.6		20.0	38.0		24.0						
Green Ext Time (p_c), s	12.9		0.0	0.0		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	52.3	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	567	4	1243	584	460	1561
Future Volume (vph)	567	4	1243	584	460	1561
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	26.0	26.0	26.7	26.7	24.8	55.5
Actuated g/C Ratio	0.29	0.29	0.30	0.30	0.28	0.62
v/c Ratio	1.07	1.25	0.84	0.67	0.97	0.73
Control Delay	94.8	160.2	35.8	6.7	48.4	20.5
Queue Delay	0.0	0.0	0.5	0.0	0.0	48.7
Total Delay	94.8	160.2	36.3	6.7	48.4	69.2
LOS	F	F	D	A	D	E
Approach Delay		129.2	26.8			64.4
Approach LOS		F	C			E

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 64.7	Intersection LOS: E
Intersection Capacity Utilization 122.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	567	4	507	0	0	0	0	1243	584	460	1561	0
Future Volume (veh/h)	567	4	507	0	0	0	0	1243	584	460	1561	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	532	86	470				0	1295	532	479	1626	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	523	74	403				0	1527	474	503	2226	0
Arrive On Green	0.29	0.29	0.29				0.00	0.29	0.29	0.28	0.62	0.00
Sat Flow, veh/h	1810	255	1394				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	532	0	556				0	1295	532	479	1626	0
Grp Sat Flow(s),veh/h/ln	1810	0	1649				0	1729	1610	1810	1805	0
Q Serve(g_s), s	26.0	0.0	26.0				0.0	21.1	26.5	23.4	28.3	0.0
Cycle Q Clear(g_c), s	26.0	0.0	26.0				0.0	21.1	26.5	23.4	28.3	0.0
Prop In Lane	1.00		0.85				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	523	0	476				0	1527	474	503	2226	0
V/C Ratio(X)	1.02	0.00	1.17				0.00	0.85	1.12	0.95	0.73	0.00
Avail Cap(c_a), veh/h	523	0	476				0	1527	474	503	2226	0
HCM Platoon Ratio	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				0.00	0.23	0.23	0.59	0.59	0.00
Uniform Delay (d), s/veh	32.0	0.0	32.0				0.0	29.9	31.8	31.9	12.0	0.0
Incr Delay (d2), s/veh	43.9	0.0	95.9				0.0	1.5	62.1	20.1	1.3	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
%ile BackOfQ(50%),veh/ln	16.8	0.0	22.2				0.0	8.4	17.8	12.4	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.9	0.0	127.9				0.0	31.3	93.8	52.0	13.3	0.0
LnGrp LOS	F	A	F				A	C	F	D	B	A
Approach Vol, veh/h		1088						1827			2105	
Approach Delay, s/veh		102.5						49.5			22.1	
Approach LOS		F						D			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.0	31.0		30.0		60.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	25.4	28.5		28.0		30.3
Green Ext Time (p_c), s	0.0	0.0		0.0		9.3

Intersection Summary	
HCM 6th Ctrl Delay	49.5
HCM 6th LOS	D

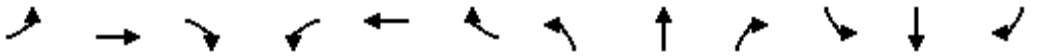
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	311	6	9	1	17	1416	143	1426	500
Future Volume (vph)	311	6	9	1	17	1416	143	1426	500
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	43.0	43.0	43.0	43.0	9.6	63.0	14.0	67.4	67.4
Total Split (%)	35.8%	35.8%	35.8%	35.8%	8.0%	52.5%	11.7%	56.2%	56.2%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	36.8	36.8		36.9	63.5	57.7	72.0	67.5	67.5
Actuated g/C Ratio	0.31	0.31		0.31	0.54	0.49	0.61	0.57	0.57
v/c Ratio	0.98	0.07		0.22	0.13	0.93	0.85	0.78	0.50
Control Delay	84.2	12.7		9.0	12.0	40.2	64.8	24.3	4.5
Queue Delay	0.0	0.0		0.0	0.0	12.0	0.0	0.0	0.0
Total Delay	84.2	12.7		9.0	12.0	52.2	64.8	24.3	4.5
LOS	F	B		A	B	D	E	C	A
Approach Delay		77.7		9.0		51.8		22.3	
Approach LOS		E		A		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 118.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 37.5	Intersection LOS: D
Intersection Capacity Utilization 89.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	6	25	9	1	102	17	1416	41	143	1426	500
Future Volume (veh/h)	311	6	25	9	1	102	17	1416	41	143	1426	500
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		1.00	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	331	6	25	10	1	58	18	1506	43	152	1517	368
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	421	81	337	75	28	342	154	1829	52	216	1976	881
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.02	0.54	0.54	0.06	0.58	0.58
Sat Flow, veh/h	1289	304	1266	138	106	1285	1619	3396	97	1619	3420	1525
Grp Volume(v), veh/h	331	0	31	69	0	0	18	757	792	152	1517	368
Grp Sat Flow(s),veh/h/ln	1289	0	1570	1529	0	0	1619	1710	1783	1619	1710	1525
Q Serve(g_s), s	22.3	0.0	1.6	0.0	0.0	0.0	0.5	39.3	39.6	4.3	36.1	14.4
Cycle Q Clear(g_c), s	26.0	0.0	1.6	3.6	0.0	0.0	0.5	39.3	39.6	4.3	36.1	14.4
Prop In Lane	1.00		0.81	0.14		0.84	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	421	0	417	445	0	0	154	921	960	216	1976	881
V/C Ratio(X)	0.79	0.00	0.07	0.16	0.00	0.00	0.12	0.82	0.82	0.70	0.77	0.42
Avail Cap(c_a), veh/h	539	0	561	584	0	0	198	921	960	263	1976	881
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	0.0	29.5	30.3	0.0	0.0	15.7	20.5	20.6	22.1	17.2	12.6
Incr Delay (d2), s/veh	4.4	0.0	0.0	0.1	0.0	0.0	0.1	8.2	8.0	4.2	2.9	1.5
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	9.0	0.0	0.6	1.4	0.0	0.0	0.2	16.3	17.0	2.3	13.4	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	29.5	30.3	0.0	0.0	15.9	28.7	28.6	26.3	20.1	14.1
LnGrp LOS	D	A	C	C	A	A	B	C	C	C	C	B
Approach Vol, veh/h		362			69			1567			2037	
Approach Delay, s/veh		41.3			30.3			28.5			19.5	
Approach LOS		D			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	63.2		33.2	6.7	67.4		33.2				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	9.4	57.6		* 38	5.0	62.0		* 38				
Max Q Clear Time (g_c+I1), s	6.3	41.6		28.0	2.5	38.1		5.6				
Green Ext Time (p_c), s	0.1	9.3		0.6	0.0	13.9		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		25.1	
HCM 6th LOS		C	

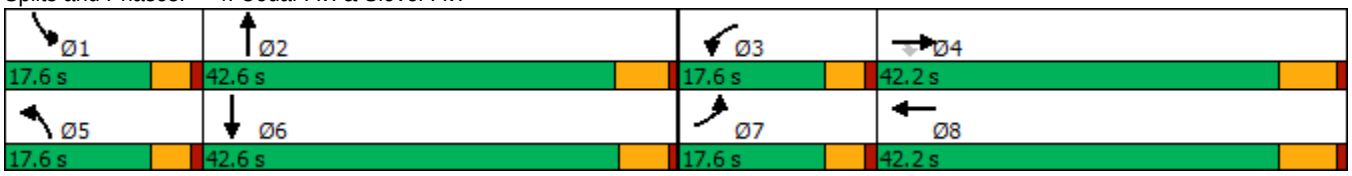
Notes

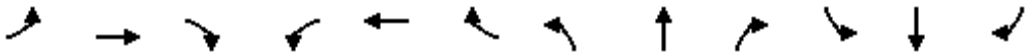
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	241	142	49	19	172	85	1072	148	1110
Future Volume (vph)	241	142	49	19	172	85	1072	148	1110
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	13.1	27.3	27.3	6.0	14.1	9.5	37.0	12.8	42.9
Actuated g/C Ratio	0.13	0.28	0.28	0.06	0.14	0.10	0.38	0.13	0.44
v/c Ratio	1.22	0.16	0.11	0.21	0.60	0.59	0.95	0.77	0.97
Control Delay	172.5	28.5	0.4	51.1	23.8	58.9	46.1	66.8	47.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	172.5	28.5	0.4	51.1	23.8	58.9	46.1	66.8	47.5
LOS	F	C	A	D	C	E	D	E	D
Approach Delay		105.8			25.3		47.0		49.4
Approach LOS		F			C		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 98.2	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.22	
Intersection Signal Delay: 53.2	Intersection LOS: D
Intersection Capacity Utilization 87.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	142	49	19	172	161	85	1072	42	148	1110	204
Future Volume (veh/h)	241	142	49	19	172	161	85	1072	42	148	1110	204
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		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	262	154	40	21	187	153	92	1165	46	161	1207	219
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	223	890	396	36	266	206	114	1261	50	190	1223	221
Arrive On Green	0.14	0.26	0.26	0.02	0.15	0.15	0.07	0.38	0.38	0.12	0.42	0.42
Sat Flow, veh/h	1619	3420	1524	1619	1836	1418	1619	3354	132	1619	2894	522
Grp Volume(v), veh/h	262	154	40	21	173	167	92	594	617	161	710	716
Grp Sat Flow(s),veh/h/ln	1619	1710	1524	1619	1710	1545	1619	1710	1776	1619	1710	1706
Q Serve(g_s), s	13.0	3.3	1.9	1.2	9.1	9.8	5.3	31.4	31.4	9.2	38.7	39.5
Cycle Q Clear(g_c), s	13.0	3.3	1.9	1.2	9.1	9.8	5.3	31.4	31.4	9.2	38.7	39.5
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.07	1.00		0.31
Lane Grp Cap(c), veh/h	223	890	396	36	248	224	114	643	668	190	723	721
V/C Ratio(X)	1.18	0.17	0.10	0.58	0.70	0.74	0.80	0.92	0.92	0.85	0.98	0.99
Avail Cap(c_a), veh/h	223	1302	580	223	651	588	223	665	691	223	723	721
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	40.8	27.1	26.6	45.8	38.5	38.7	43.3	28.2	28.2	40.9	26.9	27.2
Incr Delay (d2), s/veh	116.6	0.1	0.1	5.3	3.5	4.8	4.9	18.3	17.9	20.1	28.9	31.7
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	12.1	1.3	0.7	0.5	3.8	3.8	2.2	15.0	15.5	4.6	20.2	21.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	157.4	27.2	26.7	51.1	42.0	43.6	48.2	46.5	46.1	61.0	55.8	58.9
LnGrp LOS	F	C	C	D	D	D	D	D	D	E	E	E
Approach Vol, veh/h		456			361			1303			1587	
Approach Delay, s/veh		101.9			43.3			46.5			57.7	
Approach LOS		F			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	41.4	6.7	30.8	11.3	45.8	17.6	19.9
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	11.2	33.4	3.2	5.3	7.3	41.5	15.0	11.8
Green Ext Time (p_c), s	0.0	2.1	0.0	0.9	0.0	0.0	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	57.8
HCM 6th LOS	E

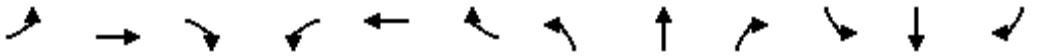
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	275	53	41	296	52	56	41	35
Future Volume (vph)	5	275	53	41	296	52	56	41	35
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	76.0	76.0	76.0	76.0	76.0	44.0	44.0	44.0	44.0
Total Split (%)	63.3%	63.3%	63.3%	63.3%	63.3%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None
Act Effct Green (s)	70.1	70.1	70.1	71.2	71.2		15.2		16.8
Actuated g/C Ratio	0.72	0.72	0.72	0.73	0.73		0.16		0.17
v/c Ratio	0.01	0.23	0.05	0.06	0.14		0.59		0.34
Control Delay	5.8	6.0	1.9	5.3	4.6		45.4		38.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.8	6.0	1.9	5.3	4.6		45.4		38.0
LOS	A	A	A	A	A		D		D
Approach Delay		5.3			4.7		45.4		38.0
Approach LOS		A			A		D		D

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 97.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 47.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	275	53	41	296	33	52	56	24	41	35	4
Future Volume (veh/h)	5	275	53	41	296	33	52	56	24	41	35	4
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		1.00	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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	5	293	46	44	315	21	55	60	20	44	37	3
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	813	1368	1160	790	2475	164	116	89	26	129	92	6
Arrive On Green	0.76	0.76	0.76	0.76	0.76	0.76	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1002	1800	1525	999	3255	216	574	837	245	655	858	56
Grp Volume(v), veh/h	5	293	46	44	165	171	135	0	0	84	0	0
Grp Sat Flow(s),veh/h/ln	1002	1800	1525	999	1710	1761	1656	0	0	1569	0	0
Q Serve(g_s), s	0.1	4.3	0.7	1.2	2.4	2.4	2.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	4.3	0.7	5.6	2.4	2.4	7.2	0.0	0.0	4.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.12	0.41		0.15	0.52		0.04
Lane Grp Cap(c), veh/h	813	1368	1160	790	1300	1339	231	0	0	227	0	0
V/C Ratio(X)	0.01	0.21	0.04	0.06	0.13	0.13	0.58	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	813	1368	1160	790	1300	1339	700	0	0	705	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	3.3	3.2	2.8	4.0	3.0	3.0	40.3	0.0	0.0	39.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.1	0.1	0.2	0.2	2.3	0.0	0.0	1.0	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	1.0	0.1	0.2	0.5	0.5	3.1	0.0	0.0	1.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.3	3.6	2.8	4.1	3.2	3.2	42.7	0.0	0.0	40.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		344			380			135			84	
Approach Delay, s/veh		3.5			3.3			42.7			40.1	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.2		77.1		16.2		77.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		37.8		69.8		* 39		* 71				
Max Q Clear Time (g_c+I1), s		9.2		6.3		6.5		7.6				
Green Ext Time (p_c), s		0.7		1.8		0.5		2.0				

Intersection Summary		
HCM 6th Ctrl Delay		12.3
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	282	11	6	266	3	2
Future Vol, veh/h	282	11	6	266	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	307	12	7	289	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	319	0	472	160
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1252	-	526	863
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1252	-	523	863
Mov Cap-2 Maneuver	-	-	-	-	590	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	675	-	-	1252	-
HCM Lane V/C Ratio	0.008	-	-	0.005	-
HCM Control Delay (s)	10.4	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	279	4	5	270	1	2
Future Vol, veh/h	279	4	5	270	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	303	4	5	293	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	307	0	462	154
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1265	-	533	871
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	861	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1265	-	531	871
Mov Cap-2 Maneuver	-	-	-	-	597	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	858	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	755	-	-	1265	-
HCM Lane V/C Ratio	0.004	-	-	0.004	-
HCM Control Delay (s)	9.8	-	-	7.9	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	205	75	94	196	80	53
Future Vol, veh/h	205	75	94	196	80	53
Conflicting Peds, #/hr	0	1	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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	230	84	106	220	90	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	315	0	595	158
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1257	-	440	866
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1256	-	397	865
Mov Cap-2 Maneuver	-	-	-	-	496	-
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	645	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	598	-	-	1256	-
HCM Lane V/C Ratio	0.25	-	-	0.084	-
HCM Control Delay (s)	13	-	-	8.1	0.2
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	128	157	12
Future Vol, veh/h	4	0	0	128	157	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	0	0	139	171	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	317	178	184	0	-	0
Stage 1	178	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	680	870	1403	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	680	870	1403	-	-	-
Mov Cap-2 Maneuver	680	-	-	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1403	-	680	-	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	0	-	10.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	127	153	4
Future Vol, veh/h	1	0	1	127	153	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	0	1	138	166	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	308	168	170	0	-	0
Stage 1	168	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	688	881	1420	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	687	881	1420	-	-	-
Mov Cap-2 Maneuver	687	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	892	-	-	-	-	-

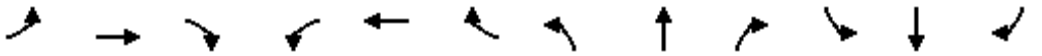
Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1420	-	687	-	-
HCM Lane V/C Ratio	0.001	-	0.002	-	-
HCM Control Delay (s)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	851	0	434	549	995	1341	627
Future Volume (vph)	851	0	434	549	995	1341	627
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	15.8	15.8	15.8	9.6	23.2	16.2	16.2
Total Split (s)	33.0	33.0	33.0	29.0	57.0	28.0	28.0
Total Split (%)	36.7%	36.7%	36.7%	32.2%	63.3%	31.1%	31.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	26.8	26.8	26.8	19.1	50.8	27.1	27.1
Actuated g/C Ratio	0.30	0.30	0.30	0.21	0.57	0.30	0.30
v/c Ratio	0.93	0.84	0.78	0.78	0.36	0.71	0.72
Control Delay	57.5	39.2	34.1	40.6	11.0	31.1	9.3
Queue Delay	0.0	0.0	0.0	0.1	0.5	0.0	0.0
Total Delay	57.5	39.2	34.1	40.7	11.5	31.1	9.3
LOS	E	D	C	D	B	C	A
Approach Delay		44.1			21.9	24.2	
Approach LOS		D			C	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 28.8	Intersection LOS: C
Intersection Capacity Utilization 139.1%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	851	0	434	549	995	0	0	1341	627
Future Volume (veh/h)	0	0	0	851	0	434	549	995	0	0	1341	627
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				970	0	159	578	1047	0	0	1412	495
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1062	0	473	670	2965	0	0	2150	530
Arrive On Green				0.29	0.00	0.29	0.19	0.57	0.00	0.00	0.33	0.33
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				970	0	159	578	1047	0	0	1412	495
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				23.0	0.0	6.9	14.2	9.6	0.0	0.0	16.4	26.5
Cycle Q Clear(g_c), s				23.0	0.0	6.9	14.2	9.6	0.0	0.0	16.4	26.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1062	0	473	670	2965	0	0	2150	530
V/C Ratio(X)				0.91	0.00	0.34	0.86	0.35	0.00	0.00	0.66	0.93
Avail Cap(c_a), veh/h				1107	0	493	964	2965	0	0	2150	530
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.3	0.0	24.6	34.8	10.2	0.0	0.0	25.5	28.9
Incr Delay (d2), s/veh				11.2	0.0	0.4	4.2	0.3	0.0	0.0	1.6	25.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.8	0.0	2.5	6.0	3.1	0.0	0.0	6.0	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				41.5	0.0	25.0	39.0	10.6	0.0	0.0	27.1	54.8
LnGrp LOS				D	A	C	D	B	A	A	C	D
Approach Vol, veh/h					1129			1625			1907	
Approach Delay, s/veh					39.2			20.7			34.3	
Approach LOS					D			C			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		57.0			21.6	35.4		31.9				
Change Period (Y+Rc), s		6.2			4.6	6.2		5.8				
Max Green Setting (Gmax), s		50.8			24.4	21.8		27.2				
Max Q Clear Time (g_c+I1), s		11.6			16.2	28.5		25.0				
Green Ext Time (p_c), s		7.8			0.8	0.0		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			30.7									
HCM 6th LOS			C									

Notes

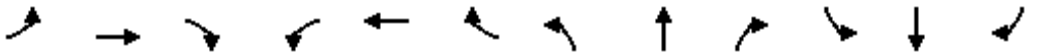
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	429	0	703	1115	755	559	1634
Future Volume (vph)	429	0	703	1115	755	559	1634
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	38.0	38.0	38.0	57.0	57.0	25.0	82.0
Total Split (%)	31.7%	31.7%	31.7%	47.5%	47.5%	20.8%	68.3%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.3	31.3	31.3	50.8	50.8	20.4	75.8
Actuated g/C Ratio	0.26	0.26	0.26	0.43	0.43	0.17	0.64
v/c Ratio	0.92	0.91	0.88	0.76	0.54	1.00	0.76
Control Delay	70.1	60.2	56.4	30.4	4.6	86.9	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	47.9
Total Delay	70.1	60.2	56.4	30.4	4.6	86.9	66.3
LOS	E	E	E	C	A	F	E
Approach Delay		62.3		24.6			71.5
Approach LOS		E		C			E

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 119.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 52.6 — Intersection LOS: D
Intersection Capacity Utilization 139.1% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	0	703	0	0	0	0	1115	755	559	1634	0
Future Volume (veh/h)	429	0	703	0	0	0	0	1115	755	559	1634	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	674	0	382				0	1051	834	601	1757	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	935	0	416				0	1631	1380	605	2312	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	3800	3217	3510	3705	0
Grp Volume(v), veh/h	674	0	382				0	1051	834	601	1757	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1608	1755	1805	0
Q Serve(g_s), s	20.1	0.0	27.3				0.0	25.8	23.7	20.2	40.4	0.0
Cycle Q Clear(g_c), s	20.1	0.0	27.3				0.0	25.8	23.7	20.2	40.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	935	0	416				0	1631	1380	605	2312	0
V/C Ratio(X)	0.72	0.00	0.92				0.00	0.64	0.60	0.99	0.76	0.00
Avail Cap(c_a), veh/h	984	0	438				0	1631	1380	605	2312	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	42.7				0.0	26.7	26.0	48.9	14.9	0.0
Incr Delay (d2), s/veh	2.5	0.0	23.7				0.0	2.0	2.0	34.8	2.4	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
%ile BackOfQ(50%),veh/ln	8.9	0.0	13.2				0.0	11.3	8.8	11.4	14.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	0.0	66.4				0.0	28.6	28.0	83.7	17.3	0.0
LnGrp LOS	D	A	E				A	C	C	F	B	A
Approach Vol, veh/h		1056						1885			2358	
Approach Delay, s/veh		51.1						28.4			34.3	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	57.0		36.4		82.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	50.8		32.2		75.8
Max Q Clear Time (g_c+I1), s	22.2	27.8		29.3		42.4
Green Ext Time (p_c), s	0.0	11.5		1.3		16.7

Intersection Summary			
HCM 6th Ctrl Delay			35.5
HCM 6th LOS			D

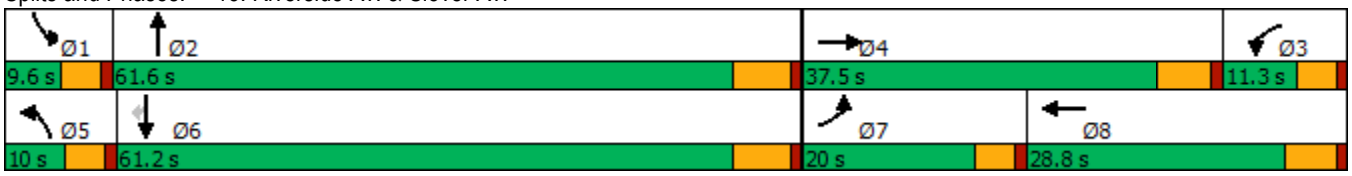
Notes

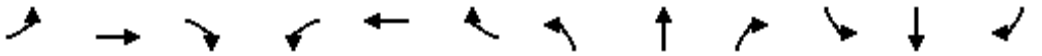
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	369	36	23	17	108	1485	31	1900	408
Future Volume (vph)	369	36	23	17	108	1485	31	1900	408
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	20.0	37.5	11.3	28.8	10.0	61.6	9.6	61.2	61.2
Total Split (%)	16.7%	31.3%	9.4%	24.0%	8.3%	51.3%	8.0%	51.0%	51.0%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	14.9	21.4	8.9	12.4	5.5	60.2	5.0	55.5	55.5
Actuated g/C Ratio	0.14	0.20	0.08	0.12	0.05	0.57	0.05	0.52	0.52
v/c Ratio	0.80	0.22	0.16	0.16	1.24	0.79	0.38	1.01	0.45
Control Delay	58.4	12.2	49.0	18.0	214.7	24.6	65.5	50.8	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	12.2	49.0	18.0	214.7	24.6	65.5	50.8	8.4
LOS	E	B	D	B	F	C	E	D	A
Approach Delay		44.7		26.0		37.3		43.6	
Approach LOS		D		C		D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.9	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.24	
Intersection Signal Delay: 41.2	Intersection LOS: D
Intersection Capacity Utilization 91.5%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	36	120	23	17	48	108	1485	26	31	1900	408
Future Volume (veh/h)	369	36	120	23	17	48	108	1485	26	31	1900	408
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		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	393	38	122	24	18	34	115	1580	24	33	2021	365
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	460	189	168	205	177	158	92	1970	30	53	1975	837
Arrive On Green	0.13	0.10	0.10	0.11	0.10	0.10	0.05	0.54	0.54	0.03	0.52	0.52
Sat Flow, veh/h	3510	1805	1601	1810	1805	1610	1810	3640	55	1810	3800	1610
Grp Volume(v), veh/h	393	38	122	24	18	34	115	783	821	33	2021	365
Grp Sat Flow(s),veh/h/ln	1755	1805	1601	1810	1805	1610	1810	1805	1890	1810	1900	1610
Q Serve(g_s), s	11.6	2.0	7.8	1.3	1.0	2.1	5.4	37.2	37.3	1.9	55.0	14.9
Cycle Q Clear(g_c), s	11.6	2.0	7.8	1.3	1.0	2.1	5.4	37.2	37.3	1.9	55.0	14.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	460	189	168	205	177	158	92	977	1023	53	1975	837
V/C Ratio(X)	0.85	0.20	0.73	0.12	0.10	0.22	1.25	0.80	0.80	0.62	1.02	0.44
Avail Cap(c_a), veh/h	511	541	479	205	392	350	92	977	1023	85	1975	837
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	45.0	43.3	45.9	42.2	43.5	44.0	50.2	19.7	19.7	50.8	25.4	15.8
Incr Delay (d2), s/veh	12.3	0.5	5.9	0.3	0.2	0.7	173.6	6.9	6.7	4.4	26.5	1.7
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	5.6	0.9	3.3	0.6	0.4	0.8	6.8	15.3	16.0	0.9	28.5	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	43.9	51.9	42.4	43.7	44.7	223.8	26.5	26.4	55.1	51.9	17.4
LnGrp LOS	E	D	D	D	D	D	F	C	C	E	F	B
Approach Vol, veh/h		553			76			1719			2419	
Approach Delay, s/veh		55.2			43.7			39.7			46.7	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	63.5	17.8	16.9	10.0	61.2	18.5	16.2
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	5.0	55.4	6.7	* 32	5.4	55.0	15.4	23.0
Max Q Clear Time (g_c+I1), s	3.9	39.3	3.3	9.8	7.4	57.0	13.6	4.1
Green Ext Time (p_c), s	0.0	9.2	0.0	0.8	0.0	0.0	0.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	45.1
HCM 6th LOS	D

Notes

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

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	424	443	1668	1315	673
Future Volume (vph)	4	424	443	1668	1315	673
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	29.0	29.0	25.0	61.0	36.0	36.0
Total Split (%)	32.2%	32.2%	27.8%	67.8%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	24.9	24.9	21.1	56.6	31.5	31.5
Actuated g/C Ratio	0.28	0.28	0.23	0.63	0.35	0.35
v/c Ratio	0.96	0.83	1.08	0.76	0.75	0.72
Control Delay	65.8	42.3	68.9	18.3	28.9	8.5
Queue Delay	0.0	0.0	0.0	48.5	0.2	0.0
Total Delay	65.8	42.3	68.9	66.8	29.1	8.5
LOS	E	D	E	E	C	A
Approach Delay	54.9			67.3	22.1	
Approach LOS	D			E	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 47.0	Intersection LOS: D
Intersection Capacity Utilization 147.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	394	4	424	443	1668	0	0	1315	673
Future Volume (veh/h)	0	0	0	394	4	424	443	1668	0	0	1315	673
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				406	20	420	457	1720	0	0	1356	500
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				480	24	447	422	2267	0	0	1817	556
Arrive On Green				0.28	0.28	0.28	0.31	0.84	0.00	0.00	0.35	0.35
Sat Flow, veh/h				1728	85	1610	1810	3705	0	0	5358	1587
Grp Volume(v), veh/h				426	0	420	457	1720	0	0	1356	500
Grp Sat Flow(s),veh/h/ln				1814	0	1610	1810	1805	0	0	1729	1587
Q Serve(g_s), s				20.0	0.0	22.9	21.0	19.3	0.0	0.0	20.7	26.9
Cycle Q Clear(g_c), s				20.0	0.0	22.9	21.0	19.3	0.0	0.0	20.7	26.9
Prop In Lane				0.95		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				503	0	447	422	2267	0	0	1817	556
V/C Ratio(X)				0.85	0.00	0.94	1.08	0.76	0.00	0.00	0.75	0.90
Avail Cap(c_a), veh/h				504	0	447	422	2267	0	0	1817	556
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.7	0.0	31.8	31.0	4.3	0.0	0.0	25.7	27.7
Incr Delay (d2), s/veh				12.6	0.0	28.0	41.6	0.2	0.0	0.0	2.8	20.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.8	0.0	11.7	12.7	2.9	0.0	0.0	8.4	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				43.3	0.0	59.8	72.6	4.6	0.0	0.0	28.6	47.8
LnGrp LOS				D	A	E	F	A	A	A	C	D
Approach Vol, veh/h					846			2177			1856	
Approach Delay, s/veh					51.5			18.8			33.7	
Approach LOS					D			B			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	61.0		25.0	36.0		29.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	56.5		21.0	31.5		25.0						
Max Q Clear Time (g_c+I1), s	21.3		23.0	28.9		24.9						
Green Ext Time (p_c), s	17.8		0.0	2.2		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	30.2	
HCM 6th LOS	C	

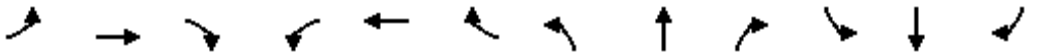
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	820	1	1290	621	471	1235
Future Volume (vph)	820	1	1290	621	471	1235
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	33.0	33.0	29.0	29.0	28.0	57.0
Total Split (%)	36.7%	36.7%	32.2%	32.2%	31.1%	63.3%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	29.0	29.0	24.5	24.5	24.0	52.5
Actuated g/C Ratio	0.32	0.32	0.27	0.27	0.27	0.58
v/c Ratio	1.18	1.08	0.95	0.72	1.02	0.61
Control Delay	127.1	89.6	47.9	7.9	59.3	5.6
Queue Delay	4.5	12.7	13.9	0.0	0.0	4.3
Total Delay	131.6	102.3	61.8	7.9	59.3	9.9
LOS	F	F	E	A	E	A
Approach Delay		117.6	44.3			23.6
Approach LOS		F	D			C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 55.2	Intersection LOS: E
Intersection Capacity Utilization 147.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	820	1	375	0	0	0	0	1290	621	471	1235	0
Future Volume (veh/h)	820	1	375	0	0	0	0	1290	621	471	1235	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	612	340	368				0	1344	560	491	1286	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	583	269	291				0	1412	438	483	2106	0
Arrive On Green	0.32	0.32	0.32				0.00	0.27	0.27	0.18	0.39	0.00
Sat Flow, veh/h	1810	834	903				0	5358	1608	1810	3705	0
Grp Volume(v), veh/h	612	0	708				0	1344	560	491	1286	0
Grp Sat Flow(s),veh/h/ln	1810	0	1737				0	1729	1608	1810	1805	0
Q Serve(g_s), s	29.0	0.0	29.0				0.0	22.9	24.5	24.0	25.7	0.0
Cycle Q Clear(g_c), s	29.0	0.0	29.0				0.0	22.9	24.5	24.0	25.7	0.0
Prop In Lane	1.00		0.52				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	583	0	560				0	1412	438	483	2106	0
V/C Ratio(X)	1.05	0.00	1.26				0.00	0.95	1.28	1.02	0.61	0.00
Avail Cap(c_a), veh/h	583	0	560				0	1412	438	483	2106	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.42	0.42	0.58	0.58	0.00
Uniform Delay (d), s/veh	30.5	0.0	30.5				0.0	32.2	32.8	37.0	19.2	0.0
Incr Delay (d2), s/veh	50.9	0.0	132.9				0.0	7.8	133.0	35.7	0.8	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
%ile BackOfQ(50%),veh/ln	19.8	0.0	31.7				0.0	10.0	25.1	15.5	11.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.4	0.0	163.4				0.0	40.0	165.8	72.6	20.0	0.0
LnGrp LOS	F	A	F				A	D	F	F	C	A
Approach Vol, veh/h		1320						1904			1777	
Approach Delay, s/veh		125.4						77.0			34.5	
Approach LOS		F						E			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	28.0	29.0		33.0		57.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	24.0	24.5		29.0		52.5
Max Q Clear Time (g_c+I1), s	26.0	26.5		31.0		27.7
Green Ext Time (p_c), s	0.0	0.0		0.0		6.6

Intersection Summary	
HCM 6th Ctrl Delay	74.7
HCM 6th LOS	E

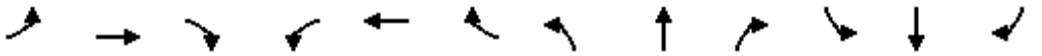
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	193	50	37	2	13	1435	57	1295	258
Future Volume (vph)	193	50	37	2	13	1435	57	1295	258
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	46.6	46.6	46.6	46.6	9.6	63.6	9.8	63.8	63.8
Total Split (%)	38.8%	38.8%	38.8%	38.8%	8.0%	53.0%	8.2%	53.2%	53.2%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	33.6	33.6		33.7	63.7	59.1	65.8	63.1	63.1
Actuated g/C Ratio	0.30	0.30		0.31	0.58	0.54	0.60	0.57	0.57
v/c Ratio	1.02	0.15		0.63	0.08	0.82	0.42	0.69	0.28
Control Delay	108.7	20.5		28.0	11.8	28.8	21.2	21.8	3.7
Queue Delay	0.0	0.0		0.0	0.0	1.3	0.0	0.0	0.0
Total Delay	108.7	20.5		28.0	11.8	30.1	21.2	21.8	3.7
LOS	F	C		C	B	C	C	C	A
Approach Delay		83.8		28.0		29.9		18.9	
Approach LOS		F		C		C		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 110.4	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 28.8	Intersection LOS: C
Intersection Capacity Utilization 95.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	50	26	37	2	284	13	1435	13	57	1295	258
Future Volume (veh/h)	193	50	26	37	2	284	13	1435	13	57	1295	258
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		1.00	1.00		0.98	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	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	201	52	24	39	2	231	14	1495	14	59	1349	174
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	289	336	155	80	24	372	182	1865	17	191	1914	852
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.54	0.54	0.04	0.56	0.56
Sat Flow, veh/h	1101	1164	537	146	83	1289	1619	3471	32	1619	3420	1523
Grp Volume(v), veh/h	201	0	76	272	0	0	14	736	773	59	1349	174
Grp Sat Flow(s),veh/h/ln	1101	0	1702	1518	0	0	1619	1710	1793	1619	1710	1523
Q Serve(g_s), s	12.1	0.0	3.6	6.5	0.0	0.0	0.4	37.9	38.0	1.7	31.1	6.2
Cycle Q Clear(g_c), s	28.7	0.0	3.6	16.6	0.0	0.0	0.4	37.9	38.0	1.7	31.1	6.2
Prop In Lane	1.00		0.32	0.14		0.85	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	289	0	491	476	0	0	182	919	963	191	1914	852
V/C Ratio(X)	0.70	0.00	0.15	0.57	0.00	0.00	0.08	0.80	0.80	0.31	0.70	0.20
Avail Cap(c_a), veh/h	397	0	658	625	0	0	231	919	963	206	1914	852
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.5	0.0	28.7	33.2	0.0	0.0	14.9	20.4	20.4	18.2	17.3	11.9
Incr Delay (d2), s/veh	1.3	0.0	0.1	0.4	0.0	0.0	0.1	7.3	7.0	0.3	2.2	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	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	1.5	6.2	0.0	0.0	0.1	15.5	16.3	0.6	11.6	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.8	0.0	28.7	33.6	0.0	0.0	14.9	27.7	27.4	18.6	19.5	12.4
LnGrp LOS	D	A	C	C	A	A	B	C	C	B	B	B
Approach Vol, veh/h		277			272			1523			1582	
Approach Delay, s/veh		38.2			33.6			27.4			18.7	
Approach LOS		D			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	63.6		36.0	6.3	66.0		36.0				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	5.2	58.2		* 42	5.0	58.4		* 42				
Max Q Clear Time (g_c+I1), s	3.7	40.0		30.7	2.4	33.1		18.6				
Green Ext Time (p_c), s	0.0	9.8		0.6	0.0	11.6		1.3				

Intersection Summary			
HCM 6th Ctrl Delay		24.9	
HCM 6th LOS		C	

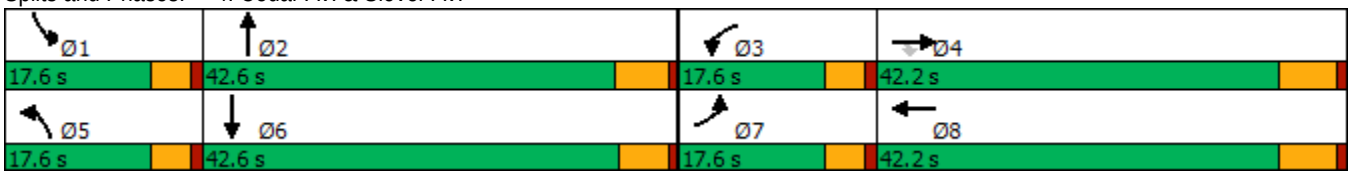
Notes

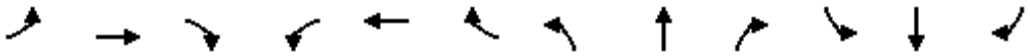
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	344	498	143	46	283	97	972	161	1039
Future Volume (vph)	344	498	143	46	283	97	972	161	1039
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	13.0	25.9	25.9	7.6	18.4	10.3	36.9	13.0	40.1
Actuated g/C Ratio	0.13	0.25	0.25	0.07	0.18	0.10	0.36	0.13	0.39
v/c Ratio	1.79	0.61	0.31	0.41	0.71	0.64	0.92	0.83	0.97
Control Delay	402.6	38.3	7.1	56.5	38.7	63.1	44.9	77.5	51.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	402.6	38.3	7.1	56.5	38.7	63.1	44.9	77.5	51.0
LOS	F	D	A	E	D	E	D	E	D
Approach Delay		161.0			40.4		46.4		54.2
Approach LOS		F			D		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 102.7	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.79	
Intersection Signal Delay: 76.8	Intersection LOS: E
Intersection Capacity Utilization 93.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	344	498	143	46	283	145	97	972	79	161	1039	160
Future Volume (veh/h)	344	498	143	46	283	145	97	972	79	161	1039	160
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	1.00		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	366	530	103	49	301	120	103	1034	82	171	1105	167
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	216	910	399	61	407	159	127	1141	90	199	1190	179
Arrive On Green	0.13	0.27	0.27	0.04	0.17	0.17	0.08	0.36	0.36	0.12	0.40	0.40
Sat Flow, veh/h	1619	3420	1501	1619	2394	932	1619	3209	254	1619	2973	448
Grp Volume(v), veh/h	366	530	103	49	213	208	103	551	565	171	634	638
Grp Sat Flow(s),veh/h/ln	1619	1710	1501	1619	1710	1616	1619	1710	1754	1619	1710	1711
Q Serve(g_s), s	13.0	13.1	5.3	2.9	11.5	11.9	6.1	29.8	29.8	10.1	34.4	34.7
Cycle Q Clear(g_c), s	13.0	13.1	5.3	2.9	11.5	11.9	6.1	29.8	29.8	10.1	34.4	34.7
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.15	1.00		0.26
Lane Grp Cap(c), veh/h	216	910	399	61	291	275	127	608	624	199	684	685
V/C Ratio(X)	1.69	0.58	0.26	0.80	0.73	0.76	0.81	0.91	0.91	0.86	0.93	0.93
Avail Cap(c_a), veh/h	216	1265	555	216	632	597	216	646	663	216	684	685
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	42.2	31.0	28.2	46.5	38.3	38.5	44.2	29.8	29.8	41.9	27.8	27.9
Incr Delay (d2), s/veh	331.0	0.6	0.3	8.8	3.5	4.2	4.6	15.9	15.7	24.3	18.8	19.5
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	24.8	5.1	1.8	1.3	4.8	4.8	2.5	13.9	14.3	5.2	16.6	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	373.2	31.6	28.5	55.2	41.8	42.7	48.8	45.8	45.5	66.2	46.7	47.4
LnGrp LOS	F	C	C	E	D	D	D	D	D	E	D	D
Approach Vol, veh/h		999			470			1219			1443	
Approach Delay, s/veh		156.5			43.6			45.9			49.3	
Approach LOS		F			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.6	40.4	8.3	32.1	12.2	44.8	17.6	22.8
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	12.1	31.8	4.9	15.1	8.1	36.7	15.0	13.9
Green Ext Time (p_c), s	0.0	2.8	0.0	3.4	0.0	0.4	0.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	73.6
HCM 6th LOS	E

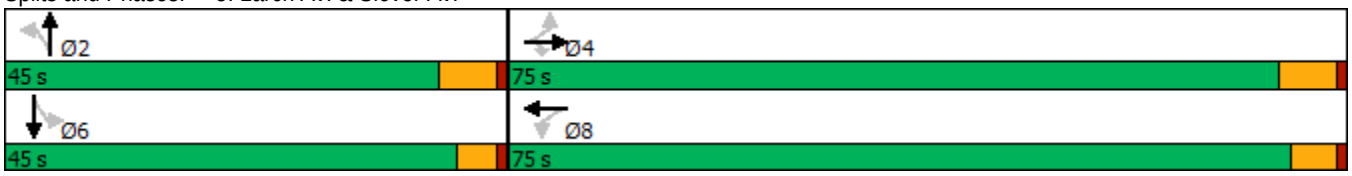
Notes

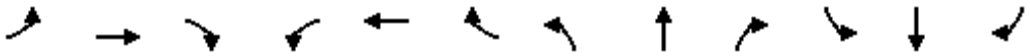
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	38	640	59	62	386	60	153	54	45
Future Volume (vph)	38	640	59	62	386	60	153	54	45
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	75.0	75.0	75.0	75.0	75.0	45.0	45.0	45.0	45.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None
Act Effct Green (s)	69.1	69.1	69.1	70.2	70.2		26.5		28.2
Actuated g/C Ratio	0.64	0.64	0.64	0.65	0.65		0.25		0.26
v/c Ratio	0.09	0.62	0.07	0.22	0.23		0.84		0.46
Control Delay	10.1	16.1	2.7	12.0	8.5		55.5		34.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	10.1	16.1	2.7	12.0	8.5		55.5		34.6
LOS	B	B	A	B	A		E		C
Approach Delay		14.7			8.9		55.5		34.6
Approach LOS		B			A		E		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 108.1	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 21.6	Intersection LOS: C
Intersection Capacity Utilization 77.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Larch Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	640	59	62	386	72	60	153	81	54	45	30
Future Volume (veh/h)	38	640	59	62	386	72	60	153	81	54	45	30
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		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	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	711	52	69	429	66	67	170	71	60	50	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	596	1198	995	371	1979	303	104	210	81	139	107	36
Arrive On Green	0.67	0.67	0.67	0.67	0.67	0.67	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	865	1800	1494	675	2973	455	288	971	377	413	496	165
Grp Volume(v), veh/h	42	711	52	69	246	249	308	0	0	130	0	0
Grp Sat Flow(s),veh/h/ln	865	1800	1494	675	1710	1718	1635	0	0	1075	0	0
Q Serve(g_s), s	2.1	22.9	1.3	6.6	5.9	6.0	7.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.1	22.9	1.3	29.5	5.9	6.0	19.0	0.0	0.0	11.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.26	0.22		0.23	0.46		0.15
Lane Grp Cap(c), veh/h	596	1198	995	371	1138	1144	395	0	0	282	0	0
V/C Ratio(X)	0.07	0.59	0.05	0.19	0.22	0.22	0.78	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	596	1198	995	371	1138	1144	643	0	0	519	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	8.4	9.7	6.1	17.8	6.8	6.9	39.6	0.0	0.0	36.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.2	0.1	1.1	0.4	0.4	3.4	0.0	0.0	1.2	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	0.4	7.7	0.3	1.1	1.8	1.9	7.8	0.0	0.0	3.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.7	11.9	6.2	19.0	7.3	7.3	43.0	0.0	0.0	37.2	0.0	0.0
LnGrp LOS	A	B	A	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		805			564			308			130	
Approach Delay, s/veh		11.3			8.7			43.0			37.2	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.9	76.1	28.9	76.1
Change Period (Y+Rc), s	6.2	6.2	* 6.2	* 6.2
Max Green Setting (Gmax), s	38.8	68.8	* 40	* 70
Max Q Clear Time (g_c+I1), s	21.0	24.9	13.2	31.5
Green Ext Time (p_c), s	1.7	5.4	0.8	3.4

Intersection Summary	
HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	518	4	2	419	12	6
Future Vol, veh/h	518	4	2	419	12	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	563	4	2	455	13	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	567	0	797	284
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	232	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1015	-	328	719
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	791	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1015	-	327	719
Mov Cap-2 Maneuver	-	-	-	-	431	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	789	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	497	-	-	1015	-
HCM Lane V/C Ratio	0.039	-	-	0.002	-
HCM Control Delay (s)	12.5	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	538	2	2	431	5	5
Future Vol, veh/h	538	2	2	431	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	585	2	2	468	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	587	0	824	294
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	238	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	998	-	315	708
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	998	-	314	708
Mov Cap-2 Maneuver	-	-	-	-	419	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	783	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	526	-	-	998	-
HCM Lane V/C Ratio	0.021	-	-	0.002	-
HCM Control Delay (s)	12	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	464	80	92	312	121	93
Future Vol, veh/h	464	80	92	312	121	93
Conflicting Peds, #/hr	0	1	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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	483	83	96	325	126	97

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	567	0	881	284
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	355	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1015	-	290	719
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1014	-	256	718
Mov Cap-2 Maneuver	-	-	-	-	383	-
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	606	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	480	-	-	1014	-
HCM Lane V/C Ratio	0.464	-	-	0.095	-
HCM Control Delay (s)	18.8	-	-	8.9	0.3
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	0	0	202	168	5
Future Vol, veh/h	13	0	0	202	168	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	0	0	220	183	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	406	186	188	0	-	0
Stage 1	186	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	605	861	1398	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	605	861	1398	-	-	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1398	-	605	-	-
HCM Lane V/C Ratio	-	-	0.023	-	-
HCM Control Delay (s)	0	-	11.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1	1	198	166	2
Future Vol, veh/h	4	1	1	198	166	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	1	1	215	180	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	398	181	182	0	-	0
Stage 1	181	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	611	867	1405	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	610	867	1405	-	-	-
Mov Cap-2 Maneuver	610	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	824	-	-	-	-	-

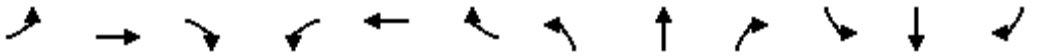
Approach	EB	NB	SB
HCM Control Delay, s	10.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1405	-	648	-	-
HCM Lane V/C Ratio	0.001	-	0.008	-	-
HCM Control Delay (s)	7.6	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	851	0	434	549	995	1341	627
Future Volume (vph)	851	0	434	549	995	1341	627
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	15.8	15.8	15.8	9.6	23.2	16.2	16.2
Total Split (s)	33.0	33.0	33.0	29.0	57.0	28.0	28.0
Total Split (%)	36.7%	36.7%	36.7%	32.2%	63.3%	31.1%	31.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	26.8	26.8	26.8	19.1	50.8	27.1	27.1
Actuated g/C Ratio	0.30	0.30	0.30	0.21	0.57	0.30	0.30
v/c Ratio	0.93	0.84	0.78	0.78	0.36	0.71	0.72
Control Delay	57.5	39.2	34.1	40.6	11.0	31.1	9.3
Queue Delay	0.0	0.0	0.0	0.1	0.5	0.0	0.0
Total Delay	57.5	39.2	34.1	40.7	11.5	31.1	9.3
LOS	E	D	C	D	B	C	A
Approach Delay		44.1			21.9	24.2	
Approach LOS		D			C	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 28.8	Intersection LOS: C
Intersection Capacity Utilization 139.1%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	851	0	434	549	995	0	0	1341	627
Future Volume (veh/h)	0	0	0	851	0	434	549	995	0	0	1341	627
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				970	0	159	578	1047	0	0	1412	495
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1062	0	473	670	2965	0	0	2150	530
Arrive On Green				0.29	0.00	0.29	0.19	0.57	0.00	0.00	0.33	0.33
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				970	0	159	578	1047	0	0	1412	495
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				23.0	0.0	6.9	14.2	9.6	0.0	0.0	16.4	26.5
Cycle Q Clear(g_c), s				23.0	0.0	6.9	14.2	9.6	0.0	0.0	16.4	26.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1062	0	473	670	2965	0	0	2150	530
V/C Ratio(X)				0.91	0.00	0.34	0.86	0.35	0.00	0.00	0.66	0.93
Avail Cap(c_a), veh/h				1107	0	493	964	2965	0	0	2150	530
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.3	0.0	24.6	34.8	10.2	0.0	0.0	25.5	28.9
Incr Delay (d2), s/veh				11.2	0.0	0.4	4.2	0.3	0.0	0.0	1.6	25.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.8	0.0	2.5	6.0	3.1	0.0	0.0	6.0	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				41.5	0.0	25.0	39.0	10.6	0.0	0.0	27.1	54.8
LnGrp LOS				D	A	C	D	B	A	A	C	D
Approach Vol, veh/h					1129			1625			1907	
Approach Delay, s/veh					39.2			20.7			34.3	
Approach LOS					D			C			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		57.0			21.6	35.4		31.9				
Change Period (Y+Rc), s		6.2			4.6	6.2		5.8				
Max Green Setting (Gmax), s		50.8			24.4	21.8		27.2				
Max Q Clear Time (g_c+I1), s		11.6			16.2	28.5		25.0				
Green Ext Time (p_c), s		7.8			0.8	0.0		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			30.7									
HCM 6th LOS			C									

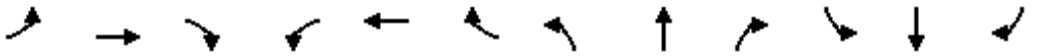
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	429	0	703	1115	755	559	1634
Future Volume (vph)	429	0	703	1115	755	559	1634
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	38.0	38.0	38.0	57.0	57.0	25.0	82.0
Total Split (%)	31.7%	31.7%	31.7%	47.5%	47.5%	20.8%	68.3%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.3	31.3	31.3	50.8	50.8	20.4	75.8
Actuated g/C Ratio	0.26	0.26	0.26	0.43	0.43	0.17	0.64
v/c Ratio	0.92	0.91	0.88	0.76	0.54	1.00	0.76
Control Delay	70.1	60.2	56.4	30.4	4.6	86.9	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	47.9
Total Delay	70.1	60.2	56.4	30.4	4.6	86.9	66.3
LOS	E	E	E	C	A	F	E
Approach Delay		62.3		24.6			71.5
Approach LOS		E		C			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.1	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 52.6	Intersection LOS: D
Intersection Capacity Utilization 139.1%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	0	703	0	0	0	0	1115	755	559	1634	0
Future Volume (veh/h)	429	0	703	0	0	0	0	1115	755	559	1634	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	674	0	382				0	1051	834	601	1757	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	935	0	416				0	1631	1380	605	2312	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	3800	3217	3510	3705	0
Grp Volume(v), veh/h	674	0	382				0	1051	834	601	1757	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1608	1755	1805	0
Q Serve(g_s), s	20.1	0.0	27.3				0.0	25.8	23.7	20.2	40.4	0.0
Cycle Q Clear(g_c), s	20.1	0.0	27.3				0.0	25.8	23.7	20.2	40.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	935	0	416				0	1631	1380	605	2312	0
V/C Ratio(X)	0.72	0.00	0.92				0.00	0.64	0.60	0.99	0.76	0.00
Avail Cap(c_a), veh/h	984	0	438				0	1631	1380	605	2312	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	42.7				0.0	26.7	26.0	48.9	14.9	0.0
Incr Delay (d2), s/veh	2.5	0.0	23.7				0.0	2.0	2.0	34.8	2.4	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
%ile BackOfQ(50%),veh/ln	8.9	0.0	13.2				0.0	11.3	8.8	11.4	14.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	0.0	66.4				0.0	28.6	28.0	83.7	17.3	0.0
LnGrp LOS	D	A	E				A	C	C	F	B	A
Approach Vol, veh/h		1056						1885			2358	
Approach Delay, s/veh		51.1						28.4			34.3	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	57.0		36.4		82.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	50.8		32.2		75.8
Max Q Clear Time (g_c+I1), s	22.2	27.8		29.3		42.4
Green Ext Time (p_c), s	0.0	11.5		1.3		16.7

Intersection Summary		
HCM 6th Ctrl Delay		35.5
HCM 6th LOS		D

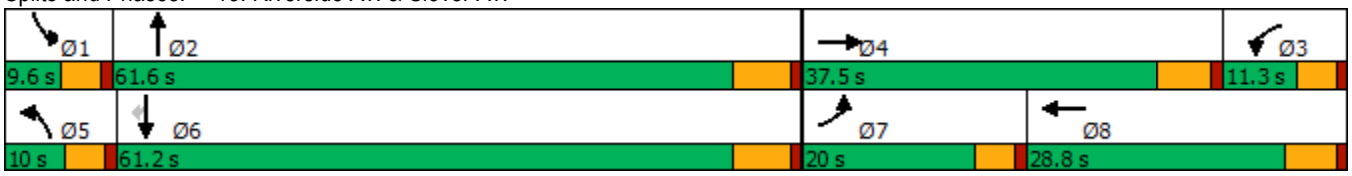
Notes

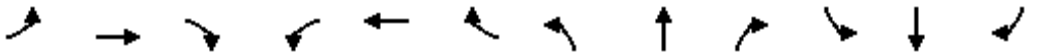
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	369	36	23	17	108	1485	31	1900	408
Future Volume (vph)	369	36	23	17	108	1485	31	1900	408
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	20.0	37.5	11.3	28.8	10.0	61.6	9.6	61.2	61.2
Total Split (%)	16.7%	31.3%	9.4%	24.0%	8.3%	51.3%	8.0%	51.0%	51.0%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	14.9	21.4	8.9	12.4	5.5	60.2	5.0	55.5	55.5
Actuated g/C Ratio	0.14	0.20	0.08	0.12	0.05	0.57	0.05	0.52	0.52
v/c Ratio	0.80	0.22	0.16	0.16	1.24	0.79	0.38	1.01	0.45
Control Delay	58.4	12.2	49.0	18.0	214.7	24.6	65.5	50.8	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	12.2	49.0	18.0	214.7	24.6	65.5	50.8	8.4
LOS	E	B	D	B	F	C	E	D	A
Approach Delay		44.7		26.0		37.3		43.6	
Approach LOS		D		C		D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.9	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.24	
Intersection Signal Delay: 41.2	Intersection LOS: D
Intersection Capacity Utilization 91.5%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	36	120	23	17	48	108	1485	26	31	1900	408
Future Volume (veh/h)	369	36	120	23	17	48	108	1485	26	31	1900	408
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		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	393	38	122	24	18	34	115	1580	24	33	2021	365
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	460	189	168	205	177	158	92	1970	30	53	1975	837
Arrive On Green	0.13	0.10	0.10	0.11	0.10	0.10	0.05	0.54	0.54	0.03	0.52	0.52
Sat Flow, veh/h	3510	1805	1601	1810	1805	1610	1810	3640	55	1810	3800	1610
Grp Volume(v), veh/h	393	38	122	24	18	34	115	783	821	33	2021	365
Grp Sat Flow(s),veh/h/ln	1755	1805	1601	1810	1805	1610	1810	1805	1890	1810	1900	1610
Q Serve(g_s), s	11.6	2.0	7.8	1.3	1.0	2.1	5.4	37.2	37.3	1.9	55.0	14.9
Cycle Q Clear(g_c), s	11.6	2.0	7.8	1.3	1.0	2.1	5.4	37.2	37.3	1.9	55.0	14.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	460	189	168	205	177	158	92	977	1023	53	1975	837
V/C Ratio(X)	0.85	0.20	0.73	0.12	0.10	0.22	1.25	0.80	0.80	0.62	1.02	0.44
Avail Cap(c_a), veh/h	511	541	479	205	392	350	92	977	1023	85	1975	837
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	45.0	43.3	45.9	42.2	43.5	44.0	50.2	19.7	19.7	50.8	25.4	15.8
Incr Delay (d2), s/veh	12.3	0.5	5.9	0.3	0.2	0.7	173.6	6.9	6.7	4.4	26.5	1.7
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	5.6	0.9	3.3	0.6	0.4	0.8	6.8	15.3	16.0	0.9	28.5	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	43.9	51.9	42.4	43.7	44.7	223.8	26.5	26.4	55.1	51.9	17.4
LnGrp LOS	E	D	D	D	D	D	F	C	C	E	F	B
Approach Vol, veh/h		553			76			1719			2419	
Approach Delay, s/veh		55.2			43.7			39.7			46.7	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	63.5	17.8	16.9	10.0	61.2	18.5	16.2
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	5.0	55.4	6.7	* 32	5.4	55.0	15.4	23.0
Max Q Clear Time (g_c+I1), s	3.9	39.3	3.3	9.8	7.4	57.0	13.6	4.1
Green Ext Time (p_c), s	0.0	9.2	0.0	0.8	0.0	0.0	0.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	45.1
HCM 6th LOS	D

Notes

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

APPENDIX 6.3:

OPENING YEAR CUMULATIVE (2020) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		OY WP
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Slover Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 1**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **2** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **11,938** vpd Minor Street Future ADT = **114** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	8,000	5,600	2,400	1,680
2 + **11,938** / *1* **114**	9,600	6,720 *	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	12,000	8,400	1,200	850
2 + **11,938** / *1* **114**	14,400	10,080 *	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 7% B: 13%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		OY WP
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Slover Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 2**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **2** lane

Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **11,906** vpd

Minor Street Future ADT = **63** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	8,000	5,600	2,400	1,680
2 + **11,906** / *1* **63**	9,600	6,720 *	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	12,000	8,400	1,200	850
2 + **11,906** / *1* **63**	14,400	10,080 *	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 4% B: 7%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		OY WP
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Cactus Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 3**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **4,828** vpd Minor Street Future ADT = **81** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **4,828**	*1* **81**	8,000	5,600	2,400	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **4,828**	*1* **81**	12,000	8,400	1,200	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,400	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
	XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** 5% **B** 9%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		OY WP
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Cactus Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 4**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **4,729** vpd Minor Street Future ADT = **36** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **4,729** / *1* **36**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **4,729** / *1* **36**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 2% B: 4%				

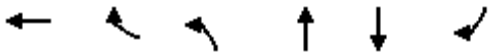
Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

APPENDIX 6.4:

OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

This Page Intentionally Left Blank



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	569	323	448	1451	1608	911
v/c Ratio	1.35	0.76	1.24	0.61	0.74	0.90
Control Delay	203.4	38.0	145.5	2.8	24.8	22.5
Queue Delay	2.3	0.0	0.0	13.6	9.2	0.0
Total Delay	205.7	38.0	145.5	16.4	34.0	22.5
Queue Length 50th (ft)	~453	143	~300	1	275	190
Queue Length 95th (ft)	#667	#277	m#366	m1	332	#505
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	421	425	361	2386	2161	1011
Starvation Cap Reductn	0	0	0	941	0	0
Spillback Cap Reductn	86	0	0	0	535	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.70	0.76	1.24	1.00	0.99	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	532	570	1289	608	479	1625
v/c Ratio	1.07	1.21	0.84	0.67	0.97	0.73
Control Delay	94.8	142.5	35.6	6.7	48.4	20.4
Queue Delay	0.0	0.0	0.5	0.0	0.0	48.7
Total Delay	94.8	142.5	36.1	6.7	48.4	69.2
Queue Length 50th (ft)	~357	~408	250	3	280	465
Queue Length 95th (ft)	#563	#622	308	90	m#380	m497
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	495	471	1541	902	501	2226
Starvation Cap Reductn	0	0	0	0	0	993
Spillback Cap Reductn	0	0	48	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.07	1.21	0.86	0.67	0.96	1.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

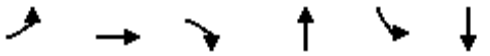
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	475	467	418	587	1065	1437	673
v/c Ratio	0.93	0.84	0.80	0.98	0.36	0.64	0.68
Control Delay	57.5	39.2	35.2	69.6	11.1	26.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	57.5	39.2	35.2	69.6	11.6	26.4	5.8
Queue Length 50th (ft)	272	219	178	173	113	197	0
Queue Length 95th (ft)	#469	#407	#338	#280	141	236	79
Internal Link Dist (ft)		1238			270	316	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	521	560	531	602	2942	2247	997
Starvation Cap Reductn	0	0	0	0	1344	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.83	0.79	0.98	0.67	0.64	0.68

Intersection Summary

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



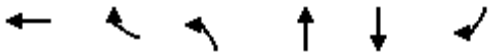
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	421	407	405	2038	613	1770
v/c Ratio	1.00	0.93	0.90	1.00dr	1.18	0.79
Control Delay	78.6	55.3	50.7	32.2	133.9	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.6
Total Delay	78.6	55.3	50.7	32.2	133.9	63.8
Queue Length 50th (ft)	252	196	185	360	~217	357
Queue Length 95th (ft)	#452	#394	#368	#482	#322	455
Internal Link Dist (ft)		1268		1816		270
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	439	449	2171	521	2238
Starvation Cap Reductn	0	0	0	0	0	687
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.93	0.90	0.94	1.18	1.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	454	393	435	1719	1355	694
v/c Ratio	0.96	0.83	1.03	0.76	0.75	0.72
Control Delay	65.8	42.3	50.1	18.3	28.8	8.3
Queue Delay	0.0	0.0	0.0	48.5	0.2	0.0
Total Delay	65.8	42.3	50.1	66.8	29.1	8.3
Queue Length 50th (ft)	263	185	~267	542	245	27
Queue Length 95th (ft)	#466	#349	m#254	m535	298	142
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	476	474	424	2272	1815	962
Starvation Cap Reductn	0	0	0	987	0	0
Spillback Cap Reductn	0	0	0	0	79	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.83	1.03	1.34	0.78	0.72

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	640	598	1321	647	491	1285
v/c Ratio	1.16	1.08	0.94	0.72	1.02	0.61
Control Delay	120.9	90.2	45.6	7.9	59.3	5.6
Queue Delay	4.5	12.0	7.0	0.0	0.0	4.2
Total Delay	125.4	102.2	52.5	7.9	59.3	9.9
Queue Length 50th (ft)	~457	~378	268	4	~302	19
Queue Length 95th (ft)	#674	#596	#360	102	m#433	m26
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	552	554	1412	897	481	2105
Starvation Cap Reductn	0	0	0	0	0	726
Spillback Cap Reductn	213	201	80	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.89	1.69	0.99	0.72	1.02	0.93

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

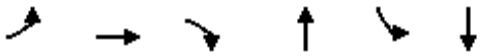
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	431	418	396	646	1707	1272	588
v/c Ratio	0.86	0.90	0.77	1.06	0.57	0.56	0.62
Control Delay	48.7	52.6	33.1	91.0	13.2	24.8	5.3
Queue Delay	0.0	0.0	0.0	0.0	5.7	0.0	0.0
Total Delay	48.7	52.6	33.1	91.0	18.9	24.8	5.3
Queue Length 50th (ft)	238	236	163	~213	215	169	0
Queue Length 95th (ft)	#406	#421	#306	#320	257	205	71
Internal Link Dist (ft)		1163			240	366	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	526	491	536	609	2974	2272	945
Starvation Cap Reductn	0	0	0	0	1202	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.85	0.74	1.06	0.96	0.56	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	443	433	396	2590	540	1375
v/c Ratio	1.05	1.05	0.88	1.19	1.04	0.61
Control Delay	91.8	91.4	47.7	115.5	88.2	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	20.1
Total Delay	91.8	91.4	47.7	115.5	88.2	32.1
Queue Length 50th (ft)	~291	~284	177	~634	~172	228
Queue Length 95th (ft)	#484	#487	#355	#731	#273	291
Internal Link Dist (ft)		1277		1822		240
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	412	449	2175	521	2238
Starvation Cap Reductn	0	0	0	0	0	897
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.05	1.05	0.88	1.19	1.04	1.03

Intersection Summary

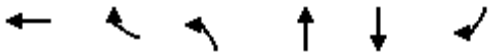
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

APPENDIX 6.5:

OPENING YEAR CUMULATIVE (2020) WITH PROJECT CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

This Page Intentionally Left Blank



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	569	323	455	1451	1609	911
v/c Ratio	1.35	0.76	1.26	0.61	0.74	0.90
Control Delay	203.4	38.0	153.5	2.8	24.8	22.6
Queue Delay	2.3	0.0	0.0	14.0	9.2	0.0
Total Delay	205.7	38.0	153.5	16.8	34.0	22.6
Queue Length 50th (ft)	~453	143	~310	1	276	191
Queue Length 95th (ft)	#667	#277	m#371	m1	332	#506
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	421	425	361	2386	2161	1010
Starvation Cap Reductn	0	0	0	943	0	0
Spillback Cap Reductn	86	0	0	0	534	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.70	0.76	1.26	1.01	0.99	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	532	591	1295	608	479	1626
v/c Ratio	1.07	1.25	0.84	0.67	0.97	0.73
Control Delay	94.8	160.2	35.8	6.7	48.4	20.5
Queue Delay	0.0	0.0	0.5	0.0	0.0	48.7
Total Delay	94.8	160.2	36.3	6.7	48.4	69.2
Queue Length 50th (ft)	~357	~435	252	3	280	466
Queue Length 95th (ft)	#563	#653	309	90	m#380	m497
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	495	471	1541	902	501	2226
Starvation Cap Reductn	0	0	0	0	0	993
Spillback Cap Reductn	0	0	48	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.07	1.25	0.87	0.67	0.96	1.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

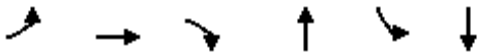
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	481	473	418	587	1065	1438	673
v/c Ratio	0.94	0.85	0.79	0.98	0.36	0.64	0.68
Control Delay	58.7	39.9	34.9	70.1	11.1	26.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	58.7	39.9	34.9	70.1	11.7	26.4	5.8
Queue Length 50th (ft)	277	225	178	173	113	197	0
Queue Length 95th (ft)	#476	#415	#338	#280	141	236	79
Internal Link Dist (ft)		1238			270	316	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	519	559	530	601	2936	2243	996
Starvation Cap Reductn	0	0	0	0	1344	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.85	0.79	0.98	0.67	0.64	0.68

Intersection Summary

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



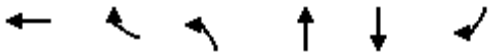
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	421	407	405	2043	613	1785
v/c Ratio	1.00	0.93	0.90	1.00dr	1.19	0.80
Control Delay	78.6	55.3	50.7	32.2	137.5	16.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.6
Total Delay	78.6	55.3	50.7	32.2	137.5	64.0
Queue Length 50th (ft)	252	196	185	360	~218	364
Queue Length 95th (ft)	#452	#394	#368	#483	#323	464
Internal Link Dist (ft)		1268		1816		270
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	439	449	2175	517	2238
Starvation Cap Reductn	0	0	0	0	0	681
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.93	0.90	0.94	1.19	1.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	454	393	457	1720	1356	694
v/c Ratio	0.96	0.83	1.08	0.76	0.75	0.72
Control Delay	65.8	42.3	68.9	18.3	28.9	8.5
Queue Delay	0.0	0.0	0.0	48.5	0.2	0.0
Total Delay	65.8	42.3	68.9	66.8	29.1	8.5
Queue Length 50th (ft)	263	185	~293	543	245	29
Queue Length 95th (ft)	#466	#349	m#283	m518	299	146
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	476	474	424	2272	1815	959
Starvation Cap Reductn	0	0	0	991	0	0
Spillback Cap Reductn	0	0	0	0	79	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.83	1.08	1.34	0.78	0.72

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	649	597	1344	647	491	1286
v/c Ratio	1.18	1.08	0.95	0.72	1.02	0.61
Control Delay	127.1	89.6	47.9	7.9	59.3	5.6
Queue Delay	4.5	12.7	13.9	0.0	0.0	4.3
Total Delay	131.6	102.3	61.8	7.9	59.3	9.9
Queue Length 50th (ft)	~468	~377	274	4	~302	19
Queue Length 95th (ft)	#687	#595	#370	102	m#432	m26
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	552	554	1412	897	481	2105
Starvation Cap Reductn	0	0	0	0	0	726
Spillback Cap Reductn	213	201	98	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.91	1.69	1.02	0.72	1.02	0.93

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

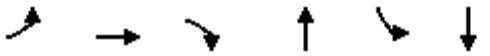
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	434	420	396	646	1708	1273	588
v/c Ratio	0.86	0.89	0.77	1.06	0.58	0.56	0.62
Control Delay	48.6	52.3	32.8	92.1	13.3	24.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	6.2	0.0	0.0
Total Delay	48.6	52.3	32.8	92.1	19.5	24.9	5.3
Queue Length 50th (ft)	241	237	163	~213	215	170	0
Queue Length 95th (ft)	#411	#425	#306	#320	258	205	71
Internal Link Dist (ft)		1163			240	366	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	525	490	535	607	2965	2265	944
Starvation Cap Reductn	0	0	0	0	1201	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.86	0.74	1.06	0.97	0.56	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	443	433	396	2606	540	1380
v/c Ratio	1.05	1.05	0.88	1.20	1.04	0.62
Control Delay	91.8	91.4	47.7	118.4	88.2	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	20.5
Total Delay	91.8	91.4	47.7	118.4	88.2	32.6
Queue Length 50th (ft)	~291	~284	177	~641	~172	231
Queue Length 95th (ft)	#484	#487	#355	#738	#273	293
Internal Link Dist (ft)		1277		1822		240
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	412	449	2176	521	2238
Starvation Cap Reductn	0	0	0	0	0	894
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.05	1.05	0.88	1.20	1.04	1.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

APPENDIX 6.6:

OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	7315	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	2187
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.91
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	58.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6898	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1650
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7008	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2077
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.87
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	34.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6773	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1561
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6779	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1954
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7018	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2040
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	33.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	7627	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	2260
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.94
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	57.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	39.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	7368	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1747
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	26.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7439	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2224
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	57.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	38.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6790	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1534
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6757	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1891
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.79
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	29.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6891	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.80
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

APPENDIX 6.7:

OPENING YEAR CUMULATIVE (2020) WITH PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	7321	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	2188
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.91
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	58.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6898	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1650
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7020	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2080
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.87
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	34.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6793	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1566
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6779	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1954
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7022	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2041
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	33.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	7648	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	2266
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.94
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	56.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	39.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	7368	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1747
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	26.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7444	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2225
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	57.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	38.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6797	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1536
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume (V), veh/h	6757	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.92	Flow Rate (v_p), pc/h/ln	1891
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.79
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	29.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6904	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1932
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

APPENDIX 6.8:

OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT CONDITIONS RAMP JUNCTION ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6149	1166
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.909	0.901
Flow Rate (v_i), pc/h	7353	1407
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.91	0.67

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	32.0
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.524
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2206
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	55.3
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.042	Outer Lanes Freeway Speed (S_O), mi/h	63.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2941	Ramp Junction Speed (S), mi/h	59.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4348	Average Density (D), pc/mi/ln	36.9
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6898	749
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.909	0.917
Flow Rate (v_i), pc/h	8248	888
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.69	0.42

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	19.8
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.378
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1623
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	59.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	74.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	3378	Ramp Junction Speed (S), mi/h	67.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	19.6
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7008	1102
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.901
Flow Rate (vi),pc/h	8307	1329
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.69	0.63

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	25.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.418
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1499
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.3
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.8
Flow in Lanes 1 and 2 (v12), pc/h	3647	Ramp Junction Speed (S), mi/h	64.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.7
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6773	933
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	6.00	14.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.877
Flow Rate (v_i), pc/h	7807	1156
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.65	0.55

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	19.8
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.402
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1477
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	58.7
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	74.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	3375	Ramp Junction Speed (S), mi/h	66.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	18.7
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5840	939
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.952	0.901
Flow Rate (v_i), pc/h	6668	1133
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.81	0.54

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	29.5
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.422
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2001
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.076	Outer Lanes Freeway Speed (S_O), mi/h	64.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2667	Ramp Junction Speed (S), mi/h	61.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3800	Average Density (D), pc/mi/ln	31.8
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5942	1076
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.870
Flow Rate (vi),pc/h	6784	1344
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.85	0.64

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	29.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.442
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2035
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.050	Outer Lanes Freeway Speed (SO), mi/h	64.5
Flow in Lanes 1 and 2 (v12), pc/h	2714	Ramp Junction Speed (S), mi/h	60.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4058	Average Density (D), pc/mi/ln	33.4
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6601	1026
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.909	0.935
Flow Rate (v_i), pc/h	7893	1193
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.95	0.57

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	32.1
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.525
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2368
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	55.3
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.069	Outer Lanes Freeway Speed (S_O), mi/h	63.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3157	Ramp Junction Speed (S), mi/h	59.1
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4350	Average Density (D), pc/mi/ln	38.4
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	7368	767
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.917	0.935
Flow Rate (v_i), pc/h	8734	892
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.73	0.42

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	21.3
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.378
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1728
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	59.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	74.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3550	Ramp Junction Speed (S), mi/h	67.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	20.8
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7439	1010
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.909
Flow Rate (vi),pc/h	8895	1208
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.74	0.58

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	26.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.407
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1666
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.2
Flow in Lanes 1 and 2 (v12), pc/h	3784	Ramp Junction Speed (S), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	27.4
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6790	1061
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	12.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.893
Flow Rate (v_i), pc/h	7601	1291
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.63	0.61

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	19.8
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.414
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1407
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	58.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	75.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	3379	Ramp Junction Speed (S), mi/h	66.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	18.2
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 NP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5729	1028
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.935
Flow Rate (v_i), pc/h	6413	1195
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.79	0.57

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	29.2
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.415
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1924
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	58.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.068	Outer Lanes Freeway Speed (S_O), mi/h	64.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2565	Ramp Junction Speed (S), mi/h	61.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3760	Average Density (D), pc/mi/ln	30.9
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information			
Analyst	cP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5642	1250
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	2.00	8.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.980	0.926
Flow Rate (vi),pc/h	6258	1467
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.80	0.70

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	28.6
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.423
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1878
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.034	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	2503	Ramp Junction Speed (S), mi/h	61.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3970	Average Density (D), pc/mi/ln	31.5
Level of Service (LOS)	D		

APPENDIX 6.9:

OPENING YEAR CUMULATIVE (2020) WITH PROJECT CONDITIONS RAMP JUNCTION ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6149	1172
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.909	0.901
Flow Rate (v_i), pc/h	7353	1414
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.91	0.67

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	32.0
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.527
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2206
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	55.2
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.041	Outer Lanes Freeway Speed (S_O), mi/h	63.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2941	Ramp Junction Speed (S), mi/h	59.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4355	Average Density (D), pc/mi/ln	37.0
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6898	749
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.909	0.917
Flow Rate (v_i), pc/h	8248	888
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.69	0.42

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	19.8
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.378
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1623
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	59.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	74.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	3378	Ramp Junction Speed (S), mi/h	67.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	19.6
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7020	1114
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.909
Flow Rate (vi),pc/h	8321	1332
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.69	0.63

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	25.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.418
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1501
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.3
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.8
Flow in Lanes 1 and 2 (v12), pc/h	3654	Ramp Junction Speed (S), mi/h	64.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.7
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6793	953
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	6.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.885
Flow Rate (v_i), pc/h	7830	1170
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.65	0.56

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	19.9
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.403
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1480
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	58.7
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	74.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	3391	Ramp Junction Speed (S), mi/h	66.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	18.7
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5840	939
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.952	0.901
Flow Rate (v_i), pc/h	6668	1133
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.81	0.54

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	29.5
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.422
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2001
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.076	Outer Lanes Freeway Speed (S_O), mi/h	64.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2667	Ramp Junction Speed (S), mi/h	61.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3800	Average Density (D), pc/mi/ln	31.8
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5942	1080
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.870
Flow Rate (vi),pc/h	6784	1349
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.85	0.64

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	29.3
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.443
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2035
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.049	Outer Lanes Freeway Speed (SO), mi/h	64.5
Flow in Lanes 1 and 2 (v12), pc/h	2714	Ramp Junction Speed (S), mi/h	60.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4063	Average Density (D), pc/mi/ln	33.4
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6601	1047
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	6.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.909	0.943
Flow Rate (v_i), pc/h	7893	1207
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.95	0.57

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	32.2
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.529
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2368
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	55.2
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.067	Outer Lanes Freeway Speed (S_O), mi/h	63.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3157	Ramp Junction Speed (S), mi/h	59.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4364	Average Density (D), pc/mi/ln	38.6
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	7368	767
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.917	0.935
Flow Rate (v_i), pc/h	8734	892
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.73	0.42

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	21.3
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.378
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1728
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	59.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	74.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3550	Ramp Junction Speed (S), mi/h	67.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	20.8
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7444	1015
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	10.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.909
Flow Rate (vi),pc/h	8901	1214
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.74	0.58

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	26.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.407
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1666
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.2
Flow in Lanes 1 and 2 (v12), pc/h	3789	Ramp Junction Speed (S), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	27.4
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6797	1028
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.901
Flow Rate (v_i), pc/h	7680	1240
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.64	0.59

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	19.8
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (D_S)	0.410
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1434
Distance to Downstream Ramp (L_{DOWN}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	58.5
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	75.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3378	Ramp Junction Speed (S), mi/h	66.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	18.4
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information

Analyst	CP	Date	4/17/2018
Agency	Urban Crossroads, Inc.	Analysis Year	2020 WP
Jurisdiction	Urban Crossroads, Inc.	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5729	1028
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.935
Flow Rate (v_i), pc/h	6413	1195
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.79	0.57

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	29.2
Distance to Upstream Ramp (L_{UP}), ft	-	Speed Index (M_S)	0.415
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1924
Distance to Downstream Ramp (L_{DOWN}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	58.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.068	Outer Lanes Freeway Speed (S_O), mi/h	64.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2565	Ramp Junction Speed (S), mi/h	61.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3760	Average Density (D), pc/mi/ln	30.9
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year Cumulative (2020) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5642	1263
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	2.00	8.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.980	0.926
Flow Rate (vi),pc/h	6258	1483
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.81	0.71

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	28.7
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.427
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1878
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.032	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	2503	Ramp Junction Speed (S), mi/h	61.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3986	Average Density (D), pc/mi/ln	31.6
Level of Service (LOS)	D		

APPENDIX 6.10:

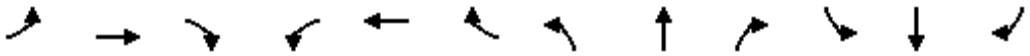
OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

This Page Intentionally Left Blank

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	567	4	487	1237	584	460	1560
Future Volume (vph)	567	4	487	1237	584	460	1560
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	24.1	24.1	24.1	28.2	28.2	25.2	57.4
Actuated g/C Ratio	0.27	0.27	0.27	0.31	0.31	0.28	0.64
v/c Ratio	0.84	0.83	0.76	0.79	0.66	0.95	0.71
Control Delay	48.0	45.0	35.8	33.2	6.4	45.1	19.0
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	48.6
Total Delay	48.0	45.0	35.8	33.4	6.4	45.1	67.6
LOS	D	D	D	C	A	D	E
Approach Delay		43.1		24.8			62.5
Approach LOS		D		C			E

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 44.3	Intersection LOS: D
Intersection Capacity Utilization 122.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	567	4	487	0	0	0	0	1237	584	460	1560	0
Future Volume (veh/h)	567	4	487	0	0	0	0	1237	584	460	1560	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	732	0	300				0	1289	532	479	1625	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	870	0	387				0	1779	552	503	2401	0
Arrive On Green	0.24	0.00	0.24				0.00	0.34	0.34	0.37	0.88	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	732	0	300				0	1289	532	479	1625	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1610	1810	1805	0
Q Serve(g_s), s	17.3	0.0	15.7				0.0	19.6	29.2	23.2	11.6	0.0
Cycle Q Clear(g_c), s	17.3	0.0	15.7				0.0	19.6	29.2	23.2	11.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	870	0	387				0	1779	552	503	2401	0
V/C Ratio(X)	0.84	0.00	0.77				0.00	0.72	0.96	0.95	0.68	0.00
Avail Cap(c_a), veh/h	1046	0	465				0	1779	552	503	2401	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.24	0.24	0.59	0.59	0.00
Uniform Delay (d), s/veh	32.5	0.0	31.9				0.0	25.9	29.0	27.8	2.4	0.0
Incr Delay (d2), s/veh	5.4	0.0	6.7				0.0	0.6	12.0	20.1	0.9	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
%ile BackOfQ(50%),veh/ln	7.7	0.0	6.4				0.0	7.6	12.2	11.2	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	0.0	38.6				0.0	26.5	41.0	47.9	3.3	0.0
LnGrp LOS	D	A	D				A	C	D	D	A	A
Approach Vol, veh/h		1032						1821			2104	
Approach Delay, s/veh		38.1						30.7			13.5	
Approach LOS		D						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.0	35.4		25.6		64.4
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	25.2	31.2		19.3		13.6
Green Ext Time (p_c), s	0.0	0.0		2.3		10.6

Intersection Summary			
HCM 6th Ctrl Delay			24.9
HCM 6th LOS			C

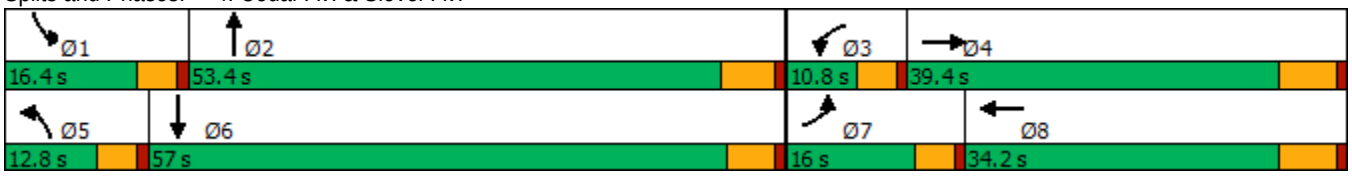
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	241	141	18	172	85	1072	127	1110
Future Volume (vph)	241	141	18	172	85	1072	127	1110
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	16.0	39.4	10.8	34.2	12.8	53.4	16.4	57.0
Total Split (%)	13.3%	32.8%	9.0%	28.5%	10.7%	44.5%	13.7%	47.5%
Yellow Time (s)	3.6	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	11.2	26.2	5.6	14.4	8.1	47.3	11.5	51.1
Actuated g/C Ratio	0.11	0.25	0.05	0.14	0.08	0.45	0.11	0.48
v/c Ratio	0.79	0.24	0.24	0.62	0.75	0.79	0.79	0.88
Control Delay	64.9	27.2	57.6	27.8	83.8	30.7	77.8	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	64.9	27.2	57.6	27.8	83.8	30.7	77.8	33.0
LOS	E	C	E	C	F	C	E	C
Approach Delay		48.3		29.4		34.4		37.0
Approach LOS		D		C		C		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.7	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 36.7	Intersection LOS: D
Intersection Capacity Utilization 79.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	141	49	18	172	155	85	1072	39	127	1110	204
Future Volume (veh/h)	241	141	49	18	172	155	85	1072	39	127	1110	204
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		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	262	153	40	20	187	146	92	1165	42	138	1207	219
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	322	594	151	35	261	192	114	1487	54	165	1370	247
Arrive On Green	0.10	0.22	0.22	0.02	0.14	0.14	0.07	0.44	0.44	0.10	0.47	0.47
Sat Flow, veh/h	3141	2700	686	1619	1876	1385	1619	3367	121	1619	2894	522
Grp Volume(v), veh/h	262	95	98	20	169	164	92	592	615	138	710	716
Grp Sat Flow(s),veh/h/ln	1570	1710	1675	1619	1710	1551	1619	1710	1778	1619	1710	1706
Q Serve(g_s), s	8.1	4.5	4.8	1.2	9.3	10.0	5.5	29.1	29.2	8.3	36.9	37.6
Cycle Q Clear(g_c), s	8.1	4.5	4.8	1.2	9.3	10.0	5.5	29.1	29.2	8.3	36.9	37.6
Prop In Lane	1.00		0.41	1.00		0.89	1.00		0.07	1.00		0.31
Lane Grp Cap(c), veh/h	322	377	369	35	238	216	114	755	785	165	809	807
V/C Ratio(X)	0.81	0.25	0.26	0.58	0.71	0.76	0.81	0.78	0.78	0.84	0.88	0.89
Avail Cap(c_a), veh/h	363	576	564	102	485	440	135	825	858	194	895	893
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	43.3	31.8	31.8	47.8	40.6	40.9	45.2	23.5	23.5	43.5	23.4	23.6
Incr Delay (d2), s/veh	10.5	0.3	0.4	5.5	3.9	5.4	22.3	4.6	4.4	20.6	9.2	10.1
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	3.4	1.8	1.9	0.5	4.0	3.9	2.8	11.6	12.0	4.1	15.5	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	32.1	32.2	53.4	44.5	46.3	67.5	28.1	27.9	64.1	32.6	33.7
LnGrp LOS	D	C	C	D	D	D	E	C	C	E	C	C
Approach Vol, veh/h		455			353			1299			1564	
Approach Delay, s/veh		44.7			45.8			30.8			35.9	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	49.4	6.7	27.9	11.5	52.5	14.7	19.9
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	11.8	47.6	6.2	33.2	8.2	* 52	11.4	28.0
Max Q Clear Time (g_c+I1), s	10.3	31.2	3.2	6.8	7.5	39.6	10.1	12.0
Green Ext Time (p_c), s	0.0	6.8	0.0	0.9	0.0	7.1	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	36.1
HCM 6th LOS	D

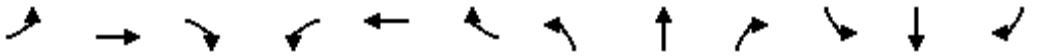
Notes

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	429	0	703	1115	751	559	1620
Future Volume (vph)	429	0	703	1115	751	559	1620
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	39.0	39.0	39.0	56.0	56.0	25.0	81.0
Total Split (%)	32.5%	32.5%	32.5%	46.7%	46.7%	20.8%	67.5%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.8	31.8	31.8	49.8	49.8	20.4	74.9
Actuated g/C Ratio	0.27	0.27	0.27	0.42	0.42	0.17	0.63
v/c Ratio	0.90	0.89	0.87	0.76	0.55	1.00	0.77
Control Delay	66.1	57.0	53.6	31.3	4.8	85.9	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	48.0
Total Delay	66.1	57.0	53.6	31.3	4.8	85.9	66.8
LOS	E	E	D	C	A	F	E
Approach Delay		59.0		25.2			71.7
Approach LOS		E		C			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 118.7	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 52.1	Intersection LOS: D
Intersection Capacity Utilization 138.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	0	703	0	0	0	0	1115	751	559	1620	0
Future Volume (veh/h)	429	0	703	0	0	0	0	1115	751	559	1620	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	674	0	382				0	1571	482	601	1742	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	946	0	421				0	2416	682	609	2298	0
Arrive On Green	0.26	0.00	0.26				0.00	0.42	0.42	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	5700	1609	3510	3705	0
Grp Volume(v), veh/h	674	0	382				0	1571	482	601	1742	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1609	1755	1805	0
Q Serve(g_s), s	19.9	0.0	27.0				0.0	25.8	29.0	20.1	39.8	0.0
Cycle Q Clear(g_c), s	19.9	0.0	27.0				0.0	25.8	29.0	20.1	39.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	946	0	421				0	2416	682	609	2298	0
V/C Ratio(X)	0.71	0.00	0.91				0.00	0.65	0.71	0.99	0.76	0.00
Avail Cap(c_a), veh/h	1023	0	455				0	2416	682	609	2298	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.4	0.0	42.0				0.0	26.9	27.8	48.4	15.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	21.0				0.0	1.4	6.1	32.7	2.4	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
%ile BackOfQ(50%),veh/ln	8.8	0.0	12.7				0.0	11.2	11.5	11.2	14.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.6	0.0	63.0				0.0	28.3	33.9	81.2	17.4	0.0
LnGrp LOS	D	A	E				A	C	C	F	B	A
Approach Vol, veh/h		1056						2053			2343	
Approach Delay, s/veh		49.3						29.6			33.8	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	56.0		36.5		81.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	49.8		33.2		74.8
Max Q Clear Time (g_c+I1), s	22.1	31.0		29.0		41.8
Green Ext Time (p_c), s	0.0	11.8		1.7		16.4

Intersection Summary		
HCM 6th Ctrl Delay		35.2
HCM 6th LOS		D

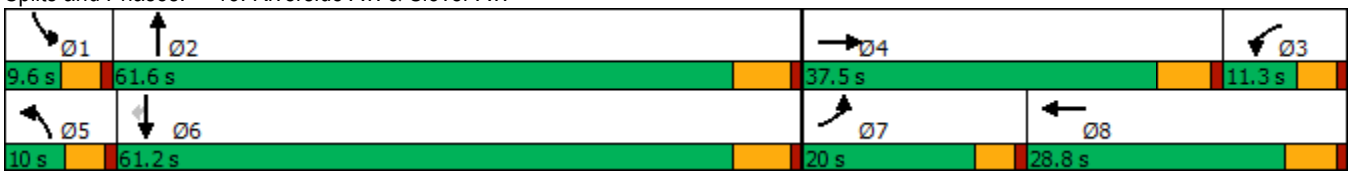
Notes

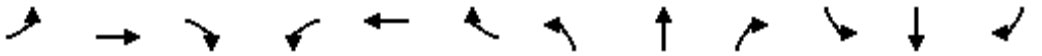
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	365	36	23	16	105	1485	31	1900	394
Future Volume (vph)	365	36	23	16	105	1485	31	1900	394
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	20.0	37.5	11.3	28.8	10.0	61.6	9.6	61.2	61.2
Total Split (%)	16.7%	31.3%	9.4%	24.0%	8.3%	51.3%	8.0%	51.0%	51.0%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	14.8	21.3	8.9	12.4	5.5	60.1	5.0	55.5	55.5
Actuated g/C Ratio	0.14	0.20	0.08	0.12	0.05	0.57	0.05	0.52	0.52
v/c Ratio	0.79	0.22	0.16	0.16	1.20	0.79	0.38	1.01	0.43
Control Delay	57.9	12.2	49.0	17.9	204.1	24.6	65.5	50.6	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	12.2	49.0	17.9	204.1	24.6	65.5	50.6	8.4
LOS	E	B	D	B	F	C	E	D	A
Approach Delay		44.3		26.0		36.3		43.7	
Approach LOS		D		C		D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.8	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.20	
Intersection Signal Delay: 40.8	Intersection LOS: D
Intersection Capacity Utilization 91.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	36	119	23	16	48	105	1485	26	31	1900	394
Future Volume (veh/h)	365	36	119	23	16	48	105	1485	26	31	1900	394
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		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	388	38	121	24	17	34	112	1580	24	33	2021	350
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	456	188	167	204	177	158	92	1973	30	53	1977	838
Arrive On Green	0.13	0.10	0.10	0.11	0.10	0.10	0.05	0.54	0.54	0.03	0.52	0.52
Sat Flow, veh/h	3510	1805	1601	1810	1805	1610	1810	3640	55	1810	3800	1610
Grp Volume(v), veh/h	388	38	121	24	17	34	112	783	821	33	2021	350
Grp Sat Flow(s),veh/h/ln	1755	1805	1601	1810	1805	1610	1810	1805	1890	1810	1900	1610
Q Serve(g_s), s	11.4	2.0	7.7	1.3	0.9	2.1	5.4	37.1	37.2	1.9	55.0	14.1
Cycle Q Clear(g_c), s	11.4	2.0	7.7	1.3	0.9	2.1	5.4	37.1	37.2	1.9	55.0	14.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	456	188	167	204	177	158	92	978	1025	53	1977	838
V/C Ratio(X)	0.85	0.20	0.73	0.12	0.10	0.22	1.21	0.80	0.80	0.62	1.02	0.42
Avail Cap(c_a), veh/h	511	541	480	204	393	350	92	978	1025	86	1977	838
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	45.0	43.3	45.9	42.2	43.4	43.9	50.1	19.6	19.6	50.7	25.3	15.5
Incr Delay (d2), s/veh	11.9	0.5	5.9	0.3	0.2	0.7	161.1	6.8	6.6	4.4	26.0	1.5
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	5.6	0.9	3.2	0.6	0.4	0.8	6.5	15.2	16.0	0.9	28.4	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.9	43.9	51.8	42.4	43.6	44.6	211.2	26.4	26.2	55.1	51.4	17.1
LnGrp LOS	E	D	D	D	D	D	F	C	C	E	F	B
Approach Vol, veh/h		547			75			1716			2404	
Approach Delay, s/veh		54.9			43.7			38.4			46.4	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	63.5	17.7	16.8	10.0	61.2	18.3	16.2
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	5.0	55.4	6.7	* 32	5.4	55.0	15.4	23.0
Max Q Clear Time (g_c+I1), s	3.9	39.2	3.3	9.7	7.4	57.0	13.4	4.1
Green Ext Time (p_c), s	0.0	9.2	0.0	0.8	0.0	0.0	0.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	44.4
HCM 6th LOS	D

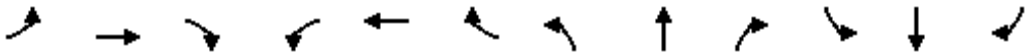
Notes

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	820	1	368	1268	621	471	1234
Future Volume (vph)	820	1	368	1268	621	471	1234
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	33.0	33.0	33.0	29.0	29.0	28.0	57.0
Total Split (%)	36.7%	36.7%	36.7%	32.2%	32.2%	31.1%	63.3%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	27.5	27.5	27.5	24.7	24.7	25.4	54.0
Actuated g/C Ratio	0.31	0.31	0.31	0.27	0.27	0.28	0.60
v/c Ratio	0.87	0.88	0.67	0.93	0.72	0.97	0.59
Control Delay	47.5	49.1	28.7	44.7	7.8	45.8	5.2
Queue Delay	54.2	54.2	0.0	4.3	0.0	0.0	2.6
Total Delay	101.7	103.3	28.7	49.1	7.8	45.8	7.7
LOS	F	F	C	D	A	D	A
Approach Delay		81.9		35.5			18.2
Approach LOS		F		D			B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 40.9	Intersection LOS: D
Intersection Capacity Utilization 139.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	820	1	368	0	0	0	0	1268	621	471	1234	0
Future Volume (veh/h)	820	1	368	0	0	0	0	1268	621	471	1234	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	966	0	240				0	1321	560	491	1285	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	1081	0	481				0	1534	476	483	2191	0
Arrive On Green	0.30	0.00	0.30				0.00	0.30	0.30	0.18	0.41	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1609	1810	3705	0
Grp Volume(v), veh/h	966	0	240				0	1321	560	491	1285	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1810	1805	0
Q Serve(g_s), s	23.0	0.0	11.1				0.0	21.7	26.6	24.0	25.0	0.0
Cycle Q Clear(g_c), s	23.0	0.0	11.1				0.0	21.7	26.6	24.0	25.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1081	0	481				0	1534	476	483	2191	0
V/C Ratio(X)	0.89	0.00	0.50				0.00	0.86	1.18	1.02	0.59	0.00
Avail Cap(c_a), veh/h	1166	0	519				0	1534	476	483	2191	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.43	0.43	0.58	0.58	0.00
Uniform Delay (d), s/veh	30.2	0.0	26.0				0.0	29.9	31.7	37.0	17.9	0.0
Incr Delay (d2), s/veh	8.7	0.0	0.8				0.0	3.0	89.3	35.7	0.7	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
%ile BackOfQ(50%),veh/ln	10.5	0.0	4.0				0.0	8.9	21.4	15.5	10.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	0.0	26.8				0.0	32.9	121.0	72.6	18.6	0.0
LnGrp LOS	D	A	C				A	C	F	F	B	A
Approach Vol, veh/h		1206						1881			1776	
Approach Delay, s/veh		36.5						59.1			33.5	
Approach LOS		D						E			C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	28.0	31.1		30.9		59.1						
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5						
Max Green Setting (Gmax), s	24.0	24.5		29.0		52.5						
Max Q Clear Time (g_c+I1), s	26.0	28.6		25.0		27.0						
Green Ext Time (p_c), s	0.0	0.0		1.9		6.6						

Intersection Summary			
HCM 6th Ctrl Delay			44.2
HCM 6th LOS			D

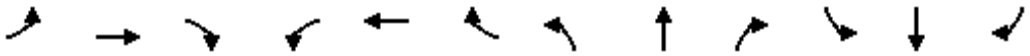
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	344	497	43	282	97	972	153	1039
Future Volume (vph)	344	497	43	282	97	972	153	1039
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	20.0	40.2	14.0	34.2	13.6	47.6	18.2	52.2
Total Split (%)	16.7%	33.5%	11.7%	28.5%	11.3%	39.7%	15.2%	43.5%
Yellow Time (s)	3.6	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	15.0	30.0	7.4	20.2	8.9	41.1	13.2	45.8
Actuated g/C Ratio	0.14	0.27	0.07	0.18	0.08	0.37	0.12	0.41
v/c Ratio	0.86	0.74	0.43	0.68	0.80	0.89	0.85	0.92
Control Delay	68.4	41.8	64.2	42.6	91.9	43.4	85.1	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.4	41.8	64.2	42.6	91.9	43.4	85.1	42.5
LOS	E	D	E	D	F	D	F	D
Approach Delay		51.1		44.7		47.5		47.3
Approach LOS		D		D		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 110.8	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 48.0	Intersection LOS: D
Intersection Capacity Utilization 82.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	344	497	143	43	282	123	97	972	78	153	1039	160
Future Volume (veh/h)	344	497	143	43	282	123	97	972	78	153	1039	160
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	1.00		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	366	529	103	46	300	97	103	1034	81	163	1105	167
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	425	732	142	58	401	127	126	1220	96	191	1247	188
Arrive On Green	0.14	0.26	0.26	0.04	0.16	0.16	0.08	0.38	0.38	0.12	0.42	0.42
Sat Flow, veh/h	3141	2848	552	1619	2545	806	1619	3213	252	1619	2973	448
Grp Volume(v), veh/h	366	317	315	46	199	198	103	550	565	163	634	638
Grp Sat Flow(s),veh/h/ln	1570	1710	1690	1619	1710	1641	1619	1710	1754	1619	1710	1711
Q Serve(g_s), s	11.5	17.1	17.2	2.8	11.2	11.6	6.3	29.7	29.7	10.0	34.6	34.8
Cycle Q Clear(g_c), s	11.5	17.1	17.2	2.8	11.2	11.6	6.3	29.7	29.7	10.0	34.6	34.8
Prop In Lane	1.00		0.33	1.00		0.49	1.00		0.14	1.00		0.26
Lane Grp Cap(c), veh/h	425	439	434	58	269	258	126	649	666	191	717	718
V/C Ratio(X)	0.86	0.72	0.73	0.79	0.74	0.76	0.82	0.85	0.85	0.86	0.88	0.89
Avail Cap(c_a), veh/h	479	576	569	151	474	455	144	708	726	218	792	793
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	42.7	34.2	34.3	48.3	40.6	40.8	45.9	28.7	28.7	43.7	27.1	27.1
Incr Delay (d2), s/veh	12.4	3.0	3.2	8.7	4.0	4.7	23.4	8.9	8.7	22.3	10.9	11.3
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	5.0	7.0	7.0	1.2	4.8	4.8	3.3	12.8	13.1	5.1	15.2	15.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.1	37.3	37.5	57.0	44.6	45.5	69.3	37.5	37.4	66.0	38.0	38.5
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		998			443			1218			1435	
Approach Delay, s/veh		43.9			46.3			40.1			41.4	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.5	44.1	8.2	32.1	12.5	48.2	18.3	22.1
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.6	41.8	9.4	34.0	9.0	* 47	15.4	28.0
Max Q Clear Time (g_c+I1), s	12.0	31.7	4.8	19.2	8.3	36.8	13.5	13.6
Green Ext Time (p_c), s	0.0	4.7	0.0	2.9	0.0	5.5	0.2	1.7

Intersection Summary	
HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

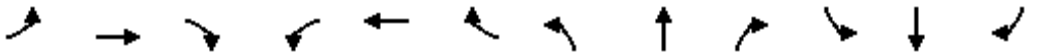
Notes

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	677	3	508	1523	899	504	1284
Future Volume (vph)	677	3	508	1523	899	504	1284
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	39.0	39.0	39.0	56.0	56.0	25.0	81.0
Total Split (%)	32.5%	32.5%	32.5%	46.7%	46.7%	20.8%	67.5%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	32.7	32.7	32.7	50.4	50.4	19.9	74.8
Actuated g/C Ratio	0.27	0.27	0.27	0.42	0.42	0.17	0.63
v/c Ratio	0.93	0.95	0.83	0.97	0.63	0.91	0.60
Control Delay	70.1	72.2	49.6	47.2	5.3	70.3	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	7.4	48.0
Total Delay	70.1	72.2	49.6	47.2	5.3	77.7	62.8
LOS	E	E	D	D	A	E	E
Approach Delay		64.4		37.8			67.0
Approach LOS		E		D			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.5	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 53.3	Intersection LOS: D
Intersection Capacity Utilization 131.0%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	677	3	508	0	0	0	0	1523	899	504	1284	0
Future Volume (veh/h)	677	3	508	0	0	0	0	1523	899	504	1284	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	849	0	289				0	1942	610	531	1352	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	943	0	419				0	2458	694	585	2300	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	5700	1610	3510	3705	0
Grp Volume(v), veh/h	849	0	289				0	1942	610	531	1352	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	1755	1805	0
Q Serve(g_s), s	26.6	0.0	19.0				0.0	34.5	40.7	17.4	25.5	0.0
Cycle Q Clear(g_c), s	26.6	0.0	19.0				0.0	34.5	40.7	17.4	25.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	943	0	419				0	2458	694	585	2300	0
V/C Ratio(X)	0.90	0.00	0.69				0.00	0.79	0.88	0.91	0.59	0.00
Avail Cap(c_a), veh/h	1024	0	455				0	2458	694	610	2300	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.9	0.0	39.1				0.0	28.8	30.6	48.0	12.3	0.0
Incr Delay (d2), s/veh	10.3	0.0	3.9				0.0	2.7	14.7	16.4	1.1	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
%ile BackOfQ(50%),veh/ln	12.7	0.0	7.7				0.0	15.1	17.3	8.7	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	0.0	43.1				0.0	31.5	45.3	64.4	13.5	0.0
LnGrp LOS	D	A	D				A	C	D	E	B	A
Approach Vol, veh/h		1138						2552			1883	
Approach Delay, s/veh		49.9						34.8			27.8	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.2	56.8		36.4		81.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	49.8		33.2		74.8
Max Q Clear Time (g_c+I1), s	19.4	42.7		28.6		27.5
Green Ext Time (p_c), s	0.1	6.2		2.0		12.2

Intersection Summary	
HCM 6th Ctrl Delay	35.5
HCM 6th LOS	D

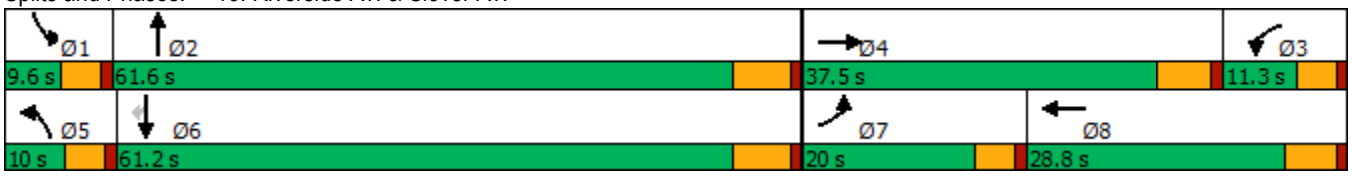
Notes

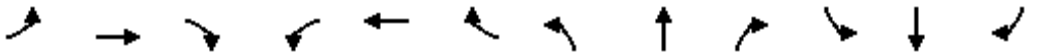
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	517	128	35	9	54	1772	31	1390	373
Future Volume (vph)	517	128	35	9	54	1772	31	1390	373
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	20.0	37.5	11.3	28.8	10.0	61.6	9.6	61.2	61.2
Total Split (%)	16.7%	31.3%	9.4%	24.0%	8.3%	51.3%	8.0%	51.0%	51.0%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	15.5	22.3	10.0	12.4	5.4	57.6	5.0	55.3	55.3
Actuated g/C Ratio	0.14	0.21	0.09	0.12	0.05	0.53	0.05	0.51	0.51
v/c Ratio	1.06	0.39	0.22	0.25	0.62	0.96	0.38	0.77	0.40
Control Delay	102.1	23.5	49.4	17.0	81.3	38.1	65.6	25.9	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.1	23.5	49.4	17.0	81.3	38.1	65.6	25.9	5.2
LOS	F	C	D	B	F	D	E	C	A
Approach Delay		73.4		25.3		39.4		22.3	
Approach LOS		E		C		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.7	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 38.3	Intersection LOS: D
Intersection Capacity Utilization 86.4%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	517	128	169	35	9	93	54	1772	17	31	1390	373
Future Volume (veh/h)	517	128	169	35	9	93	54	1772	17	31	1390	373
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	533	132	154	36	9	77	56	1827	18	32	1433	352
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	511	226	201	188	171	152	72	1944	19	52	1876	826
Arrive On Green	0.15	0.12	0.12	0.10	0.09	0.09	0.04	0.53	0.53	0.03	0.52	0.52
Sat Flow, veh/h	3510	1805	1610	1810	1805	1610	1810	3662	36	1810	3610	1589
Grp Volume(v), veh/h	533	132	154	36	9	77	56	899	946	32	1433	352
Grp Sat Flow(s),veh/h/ln	1755	1805	1610	1810	1805	1610	1810	1805	1894	1810	1805	1589
Q Serve(g_s), s	15.4	7.3	9.8	1.9	0.5	4.8	3.2	49.3	49.6	1.9	33.5	14.5
Cycle Q Clear(g_c), s	15.4	7.3	9.8	1.9	0.5	4.8	3.2	49.3	49.6	1.9	33.5	14.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	511	226	201	188	171	152	72	958	1005	52	1876	826
V/C Ratio(X)	1.04	0.59	0.77	0.19	0.05	0.51	0.77	0.94	0.94	0.61	0.76	0.43
Avail Cap(c_a), veh/h	511	541	482	188	392	350	92	958	1005	85	1876	826
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	45.2	43.7	44.8	43.4	43.6	45.6	50.3	23.2	23.3	50.8	20.2	15.7
Incr Delay (d2), s/veh	51.6	2.4	6.0	0.5	0.1	2.6	19.7	17.5	17.3	4.3	3.0	1.6
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	10.1	3.3	4.1	0.9	0.2	2.0	1.8	22.6	23.7	0.9	13.1	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.8	46.1	50.8	43.9	43.7	48.2	70.0	40.7	40.6	55.1	23.3	17.3
LnGrp LOS	F	D	D	D	D	D	E	D	D	E	C	B
Approach Vol, veh/h		819			122			1901			1817	
Approach Delay, s/veh		80.0			46.6			41.5			22.7	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	62.4	16.8	19.0	8.8	61.2	20.0	15.8
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	5.0	55.4	6.7	* 32	5.4	55.0	15.4	23.0
Max Q Clear Time (g_c+I1), s	3.9	51.6	3.9	11.8	5.2	35.5	17.4	6.8
Green Ext Time (p_c), s	0.0	3.2	0.0	1.4	0.0	11.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes

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

APPENDIX 6.11:

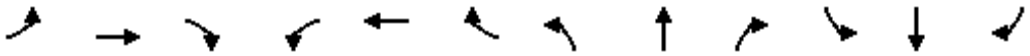
OPENING YEAR CUMULATIVE (2020) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

This Page Intentionally Left Blank

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	567	4	507	1243	584	460	1561
Future Volume (vph)	567	4	507	1243	584	460	1561
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	24.4	24.4	24.4	28.2	28.2	24.9	57.1
Actuated g/C Ratio	0.27	0.27	0.27	0.31	0.31	0.28	0.63
v/c Ratio	0.84	0.85	0.76	0.80	0.66	0.96	0.71
Control Delay	48.0	46.9	35.8	33.4	6.4	46.7	19.3
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	48.6
Total Delay	48.0	46.9	35.8	33.7	6.4	46.7	67.9
LOS	D	D	D	C	A	D	E
Approach Delay		43.8		25.0			63.1
Approach LOS		D		C			E

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 44.7	Intersection LOS: D
Intersection Capacity Utilization 122.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	567	4	507	0	0	0	0	1243	584	460	1561	0
Future Volume (veh/h)	567	4	507	0	0	0	0	1243	584	460	1561	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	739	0	314				0	1295	532	479	1626	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	877	0	390				0	1768	549	503	2394	0
Arrive On Green	0.24	0.00	0.24				0.00	0.34	0.34	0.37	0.88	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	739	0	314				0	1295	532	479	1626	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1610	1810	1805	0
Q Serve(g_s), s	17.5	0.0	16.5				0.0	19.7	29.3	23.2	11.9	0.0
Cycle Q Clear(g_c), s	17.5	0.0	16.5				0.0	19.7	29.3	23.2	11.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	877	0	390				0	1768	549	503	2394	0
V/C Ratio(X)	0.84	0.00	0.80				0.00	0.73	0.97	0.95	0.68	0.00
Avail Cap(c_a), veh/h	1046	0	465				0	1768	549	503	2394	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.23	0.23	0.59	0.59	0.00
Uniform Delay (d), s/veh	32.5	0.0	32.1				0.0	26.0	29.2	27.8	2.5	0.0
Incr Delay (d2), s/veh	5.5	0.0	8.5				0.0	0.6	12.5	20.1	0.9	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
%ile BackOfQ(50%),veh/ln	7.8	0.0	6.9				0.0	7.7	12.3	11.2	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	0.0	40.6				0.0	26.7	41.7	47.9	3.4	0.0
LnGrp LOS	D	A	D				A	C	D	D	A	A
Approach Vol, veh/h		1053						1827			2105	
Approach Delay, s/veh		38.7						31.0			13.5	
Approach LOS		D						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.0	35.2		25.8		64.2
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	25.2	31.3		19.5		13.9
Green Ext Time (p_c), s	0.0	0.0		2.3		10.6

Intersection Summary		
HCM 6th Ctrl Delay		25.3
HCM 6th LOS		C

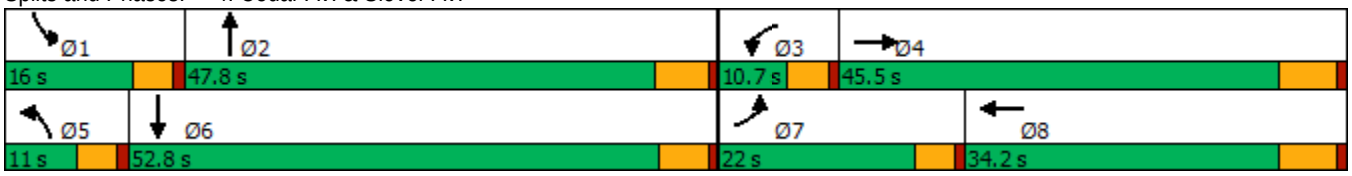
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	241	142	19	172	85	1072	148	1110
Future Volume (vph)	241	142	19	172	85	1072	148	1110
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	22.0	45.5	10.7	34.2	11.0	47.8	16.0	52.8
Total Split (%)	18.3%	37.9%	8.9%	28.5%	9.2%	39.8%	13.3%	44.0%
Yellow Time (s)	3.6	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	12.7	28.0	5.6	14.6	6.4	42.3	11.5	47.8
Actuated g/C Ratio	0.12	0.27	0.05	0.14	0.06	0.41	0.11	0.47
v/c Ratio	0.68	0.22	0.24	0.63	0.91	0.86	0.89	0.91
Control Delay	52.9	23.8	56.7	28.7	118.9	36.3	91.2	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	23.8	56.7	28.7	118.9	36.3	91.2	36.3
LOS	D	C	E	C	F	D	F	D
Approach Delay		40.0		30.3		42.1		41.9
Approach LOS		D		C		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 102.5	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 40.5	Intersection LOS: D
Intersection Capacity Utilization 80.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	142	49	19	172	161	85	1072	42	148	1110	204
Future Volume (veh/h)	241	142	49	19	172	161	85	1072	42	148	1110	204
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		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	262	154	40	21	187	153	92	1165	46	161	1207	219
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	330	609	154	36	262	202	108	1389	55	189	1344	242
Arrive On Green	0.11	0.23	0.23	0.02	0.14	0.14	0.07	0.41	0.41	0.12	0.46	0.46
Sat Flow, veh/h	3141	2703	683	1619	1836	1418	1619	3354	132	1619	2894	522
Grp Volume(v), veh/h	262	96	98	21	173	167	92	594	617	161	710	716
Grp Sat Flow(s),veh/h/ln	1570	1710	1676	1619	1710	1545	1619	1710	1776	1619	1710	1706
Q Serve(g_s), s	7.8	4.4	4.6	1.2	9.3	9.9	5.4	29.9	29.9	9.3	36.4	37.2
Cycle Q Clear(g_c), s	7.8	4.4	4.6	1.2	9.3	9.9	5.4	29.9	29.9	9.3	36.4	37.2
Prop In Lane	1.00		0.41	1.00		0.92	1.00		0.07	1.00		0.31
Lane Grp Cap(c), veh/h	330	385	378	36	244	220	108	708	736	189	794	792
V/C Ratio(X)	0.79	0.25	0.26	0.58	0.71	0.76	0.85	0.84	0.84	0.85	0.89	0.90
Avail Cap(c_a), veh/h	570	701	687	103	500	451	108	749	778	193	846	844
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	41.9	30.5	30.5	46.4	39.2	39.5	44.3	25.2	25.2	41.5	23.5	23.7
Incr Delay (d2), s/veh	1.7	0.3	0.4	5.4	3.8	5.2	42.3	8.0	7.8	27.1	11.5	12.7
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	2.9	1.7	1.8	0.5	3.9	3.9	3.3	12.5	13.0	5.0	15.8	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.5	30.8	30.9	51.8	43.0	44.7	86.6	33.2	33.0	68.6	35.0	36.4
LnGrp LOS	D	C	C	D	D	D	F	C	C	E	D	D
Approach Vol, veh/h		456			361			1303			1587	
Approach Delay, s/veh		38.1			44.3			36.9			39.0	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	45.5	6.7	27.8	11.0	50.3	14.7	19.9
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	11.4	42.0	6.1	39.3	6.4	* 47	17.4	28.0
Max Q Clear Time (g_c+I1), s	11.3	31.9	3.2	6.6	7.4	39.2	9.8	11.9
Green Ext Time (p_c), s	0.0	5.1	0.0	1.0	0.0	5.4	0.3	1.5

Intersection Summary	
HCM 6th Ctrl Delay	38.7
HCM 6th LOS	D

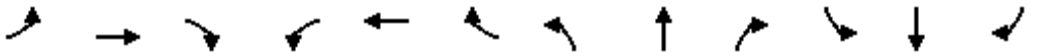
Notes

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	429	0	703	1115	755	559	1634
Future Volume (vph)	429	0	703	1115	755	559	1634
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	38.0	38.0	38.0	57.0	57.0	25.0	82.0
Total Split (%)	31.7%	31.7%	31.7%	47.5%	47.5%	20.8%	68.3%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.3	31.3	31.3	50.8	50.8	20.4	75.8
Actuated g/C Ratio	0.26	0.26	0.26	0.43	0.43	0.17	0.64
v/c Ratio	0.92	0.91	0.88	0.76	0.54	1.00	0.76
Control Delay	70.1	60.2	56.4	30.4	4.6	86.9	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	47.9
Total Delay	70.1	60.2	56.4	30.4	4.6	86.9	66.3
LOS	E	E	E	C	A	F	E
Approach Delay		62.3		24.6			71.5
Approach LOS		E		C			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.1	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 52.6	Intersection LOS: D
Intersection Capacity Utilization 139.1%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	0	703	0	0	0	0	1115	755	559	1634	0
Future Volume (veh/h)	429	0	703	0	0	0	0	1115	755	559	1634	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	674	0	382				0	1051	834	601	1757	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	935	0	416				0	1631	1380	605	2312	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	3800	3217	3510	3705	0
Grp Volume(v), veh/h	674	0	382				0	1051	834	601	1757	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1608	1755	1805	0
Q Serve(g_s), s	20.1	0.0	27.3				0.0	25.8	23.7	20.2	40.4	0.0
Cycle Q Clear(g_c), s	20.1	0.0	27.3				0.0	25.8	23.7	20.2	40.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	935	0	416				0	1631	1380	605	2312	0
V/C Ratio(X)	0.72	0.00	0.92				0.00	0.64	0.60	0.99	0.76	0.00
Avail Cap(c_a), veh/h	984	0	438				0	1631	1380	605	2312	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	42.7				0.0	26.7	26.0	48.9	14.9	0.0
Incr Delay (d2), s/veh	2.5	0.0	23.7				0.0	2.0	2.0	34.8	2.4	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
%ile BackOfQ(50%),veh/ln	8.9	0.0	13.2				0.0	11.3	8.8	11.4	14.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	0.0	66.4				0.0	28.6	28.0	83.7	17.3	0.0
LnGrp LOS	D	A	E				A	C	C	F	B	A
Approach Vol, veh/h		1056						1885			2358	
Approach Delay, s/veh		51.1						28.4			34.3	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	57.0		36.4		82.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	50.8		32.2		75.8
Max Q Clear Time (g_c+I1), s	22.2	27.8		29.3		42.4
Green Ext Time (p_c), s	0.0	11.5		1.3		16.7

Intersection Summary		
HCM 6th Ctrl Delay		35.5
HCM 6th LOS		D

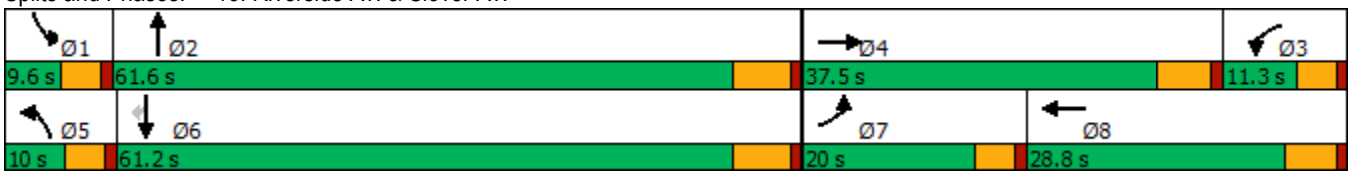
Notes

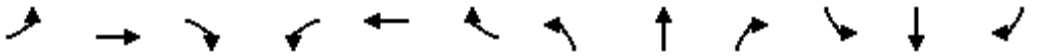
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	369	36	23	17	108	1485	31	1900	408
Future Volume (vph)	369	36	23	17	108	1485	31	1900	408
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	20.0	37.5	11.3	28.8	10.0	61.6	9.6	61.2	61.2
Total Split (%)	16.7%	31.3%	9.4%	24.0%	8.3%	51.3%	8.0%	51.0%	51.0%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	14.9	21.4	8.9	12.4	5.5	60.2	5.0	55.5	55.5
Actuated g/C Ratio	0.14	0.20	0.08	0.12	0.05	0.57	0.05	0.52	0.52
v/c Ratio	0.80	0.22	0.16	0.16	1.24	0.79	0.38	1.01	0.45
Control Delay	58.4	12.2	49.0	18.0	214.7	24.6	65.5	50.8	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	12.2	49.0	18.0	214.7	24.6	65.5	50.8	8.4
LOS	E	B	D	B	F	C	E	D	A
Approach Delay		44.7		26.0		37.3		43.6	
Approach LOS		D		C		D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.9	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.24	
Intersection Signal Delay: 41.2	Intersection LOS: D
Intersection Capacity Utilization 91.5%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	36	120	23	17	48	108	1485	26	31	1900	408
Future Volume (veh/h)	369	36	120	23	17	48	108	1485	26	31	1900	408
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		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	393	38	122	24	18	34	115	1580	24	33	2021	365
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	460	189	168	205	177	158	92	1970	30	53	1975	837
Arrive On Green	0.13	0.10	0.10	0.11	0.10	0.10	0.05	0.54	0.54	0.03	0.52	0.52
Sat Flow, veh/h	3510	1805	1601	1810	1805	1610	1810	3640	55	1810	3800	1610
Grp Volume(v), veh/h	393	38	122	24	18	34	115	783	821	33	2021	365
Grp Sat Flow(s),veh/h/ln	1755	1805	1601	1810	1805	1610	1810	1805	1890	1810	1900	1610
Q Serve(g_s), s	11.6	2.0	7.8	1.3	1.0	2.1	5.4	37.2	37.3	1.9	55.0	14.9
Cycle Q Clear(g_c), s	11.6	2.0	7.8	1.3	1.0	2.1	5.4	37.2	37.3	1.9	55.0	14.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	460	189	168	205	177	158	92	977	1023	53	1975	837
V/C Ratio(X)	0.85	0.20	0.73	0.12	0.10	0.22	1.25	0.80	0.80	0.62	1.02	0.44
Avail Cap(c_a), veh/h	511	541	479	205	392	350	92	977	1023	85	1975	837
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	45.0	43.3	45.9	42.2	43.5	44.0	50.2	19.7	19.7	50.8	25.4	15.8
Incr Delay (d2), s/veh	12.3	0.5	5.9	0.3	0.2	0.7	173.6	6.9	6.7	4.4	26.5	1.7
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	5.6	0.9	3.3	0.6	0.4	0.8	6.8	15.3	16.0	0.9	28.5	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	43.9	51.9	42.4	43.7	44.7	223.8	26.5	26.4	55.1	51.9	17.4
LnGrp LOS	E	D	D	D	D	D	F	C	C	E	F	B
Approach Vol, veh/h		553			76			1719			2419	
Approach Delay, s/veh		55.2			43.7			39.7			46.7	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	63.5	17.8	16.9	10.0	61.2	18.5	16.2
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	5.0	55.4	6.7	* 32	5.4	55.0	15.4	23.0
Max Q Clear Time (g_c+I1), s	3.9	39.3	3.3	9.8	7.4	57.0	13.6	4.1
Green Ext Time (p_c), s	0.0	9.2	0.0	0.8	0.0	0.0	0.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	45.1
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	820	1	375	1290	621	471	1235
Future Volume (vph)	820	1	375	1290	621	471	1235
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	33.0	33.0	33.0	29.0	29.0	28.0	57.0
Total Split (%)	36.7%	36.7%	36.7%	32.2%	32.2%	31.1%	63.3%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	27.5	27.5	27.5	24.7	24.7	25.4	54.0
Actuated g/C Ratio	0.31	0.31	0.31	0.27	0.27	0.28	0.60
v/c Ratio	0.87	0.88	0.68	0.95	0.72	0.97	0.59
Control Delay	47.5	49.1	29.3	46.9	7.8	45.8	5.1
Queue Delay	54.2	54.1	0.0	9.5	0.0	0.0	2.6
Total Delay	101.7	103.3	29.3	56.4	7.8	45.8	7.7
LOS	F	F	C	E	A	D	A
Approach Delay		81.8		40.6			18.2
Approach LOS		F		D			B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 42.9	Intersection LOS: D
Intersection Capacity Utilization 139.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps

HCM 6th Signalized Intersection Summary
2: Cedar Av. & I-10 Eastbound Ramps

05/03/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	820	1	375	0	0	0	0	1290	621	471	1235	0
Future Volume (veh/h)	820	1	375	0	0	0	0	1290	621	471	1235	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	969	0	246				0	1344	560	491	1286	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	1083	0	482				0	1531	475	483	2189	0
Arrive On Green	0.30	0.00	0.30				0.00	0.30	0.30	0.18	0.41	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1609	1810	3705	0
Grp Volume(v), veh/h	969	0	246				0	1344	560	491	1286	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1810	1805	0
Q Serve(g_s), s	23.1	0.0	11.4				0.0	22.2	26.6	24.0	25.0	0.0
Cycle Q Clear(g_c), s	23.1	0.0	11.4				0.0	22.2	26.6	24.0	25.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1083	0	482				0	1531	475	483	2189	0
V/C Ratio(X)	0.89	0.00	0.51				0.00	0.88	1.18	1.02	0.59	0.00
Avail Cap(c_a), veh/h	1166	0	519				0	1531	475	483	2189	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.42	0.42	0.58	0.58	0.00
Uniform Delay (d), s/veh	30.2	0.0	26.1				0.0	30.2	31.7	37.0	17.9	0.0
Incr Delay (d2), s/veh	8.7	0.0	0.8				0.0	3.3	90.2	35.7	0.7	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
%ile BackOfQ(50%),veh/ln	10.5	0.0	4.2				0.0	9.1	21.5	15.5	10.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	0.0	26.9				0.0	33.5	121.9	72.6	18.6	0.0
LnGrp LOS	D	A	C				A	C	F	F	B	A
Approach Vol, veh/h		1215						1904			1777	
Approach Delay, s/veh		36.5						59.5			33.5	
Approach LOS		D						E			C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	28.0	31.1		30.9		59.1						
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5						
Max Green Setting (Gmax), s	24.0	24.5		29.0		52.5						
Max Q Clear Time (g_c+I1), s	26.0	28.6		25.1		27.0						
Green Ext Time (p_c), s	0.0	0.0		1.9		6.6						

Intersection Summary			
HCM 6th Ctrl Delay			44.4
HCM 6th LOS			D

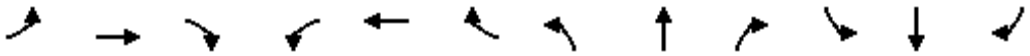
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	344	498	46	283	97	972	161	1039
Future Volume (vph)	344	498	46	283	97	972	161	1039
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	20.0	41.0	13.2	34.2	13.6	50.8	15.0	52.2
Total Split (%)	16.7%	34.2%	11.0%	28.5%	11.3%	42.3%	12.5%	43.5%
Yellow Time (s)	3.6	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	15.1	30.2	7.2	20.2	8.9	43.8	10.5	45.8
Actuated g/C Ratio	0.14	0.27	0.06	0.18	0.08	0.39	0.09	0.41
v/c Ratio	0.86	0.74	0.47	0.70	0.80	0.83	1.12	0.92
Control Delay	68.3	41.5	66.9	41.9	91.8	37.4	158.0	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	41.5	66.9	41.9	91.8	37.4	158.0	42.5
LOS	E	D	E	D	F	D	F	D
Approach Delay		50.8		44.4		42.0		56.1
Approach LOS		D		D		D		E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 110.9	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 49.3	Intersection LOS: D
Intersection Capacity Utilization 83.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Cedar Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	344	498	143	46	283	145	97	972	79	161	1039	160
Future Volume (veh/h)	344	498	143	46	283	145	97	972	79	161	1039	160
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	1.00		1.00	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	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	366	530	103	49	301	120	103	1034	82	171	1105	167
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	424	748	145	60	395	154	126	1262	100	164	1238	187
Arrive On Green	0.13	0.26	0.26	0.04	0.16	0.16	0.08	0.39	0.39	0.10	0.42	0.42
Sat Flow, veh/h	3141	2849	551	1619	2394	932	1619	3210	254	1619	2973	448
Grp Volume(v), veh/h	366	317	316	49	213	208	103	551	565	171	634	638
Grp Sat Flow(s),veh/h/ln	1570	1710	1690	1619	1710	1616	1619	1710	1754	1619	1710	1711
Q Serve(g_s), s	11.7	17.3	17.4	3.1	12.2	12.7	6.5	29.7	29.7	10.4	35.4	35.7
Cycle Q Clear(g_c), s	11.7	17.3	17.4	3.1	12.2	12.7	6.5	29.7	29.7	10.4	35.4	35.7
Prop In Lane	1.00		0.33	1.00		0.58	1.00		0.15	1.00		0.26
Lane Grp Cap(c), veh/h	424	449	444	60	282	267	126	672	690	164	712	712
V/C Ratio(X)	0.86	0.71	0.71	0.81	0.75	0.78	0.82	0.82	0.82	1.05	0.89	0.90
Avail Cap(c_a), veh/h	470	578	571	135	465	439	142	747	767	164	777	778
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	43.6	34.4	34.4	49.2	41.0	41.2	46.8	28.0	28.0	46.3	27.9	27.9
Incr Delay (d2), s/veh	13.2	2.8	2.9	9.2	4.1	4.9	24.6	6.6	6.5	82.9	11.8	12.3
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	5.1	7.1	7.1	1.4	5.2	5.2	3.4	12.4	12.7	7.8	15.8	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	37.1	37.4	58.4	45.1	46.1	71.3	34.6	34.4	129.2	39.7	40.2
LnGrp LOS	E	D	D	E	D	D	E	C	C	F	D	D
Approach Vol, veh/h		999			470			1219			1443	
Approach Delay, s/veh		44.4			46.9			37.6			50.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	46.3	8.4	33.2	12.6	48.7	18.5	23.2
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	10.4	45.0	8.6	34.8	9.0	* 47	15.4	28.0
Max Q Clear Time (g_c+I1), s	12.4	31.7	5.1	19.4	8.5	37.7	13.7	14.7
Green Ext Time (p_c), s	0.0	5.5	0.0	3.0	0.0	5.2	0.1	1.8

Intersection Summary	
HCM 6th Ctrl Delay	44.8
HCM 6th LOS	D

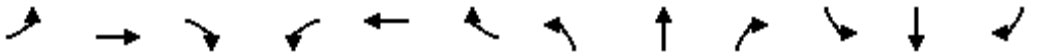
Notes

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	677	3	508	1524	912	504	1289
Future Volume (vph)	677	3	508	1524	912	504	1289
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	39.0	39.0	39.0	56.0	56.0	25.0	81.0
Total Split (%)	32.5%	32.5%	32.5%	46.7%	46.7%	20.8%	67.5%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	32.7	32.7	32.7	50.4	50.4	19.9	74.8
Actuated g/C Ratio	0.27	0.27	0.27	0.42	0.42	0.17	0.63
v/c Ratio	0.93	0.95	0.83	0.97	0.63	0.91	0.60
Control Delay	70.1	72.2	49.6	47.7	5.4	70.3	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	7.4	48.5
Total Delay	70.1	72.2	49.6	47.7	5.4	77.7	63.4
LOS	E	E	D	D	A	E	E
Approach Delay		64.4		38.0			67.4
Approach LOS		E		D			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.5	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 53.5	Intersection LOS: D
Intersection Capacity Utilization 131.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	677	3	508	0	0	0	0	1524	912	504	1289	0
Future Volume (veh/h)	677	3	508	0	0	0	0	1524	912	504	1289	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	849	0	289				0	1958	613	531	1357	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	943	0	419				0	2458	694	585	2300	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	5700	1610	3510	3705	0
Grp Volume(v), veh/h	849	0	289				0	1958	613	531	1357	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	1755	1805	0
Q Serve(g_s), s	26.6	0.0	19.0				0.0	34.9	41.0	17.4	25.6	0.0
Cycle Q Clear(g_c), s	26.6	0.0	19.0				0.0	34.9	41.0	17.4	25.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	943	0	419				0	2458	694	585	2300	0
V/C Ratio(X)	0.90	0.00	0.69				0.00	0.80	0.88	0.91	0.59	0.00
Avail Cap(c_a), veh/h	1024	0	455				0	2458	694	610	2300	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.9	0.0	39.1				0.0	28.9	30.7	48.0	12.4	0.0
Incr Delay (d2), s/veh	10.3	0.0	3.9				0.0	2.8	15.2	16.4	1.1	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
%ile BackOfQ(50%),veh/ln	12.7	0.0	7.7				0.0	15.3	17.5	8.7	9.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	0.0	43.1				0.0	31.7	45.8	64.4	13.5	0.0
LnGrp LOS	D	A	D				A	C	D	E	B	A
Approach Vol, veh/h		1138						2571			1888	
Approach Delay, s/veh		49.9						35.1			27.8	
Approach LOS		D						D			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.2	56.8		36.4		81.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	49.8		33.2		74.8
Max Q Clear Time (g_c+I1), s	19.4	43.0		28.6		27.6
Green Ext Time (p_c), s	0.1	6.0		2.0		12.3

Intersection Summary		
HCM 6th Ctrl Delay		35.6
HCM 6th LOS		D

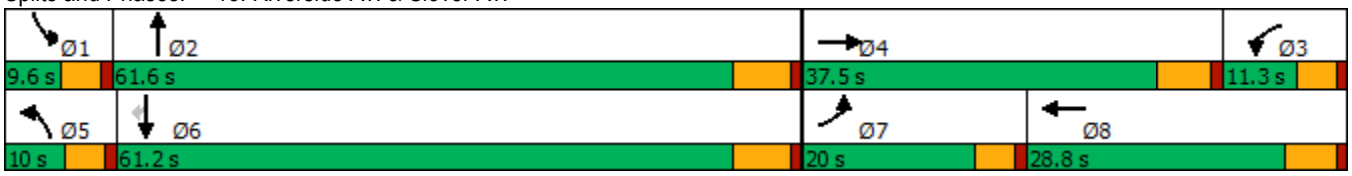
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	531	129	35	10	55	1772	31	1390	378
Future Volume (vph)	531	129	35	10	55	1772	31	1390	378
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	20.0	37.5	11.3	28.8	10.0	61.6	9.6	61.2	61.2
Total Split (%)	16.7%	31.3%	9.4%	24.0%	8.3%	51.3%	8.0%	51.0%	51.0%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	15.5	22.4	9.9	12.4	5.4	57.6	5.0	55.3	55.3
Actuated g/C Ratio	0.14	0.21	0.09	0.12	0.05	0.53	0.05	0.51	0.51
v/c Ratio	1.09	0.39	0.22	0.25	0.63	0.96	0.38	0.77	0.40
Control Delay	110.2	23.7	49.6	17.1	82.1	38.1	65.6	25.9	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.2	23.7	49.6	17.1	82.1	38.1	65.6	25.9	5.2
LOS	F	C	D	B	F	D	E	C	A
Approach Delay		78.9		25.3		39.4		22.2	
Approach LOS		E		C		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.7	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 39.4	Intersection LOS: D
Intersection Capacity Utilization 86.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	531	129	172	35	10	93	55	1772	17	31	1390	378
Future Volume (veh/h)	531	129	172	35	10	93	55	1772	17	31	1390	378
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	547	133	157	36	10	77	57	1827	18	32	1433	357
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	510	229	204	184	170	152	74	1946	19	52	1875	825
Arrive On Green	0.15	0.13	0.13	0.10	0.09	0.09	0.04	0.53	0.53	0.03	0.52	0.52
Sat Flow, veh/h	3510	1805	1610	1810	1805	1610	1810	3662	36	1810	3610	1589
Grp Volume(v), veh/h	547	133	157	36	10	77	57	899	946	32	1433	357
Grp Sat Flow(s),veh/h/ln	1755	1805	1610	1810	1805	1610	1810	1805	1894	1810	1805	1589
Q Serve(g_s), s	15.4	7.4	10.0	1.9	0.5	4.8	3.3	49.3	49.6	1.9	33.5	14.7
Cycle Q Clear(g_c), s	15.4	7.4	10.0	1.9	0.5	4.8	3.3	49.3	49.6	1.9	33.5	14.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	510	229	204	184	170	152	74	959	1006	52	1875	825
V/C Ratio(X)	1.07	0.58	0.77	0.20	0.06	0.51	0.77	0.94	0.94	0.61	0.76	0.43
Avail Cap(c_a), veh/h	510	540	482	184	392	350	92	959	1006	85	1875	825
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	45.3	43.6	44.7	43.6	43.7	45.6	50.3	23.2	23.3	50.9	20.3	15.8
Incr Delay (d2), s/veh	60.4	2.3	6.0	0.5	0.1	2.6	20.6	17.4	17.2	4.3	3.0	1.7
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	10.7	3.3	4.2	0.9	0.2	2.0	1.9	22.6	23.7	0.9	13.1	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	105.7	45.9	50.7	44.1	43.8	48.2	70.9	40.6	40.4	55.2	23.3	17.4
LnGrp LOS	F	D	D	D	D	D	E	D	D	E	C	B
Approach Vol, veh/h		837			123			1902			1822	
Approach Delay, s/veh		85.9			46.7			41.4			22.7	
Approach LOS		F			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	62.5	16.6	19.2	8.9	61.2	20.0	15.8
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	5.0	55.4	6.7	* 32	5.4	55.0	15.4	23.0
Max Q Clear Time (g_c+I1), s	3.9	51.6	3.9	12.0	5.3	35.5	17.4	6.8
Green Ext Time (p_c), s	0.0	3.2	0.0	1.4	0.0	11.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	42.2
HCM 6th LOS	D

Notes

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

APPENDIX 7.1:

HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

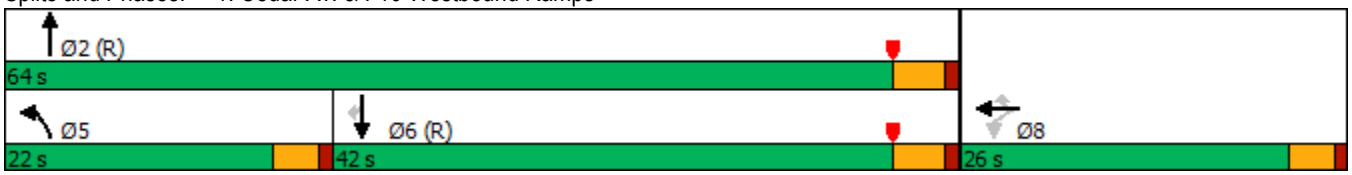
This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	400	469	1480	1757	997
Future Volume (vph)	16	400	469	1480	1757	997
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	26.0	26.0	22.0	64.0	42.0	42.0
Total Split (%)	28.9%	28.9%	24.4%	71.1%	46.7%	46.7%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 59 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	541	16	400	469	1480	0	0	1757	997
Future Volume (veh/h)	0	0	0	541	16	400	469	1480	0	0	1757	997
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				569	17	281	494	1558	0	0	1849	793
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				430	13	394	362	2387	0	0	2161	671
Arrive On Green				0.24	0.24	0.24	0.13	0.44	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1759	53	1610	1810	3705	0	0	5358	1610
Grp Volume(v), veh/h				586	0	281	494	1558	0	0	1849	793
Grp Sat Flow(s),veh/h/ln				1812	0	1610	1810	1805	0	0	1729	1610
Q Serve(g_s), s				22.0	0.0	14.4	18.0	30.4	0.0	0.0	29.1	37.5
Cycle Q Clear(g_c), s				22.0	0.0	14.4	18.0	30.4	0.0	0.0	29.1	37.5
Prop In Lane				0.97		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				443	0	394	362	2387	0	0	2161	671
V/C Ratio(X)				1.32	0.00	0.71	1.36	0.65	0.00	0.00	0.86	1.18
Avail Cap(c_a), veh/h				443	0	394	362	2387	0	0	2161	671
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.12	0.12	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.0	0.0	31.1	39.0	17.0	0.0	0.0	23.8	26.3
Incr Delay (d2), s/veh				160.4	0.0	6.0	166.5	0.2	0.0	0.0	4.6	96.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				28.7	0.0	5.9	24.8	12.8	0.0	0.0	11.7	30.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				194.4	0.0	37.1	205.4	17.1	0.0	0.0	28.4	122.9
LnGrp LOS				F	A	D	F	B	A	A	C	F
Approach Vol, veh/h					867			2052			2642	
Approach Delay, s/veh					143.4			62.5			56.8	
Approach LOS					F			E			E	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		64.0			22.0	42.0		26.0				
Change Period (Y+Rc), s		4.5			4.0	4.5		4.0				
Max Green Setting (Gmax), s		59.5			18.0	37.5		22.0				
Max Q Clear Time (g_c+I1), s		32.4			20.0	39.5		24.0				
Green Ext Time (p_c), s		13.6			0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	72.4	
HCM 6th LOS	E	

Notes

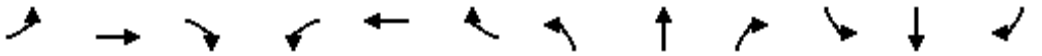
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	556	4	1392	688	566	1731
Future Volume (vph)	556	4	1392	688	566	1731
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	556	4	530	0	0	0	0	1392	688	566	1731	0
Future Volume (veh/h)	556	4	530	0	0	0	0	1392	688	566	1731	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	544	61	499				0	1465	647	596	1822	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	523	52	421				0	1527	474	503	2226	0
Arrive On Green	0.29	0.29	0.29				0.00	0.29	0.29	0.28	0.62	0.00
Sat Flow, veh/h	1810	178	1459				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	544	0	560				0	1465	647	596	1822	0
Grp Sat Flow(s),veh/h/ln	1810	0	1637				0	1729	1610	1810	1805	0
Q Serve(g_s), s	26.0	0.0	26.0				0.0	25.0	26.5	25.0	35.2	0.0
Cycle Q Clear(g_c), s	26.0	0.0	26.0				0.0	25.0	26.5	25.0	35.2	0.0
Prop In Lane	1.00		0.89				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	523	0	473				0	1527	474	503	2226	0
V/C Ratio(X)	1.04	0.00	1.18				0.00	0.96	1.36	1.19	0.82	0.00
Avail Cap(c_a), veh/h	523	0	473				0	1527	474	503	2226	0
HCM Platoon Ratio	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				0.00	0.09	0.09	0.40	0.40	0.00
Uniform Delay (d), s/veh	32.0	0.0	32.0				0.0	31.2	31.8	32.5	13.4	0.0
Incr Delay (d2), s/veh	50.3	0.0	102.5				0.0	2.2	165.4	91.9	1.4	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
%ile BackOfQ(50%),veh/ln	17.7	0.0	22.9				0.0	10.0	31.4	23.1	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.3	0.0	134.5				0.0	33.4	197.1	124.4	14.8	0.0
LnGrp LOS	F	A	F				A	C	F	F	B	A
Approach Vol, veh/h		1104						2112			2418	
Approach Delay, s/veh		108.8						83.6			41.8	
Approach LOS		F						F			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.0	31.0		30.0		60.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	27.0	28.5		28.0		37.2
Green Ext Time (p_c), s	0.0	0.0		0.0		9.4

Intersection Summary	
HCM 6th Ctrl Delay	70.6
HCM 6th LOS	E

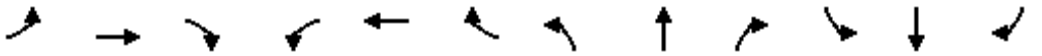
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	361	7	10	1	19	1607	157	1546	559
Future Volume (vph)	361	7	10	1	19	1607	157	1546	559
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	44.0	44.0	44.0	44.0	9.6	62.2	13.8	66.4	66.4
Total Split (%)	36.7%	36.7%	36.7%	36.7%	8.0%	51.8%	11.5%	55.3%	55.3%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 119.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	361	7	29	10	1	112	19	1607	46	157	1546	559
Future Volume (veh/h)	361	7	29	10	1	112	19	1607	46	157	1546	559
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		1.00	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	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	380	7	29	11	1	67	20	1692	47	165	1627	426
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	463	97	403	80	29	410	134	1800	50	192	1977	882
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.02	0.50	0.50	0.07	0.55	0.55
Sat Flow, veh/h	1283	322	1336	146	97	1359	1714	3588	99	1714	3610	1610
Grp Volume(v), veh/h	380	0	36	79	0	0	20	849	890	165	1627	426
Grp Sat Flow(s),veh/h/ln	1283	0	1658	1602	0	0	1714	1805	1882	1714	1805	1610
Q Serve(g_s), s	27.7	0.0	1.8	0.0	0.0	0.0	0.6	50.1	50.6	5.5	42.0	18.4
Cycle Q Clear(g_c), s	31.7	0.0	1.8	4.0	0.0	0.0	0.6	50.1	50.6	5.5	42.0	18.4
Prop In Lane	1.00		0.81	0.14		0.85	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	463	0	501	520	0	0	134	906	944	192	1977	882
V/C Ratio(X)	0.82	0.00	0.07	0.15	0.00	0.00	0.15	0.94	0.94	0.86	0.82	0.48
Avail Cap(c_a), veh/h	522	0	576	593	0	0	174	906	944	217	1977	882
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	0.0	28.2	29.0	0.0	0.0	19.7	26.5	26.7	28.1	21.1	15.7
Incr Delay (d2), s/veh	8.1	0.0	0.0	0.0	0.0	0.0	0.2	18.1	18.3	23.1	4.0	1.9
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	11.3	0.0	0.7	1.6	0.0	0.0	0.2	24.3	25.7	3.4	17.2	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	28.2	29.0	0.0	0.0	19.9	44.6	45.0	51.2	25.1	17.6
LnGrp LOS	D	A	C	C	A	A	B	D	D	D	C	B
Approach Vol, veh/h		416			79			1759			2218	
Approach Delay, s/veh		44.7			29.0			44.5			25.6	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.1	62.2		38.9	6.9	67.4		38.9				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	9.2	56.8		* 39	5.0	61.0		* 39				
Max Q Clear Time (g_c+I1), s	7.5	52.6		33.7	2.6	44.0		6.0				
Green Ext Time (p_c), s	0.0	3.4		0.5	0.0	11.9		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	34.9
HCM 6th LOS	C

Notes

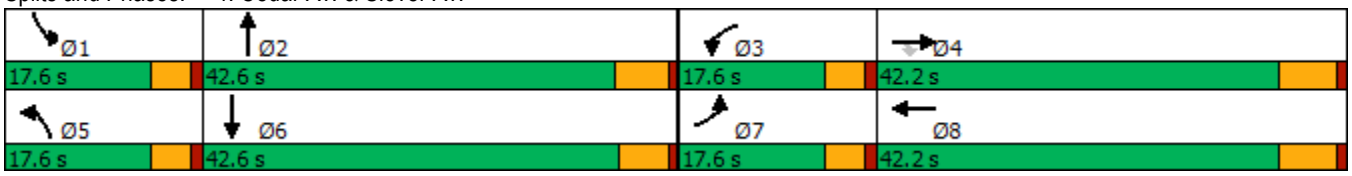
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

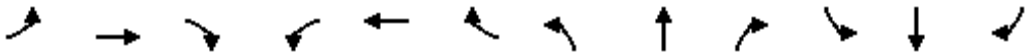
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	265	156	53	19	191	90	1176	248	1172
Future Volume (vph)	265	156	53	19	191	90	1176	248	1172
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 98.7
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	156	53	19	191	231	90	1176	43	248	1172	164
Future Volume (veh/h)	265	156	53	19	191	231	90	1176	43	248	1172	164
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		1.00	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	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	279	164	43	20	201	222	95	1238	45	261	1234	170
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	219	1015	452	36	315	281	119	1285	47	219	1339	184
Arrive On Green	0.13	0.28	0.28	0.02	0.17	0.17	0.07	0.36	0.36	0.13	0.42	0.42
Sat Flow, veh/h	1714	3610	1608	1714	1805	1610	1714	3553	129	1714	3189	437
Grp Volume(v), veh/h	279	164	43	20	201	222	95	629	654	261	696	708
Grp Sat Flow(s),veh/h/ln	1714	1805	1608	1714	1805	1610	1714	1805	1877	1714	1805	1821
Q Serve(g_s), s	13.0	3.5	2.0	1.2	10.5	13.4	5.6	34.7	34.8	13.0	37.0	37.5
Cycle Q Clear(g_c), s	13.0	3.5	2.0	1.2	10.5	13.4	5.6	34.7	34.8	13.0	37.0	37.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.24
Lane Grp Cap(c), veh/h	219	1015	452	36	315	281	119	653	679	219	758	765
V/C Ratio(X)	1.27	0.16	0.10	0.55	0.64	0.79	0.80	0.96	0.96	1.19	0.92	0.93
Avail Cap(c_a), veh/h	219	1277	569	219	639	570	219	653	679	219	758	765
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	44.4	27.5	27.0	49.3	39.0	40.2	46.6	31.8	31.8	44.4	27.9	28.0
Incr Delay (d2), s/veh	153.8	0.1	0.1	4.7	2.1	5.0	4.5	26.3	25.9	122.3	16.2	17.2
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	14.6	1.4	0.7	0.5	4.6	5.4	2.4	18.7	19.4	12.8	18.2	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	198.2	27.6	27.1	54.1	41.2	45.2	51.2	58.1	57.7	166.6	44.1	45.2
LnGrp LOS	F	C	C	D	D	D	D	E	E	F	D	D
Approach Vol, veh/h		486			443			1378			1665	
Approach Delay, s/veh		125.5			43.7			57.4			63.8	
Approach LOS		F			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	42.6	6.8	34.8	11.7	48.5	17.6	24.0
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	15.0	36.8	3.2	5.5	7.6	39.5	15.0	15.4
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	66.9
HCM 6th LOS	E

Notes

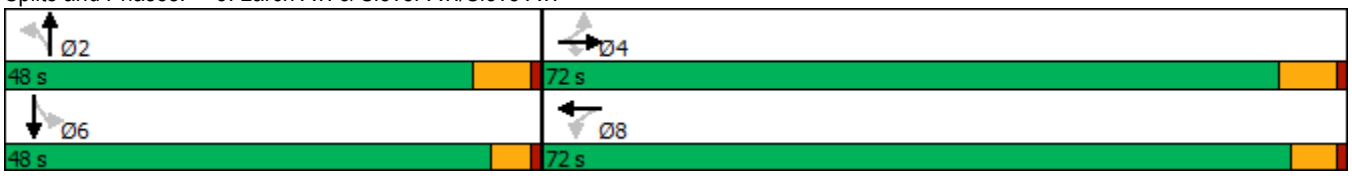
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

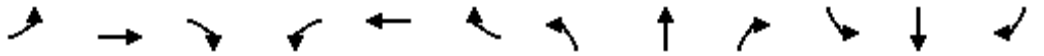
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	9	359	79	48	367	67	66	48	42
Future Volume (vph)	9	359	79	48	367	67	66	48	42
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	72.0	72.0	72.0	72.0	72.0	48.0	48.0	48.0	48.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 94.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	359	79	48	367	40	67	66	29	48	42	7
Future Volume (veh/h)	9	359	79	48	367	40	67	66	29	48	42	7
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		1.00	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	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	9	378	74	51	386	28	71	69	25	51	44	6
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	741	1406	1191	690	2526	182	137	99	32	139	106	12
Arrive On Green	0.74	0.74	0.74	0.74	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	936	1900	1610	903	3414	247	650	805	260	645	862	95
Grp Volume(v), veh/h	9	378	74	51	203	211	165	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	936	1900	1610	903	1805	1856	1715	0	0	1602	0	0
Q Serve(g_s), s	0.3	5.8	1.1	1.8	3.0	3.0	3.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	5.8	1.1	7.6	3.0	3.0	8.2	0.0	0.0	5.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.13	0.43		0.15	0.50		0.06
Lane Grp Cap(c), veh/h	741	1406	1191	690	1335	1373	268	0	0	257	0	0
V/C Ratio(X)	0.01	0.27	0.06	0.07	0.15	0.15	0.62	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	741	1406	1191	690	1335	1373	809	0	0	808	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	3.9	3.8	3.2	5.1	3.5	3.5	38.2	0.0	0.0	36.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.1	0.2	0.2	0.2	2.3	0.0	0.0	1.0	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	1.5	0.2	0.3	0.7	0.7	3.6	0.0	0.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.0	4.3	3.3	5.3	3.7	3.7	40.5	0.0	0.0	37.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		461			465			165			101	
Approach Delay, s/veh		4.1			3.9			40.5			37.9	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.3		73.1		17.3		73.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		41.8		65.8		* 43		* 67				
Max Q Clear Time (g_c+I1), s		10.2		7.8		7.1		9.6				
Green Ext Time (p_c), s		0.9		2.4		0.6		2.5				

Intersection Summary		
HCM 6th Ctrl Delay		11.9
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	224	141	96	205	84	56
Future Vol, veh/h	224	141	96	205	84	56
Conflicting Peds, #/hr	0	1	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	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	236	148	101	216	88	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	385	0	621	193
Stage 1	-	-	-	-	311	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1185	-	424	822
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1184	-	382	821
Mov Cap-2 Maneuver	-	-	-	-	486	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	653	-

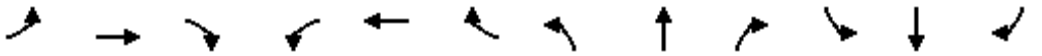
Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	581	-	-	1184	-
HCM Lane V/C Ratio	0.254	-	-	0.085	-
HCM Control Delay (s)	13.3	-	-	8.3	0.2
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.3	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	865	0	477	604	1094	1784	715
Future Volume (vph)	865	0	477	604	1094	1784	715
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	15.8	15.8	15.8	9.6	23.2	16.2	16.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	27.2	27.2	27.2	15.4	50.8	30.8	30.8
Actuated g/C Ratio	0.30	0.30	0.30	0.17	0.56	0.34	0.34
v/c Ratio	0.95	0.87	0.83	1.06	0.39	0.84	0.74
Control Delay	61.5	41.8	37.7	91.7	11.5	31.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	61.5	41.8	37.7	91.7	12.2	31.6	8.2
LOS	E	D	D	F	B	C	A
Approach Delay		47.4			40.5	24.9	
Approach LOS		D			D	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 35.1	Intersection LOS: D
Intersection Capacity Utilization 159.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	865	0	477	604	1094	0	0	1784	715
Future Volume (veh/h)	0	0	0	865	0	477	604	1094	0	0	1784	715
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				999	0	189	636	1152	0	0	1878	588
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1078	0	479	605	2946	0	0	2251	555
Arrive On Green				0.30	0.00	0.30	0.17	0.57	0.00	0.00	0.34	0.34
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				999	0	189	636	1152	0	0	1878	588
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				23.9	0.0	8.4	15.4	11.0	0.0	0.0	23.6	30.8
Cycle Q Clear(g_c), s				23.9	0.0	8.4	15.4	11.0	0.0	0.0	23.6	30.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1078	0	479	605	2946	0	0	2251	555
V/C Ratio(X)				0.93	0.00	0.39	1.05	0.39	0.00	0.00	0.83	1.06
Avail Cap(c_a), veh/h				1101	0	490	605	2946	0	0	2251	555
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.5	0.0	25.0	37.0	10.7	0.0	0.0	27.0	29.3
Incr Delay (d2), s/veh				13.0	0.0	0.5	51.0	0.4	0.0	0.0	3.8	55.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.5	0.0	3.0	10.4	3.5	0.0	0.0	8.8	19.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				43.5	0.0	25.5	88.1	11.1	0.0	0.0	30.8	84.5
LnGrp LOS				D	A	C	F	B	A	A	C	F
Approach Vol, veh/h					1188			1788			2466	
Approach Delay, s/veh					40.6			38.5			43.6	
Approach LOS					D			D			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.0		20.0	37.0		32.4						
Change Period (Y+Rc), s	6.2		4.6	6.2		5.8						
Max Green Setting (Gmax), s	50.8		15.4	30.8		27.2						
Max Q Clear Time (g_c+I1), s	13.0		17.4	32.8		25.9						
Green Ext Time (p_c), s	8.9		0.0	0.0		0.7						

Intersection Summary		
HCM 6th Ctrl Delay	41.3	
HCM 6th LOS	D	

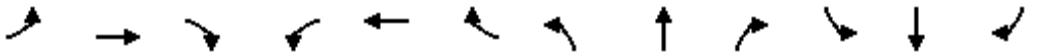
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	472	0	773	1227	666	1983
Future Volume (vph)	472	0	773	1227	666	1983
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.1	17.9	62.0
Total Split (%)	31.1%	31.1%	31.1%	49.0%	19.9%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	22.2	22.2	22.2	37.9	13.3	55.8
Actuated g/C Ratio	0.25	0.25	0.25	0.42	0.15	0.62
v/c Ratio	1.08	1.01	0.98	1.08dr	1.38	0.95
Control Delay	101.5	73.4	66.2	47.1	217.0	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	44.2
Total Delay	101.5	73.4	66.2	47.1	217.0	71.8
LOS	F	E	E	D	F	E
Approach Delay		80.6		47.1		108.3
Approach LOS		F		D		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 81.4	Intersection LOS: F
Intersection Capacity Utilization 159.2%	ICU Level of Service H
Analysis Period (min) 15	
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	472	0	773	0	0	0	0	1227	826	666	1983	0
Future Volume (veh/h)	472	0	773	0	0	0	0	1227	826	666	1983	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	749	0	427				0	1319	811	716	2132	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	893	0	397				0	1456	678	519	2238	0
Arrive On Green	0.25	0.00	0.25				0.00	0.42	0.42	0.15	0.62	0.00
Sat Flow, veh/h	3619	0	1610				0	3629	1609	3510	3705	0
Grp Volume(v), veh/h	749	0	427				0	1319	811	716	2132	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1755	1805	0
Q Serve(g_s), s	17.7	0.0	22.2				0.0	32.1	37.9	13.3	49.3	0.0
Cycle Q Clear(g_c), s	17.7	0.0	22.2				0.0	32.1	37.9	13.3	49.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	893	0	397				0	1456	678	519	2238	0
V/C Ratio(X)	0.84	0.00	1.08				0.00	0.91	1.20	1.38	0.95	0.00
Avail Cap(c_a), veh/h	893	0	397				0	1456	678	519	2238	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.2	0.0	33.9				0.0	24.4	26.1	38.3	15.9	0.0
Incr Delay (d2), s/veh	7.2	0.0	66.7				0.0	9.7	102.6	182.9	10.7	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
%ile BackOfQ(50%),veh/ln	8.1	0.0	15.4				0.0	13.4	31.8	18.5	18.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	0.0	100.6				0.0	34.1	128.6	221.2	26.6	0.0
LnGrp LOS	D	A	F				A	C	F	F	C	A
Approach Vol, veh/h		1176						2130			2848	
Approach Delay, s/veh		61.6						70.1			75.5	
Approach LOS		E						E			E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	17.9	44.1		28.0		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.3	37.9		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.3	39.9		24.2		51.3
Green Ext Time (p_c), s	0.0	0.0		0.0		4.0

Intersection Summary		
HCM 6th Ctrl Delay		71.0
HCM 6th LOS		E

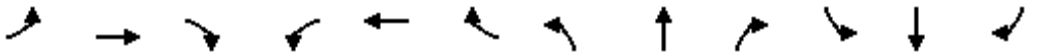
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	398	43	77	33	116	1634	35	2062
Future Volume (vph)	398	43	77	33	116	1634	35	2062
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	32.8	32.8	32.8	32.8	9.6	47.6	9.6	47.6
Total Split (%)	36.4%	36.4%	36.4%	36.4%	10.7%	52.9%	10.7%	52.9%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	27.0	27.0	27.0	27.0	5.0	45.2	5.0	41.4
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.06	0.50	0.06	0.46
v/c Ratio	1.12	0.18	0.23	0.14	1.23	0.98	0.37	1.63
Control Delay	114.7	9.7	25.8	8.1	203.1	41.5	51.8	308.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.7	9.7	25.8	8.1	203.1	41.5	51.8	308.3
LOS	F	A	C	A	F	D	D	F
Approach Delay		82.7		14.6		52.0		304.8
Approach LOS		F		B		D		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.63	
Intersection Signal Delay: 179.7	Intersection LOS: F
Intersection Capacity Utilization 126.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	398	43	131	77	33	99	116	1634	36	35	2062	442
Future Volume (veh/h)	398	43	131	77	33	99	116	1634	36	35	2062	442
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		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	423	46	133	82	35	88	123	1738	34	37	2194	401
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	433	541	482	386	542	483	101	1746	34	61	1410	250
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.06	0.48	0.48	0.03	0.46	0.46
Sat Flow, veh/h	1360	1805	1607	1291	1805	1610	1810	3621	71	1810	3064	543
Grp Volume(v), veh/h	423	46	133	82	35	88	123	864	908	37	1264	1331
Grp Sat Flow(s),veh/h/ln	1360	1805	1607	1291	1805	1610	1810	1805	1887	1810	1805	1802
Q Serve(g_s), s	23.4	1.6	5.7	4.7	1.2	3.6	5.0	42.8	43.2	1.8	41.4	41.4
Cycle Q Clear(g_c), s	27.0	1.6	5.7	10.3	1.2	3.6	5.0	42.8	43.2	1.8	41.4	41.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.30
Lane Grp Cap(c), veh/h	433	542	482	386	542	483	101	870	910	61	830	829
V/C Ratio(X)	0.98	0.08	0.28	0.21	0.06	0.18	1.22	0.99	1.00	0.61	1.52	1.61
Avail Cap(c_a), veh/h	433	542	482	386	542	483	101	870	910	101	830	829
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	35.3	22.6	24.0	28.0	22.5	23.3	42.5	23.2	23.3	42.9	24.3	24.3
Incr Delay (d2), s/veh	37.1	0.1	0.3	0.3	0.0	0.2	161.6	28.9	29.3	3.6	241.3	278.0
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	13.5	0.7	2.1	1.4	0.5	1.3	6.6	22.2	23.5	0.8	70.6	78.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	22.7	24.3	28.3	22.5	23.5	204.1	52.1	52.6	46.6	265.6	302.3
LnGrp LOS	E	C	C	C	C	C	F	D	D	D	F	F
Approach Vol, veh/h		602			205			1895			2632	
Approach Delay, s/veh		58.0			25.2			62.2			281.1	
Approach LOS		E			C			E			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	49.6		32.8	9.6	47.6		32.8				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	41.4		27.0	5.0	41.4		27.0				
Max Q Clear Time (g_c+I1), s	3.8	45.2		29.0	7.0	43.4		12.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.7				

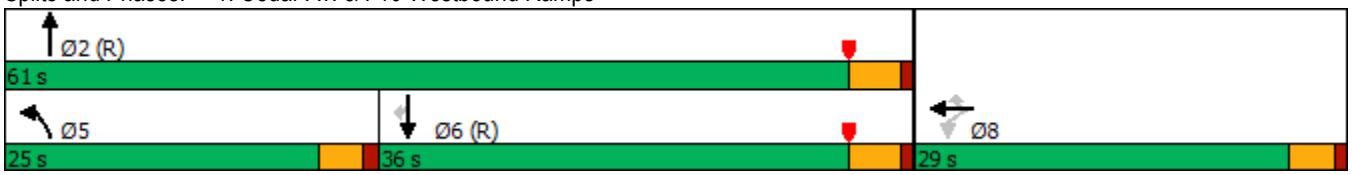
Intersection Summary												
HCM 6th Ctrl Delay			168.3									
HCM 6th LOS			F									

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	501	496	1874	1508	684
Future Volume (vph)	5	501	496	1874	1508	684
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	29.0	29.0	25.0	61.0	36.0	36.0
Total Split (%)	32.2%	32.2%	27.8%	67.8%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	433	5	501	496	1874	0	0	1508	684
Future Volume (veh/h)	0	0	0	433	5	501	496	1874	0	0	1508	684
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				456	50	491	522	1973	0	0	1587	522
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				455	50	447	422	2266	0	0	1815	556
Arrive On Green				0.28	0.28	0.28	0.31	0.83	0.00	0.00	0.35	0.35
Sat Flow, veh/h				1638	180	1610	1810	3705	0	0	5358	1587
Grp Volume(v), veh/h				506	0	491	522	1973	0	0	1587	522
Grp Sat Flow(s),veh/h/ln				1818	0	1610	1810	1805	0	0	1729	1587
Q Serve(g_s), s				25.0	0.0	25.0	21.0	29.7	0.0	0.0	25.8	28.7
Cycle Q Clear(g_c), s				25.0	0.0	25.0	21.0	29.7	0.0	0.0	25.8	28.7
Prop In Lane				0.90		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				505	0	447	422	2266	0	0	1815	556
V/C Ratio(X)				1.00	0.00	1.10	1.24	0.87	0.00	0.00	0.87	0.94
Avail Cap(c_a), veh/h				505	0	447	422	2266	0	0	1815	556
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				32.5	0.0	32.5	31.0	5.2	0.0	0.0	27.4	28.3
Incr Delay (d2), s/veh				40.5	0.0	71.7	108.3	0.5	0.0	0.0	6.2	25.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				15.8	0.0	17.9	20.5	3.6	0.0	0.0	10.9	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				73.0	0.0	104.2	139.3	5.7	0.0	0.0	33.6	54.1
LnGrp LOS				F	A	F	F	A	A	A	C	D
Approach Vol, veh/h					997			2495			2109	
Approach Delay, s/veh					88.4			33.7			38.7	
Approach LOS					F			C			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	61.0		25.0	36.0		29.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	56.5		21.0	31.5		25.0						
Max Q Clear Time (g_c+I1), s	31.7		23.0	30.7		27.0						
Green Ext Time (p_c), s	17.2		0.0	0.8		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	45.3	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	936	1	1435	683	586	1356
Future Volume (vph)	936	1	1435	683	586	1356
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	33.0	33.0	29.0	29.0	28.0	57.0
Total Split (%)	36.7%	36.7%	32.2%	32.2%	31.1%	63.3%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	936	1	418	0	0	0	0	1435	683	586	1356	0
Future Volume (veh/h)	936	1	418	0	0	0	0	1435	683	586	1356	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	701	398	417				0	1511	631	617	1427	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	583	274	287				0	1412	438	483	2106	0
Arrive On Green	0.32	0.32	0.32				0.00	0.27	0.27	0.18	0.39	0.00
Sat Flow, veh/h	1810	850	890				0	5358	1608	1810	3705	0
Grp Volume(v), veh/h	701	0	815				0	1511	631	617	1427	0
Grp Sat Flow(s),veh/h/ln	1810	0	1740				0	1729	1608	1810	1805	0
Q Serve(g_s), s	29.0	0.0	29.0				0.0	24.5	24.5	24.0	29.5	0.0
Cycle Q Clear(g_c), s	29.0	0.0	29.0				0.0	24.5	24.5	24.0	29.5	0.0
Prop In Lane	1.00		0.51				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	583	0	561				0	1412	438	483	2106	0
V/C Ratio(X)	1.20	0.00	1.45				0.00	1.07	1.44	1.28	0.68	0.00
Avail Cap(c_a), veh/h	583	0	561				0	1412	438	483	2106	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.26	0.26	0.36	0.36	0.00
Uniform Delay (d), s/veh	30.5	0.0	30.5				0.0	32.8	32.8	37.0	20.4	0.0
Incr Delay (d2), s/veh	106.7	0.0	214.0				0.0	36.0	202.0	131.3	0.6	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
%ile BackOfQ(50%),veh/ln	28.8	0.0	44.4				0.0	14.3	33.5	28.3	12.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	137.2	0.0	244.5				0.0	68.7	234.7	168.2	21.0	0.0
LnGrp LOS	F	A	F				A	F	F	F	C	A
Approach Vol, veh/h		1516						2142			2044	
Approach Delay, s/veh		194.9						117.6			65.5	
Approach LOS		F						F			E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	28.0	29.0		33.0		57.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	24.0	24.5		29.0		52.5
Max Q Clear Time (g_c+I1), s	26.0	26.5		31.0		31.5
Green Ext Time (p_c), s	0.0	0.0		0.0		7.2

Intersection Summary		
HCM 6th Ctrl Delay		119.5
HCM 6th LOS		F

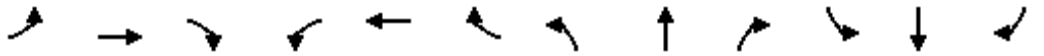
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	217	60	43	2	17	1597	63	1416	295
Future Volume (vph)	217	60	43	2	17	1597	63	1416	295
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	46.0	46.0	46.0	46.0	9.6	64.4	9.6	64.4	64.4
Total Split (%)	38.3%	38.3%	38.3%	38.3%	8.0%	53.7%	8.0%	53.7%	53.7%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 115.5
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	60	31	43	2	305	17	1597	16	63	1416	295
Future Volume (veh/h)	217	60	31	43	2	305	17	1597	16	63	1416	295
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		1.00	1.00		0.98	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	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	228	63	30	45	2	256	18	1681	17	66	1491	215
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	310	384	183	89	25	424	154	1892	19	158	1935	862
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.02	0.52	0.52	0.04	0.54	0.54
Sat Flow, veh/h	1079	1216	579	166	80	1340	1714	3660	37	1714	3610	1607
Grp Volume(v), veh/h	228	0	93	303	0	0	18	828	870	66	1491	215
Grp Sat Flow(s),veh/h/ln	1079	0	1795	1586	0	0	1714	1805	1892	1714	1805	1607
Q Serve(g_s), s	15.5	0.0	4.3	7.8	0.0	0.0	0.6	46.8	47.0	2.0	37.3	8.2
Cycle Q Clear(g_c), s	33.6	0.0	4.3	18.1	0.0	0.0	0.6	46.8	47.0	2.0	37.3	8.2
Prop In Lane	1.00		0.32	0.15		0.84	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	310	0	567	538	0	0	154	933	978	158	1935	862
V/C Ratio(X)	0.74	0.00	0.16	0.56	0.00	0.00	0.12	0.89	0.89	0.42	0.77	0.25
Avail Cap(c_a), veh/h	359	0	649	610	0	0	196	933	978	167	1935	862
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	28.2	32.8	0.0	0.0	18.2	24.6	24.7	24.3	20.9	14.2
Incr Delay (d2), s/veh	5.1	0.0	0.0	0.3	0.0	0.0	0.1	12.3	12.0	0.7	3.0	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	6.7	0.0	1.9	7.1	0.0	0.0	0.2	21.5	22.6	0.9	15.3	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	0.0	28.2	33.1	0.0	0.0	18.3	36.9	36.6	25.0	24.0	14.9
LnGrp LOS	D	A	C	C	A	A	B	D	D	C	C	B
Approach Vol, veh/h		321			303			1716			1772	
Approach Delay, s/veh		41.2			33.1			36.6			22.9	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	64.4		40.8	6.8	66.6		40.8				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	5.0	59.0		* 41	5.0	59.0		* 41				
Max Q Clear Time (g_c+I1), s	4.0	49.0		35.6	2.6	39.3		20.1				
Green Ext Time (p_c), s	0.0	7.2		0.5	0.0	11.5		1.4				

Intersection Summary			
HCM 6th Ctrl Delay		30.8	
HCM 6th LOS		C	

Notes

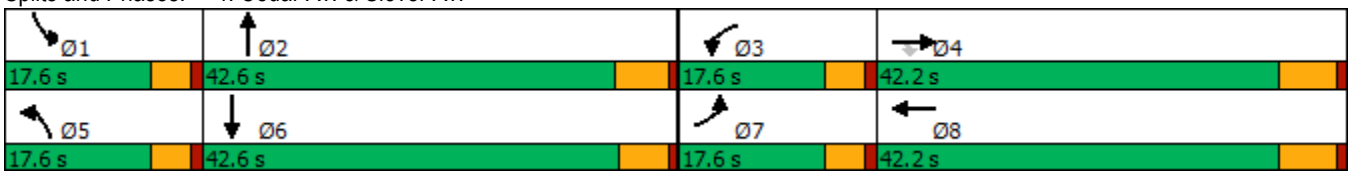
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

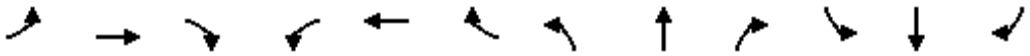
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	259	579	160	48	323	106	1061	320	1055
Future Volume (vph)	259	579	160	48	323	106	1061	320	1055
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 105.7
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	579	160	48	323	310	106	1061	102	320	1055	115
Future Volume (veh/h)	259	579	160	48	323	310	106	1061	102	320	1055	115
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	1.00		1.00	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	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	273	609	120	51	340	292	112	1117	105	337	1111	118
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	205	1115	489	65	419	353	138	1130	106	205	1243	132
Arrive On Green	0.12	0.31	0.31	0.04	0.23	0.23	0.08	0.34	0.34	0.12	0.38	0.38
Sat Flow, veh/h	1714	3610	1585	1714	1845	1554	1714	3335	313	1714	3287	349
Grp Volume(v), veh/h	273	609	120	51	332	300	112	604	618	337	609	620
Grp Sat Flow(s),veh/h/ln	1714	1805	1585	1714	1805	1594	1714	1805	1843	1714	1805	1831
Q Serve(g_s), s	13.0	15.2	6.2	3.2	19.0	19.4	7.0	36.1	36.2	13.0	34.4	34.6
Cycle Q Clear(g_c), s	13.0	15.2	6.2	3.2	19.0	19.4	7.0	36.1	36.2	13.0	34.4	34.6
Prop In Lane	1.00		1.00	1.00		0.97	1.00		0.17	1.00		0.19
Lane Grp Cap(c), veh/h	205	1115	489	65	409	362	138	611	624	205	682	692
V/C Ratio(X)	1.33	0.55	0.25	0.79	0.81	0.83	0.81	0.99	0.99	1.64	0.89	0.90
Avail Cap(c_a), veh/h	205	1196	525	205	598	528	205	611	624	205	682	692
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	47.8	31.2	28.1	51.8	39.8	40.0	49.2	35.7	35.7	47.8	31.7	31.8
Incr Delay (d2), s/veh	178.4	0.4	0.3	7.7	5.4	7.1	8.6	33.2	33.3	310.2	14.1	14.2
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	15.5	6.3	2.2	1.5	8.6	7.9	3.2	20.5	21.0	23.1	16.9	17.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	226.2	31.7	28.3	59.5	45.2	47.0	57.7	68.9	69.1	358.1	45.9	46.0
LnGrp LOS	F	C	C	E	D	D	E	E	E	F	D	D
Approach Vol, veh/h		1002			683			1334			1566	
Approach Delay, s/veh		84.3			47.1			68.1			113.1	
Approach LOS		F			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	42.6	8.7	39.7	13.3	46.9	17.6	30.8
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	15.0	38.2	5.2	17.2	9.0	36.6	15.0	21.4
Green Ext Time (p_c), s	0.0	0.0	0.0	3.8	0.0	0.5	0.0	3.1

Intersection Summary	
HCM 6th Ctrl Delay	83.9
HCM 6th LOS	F

Notes

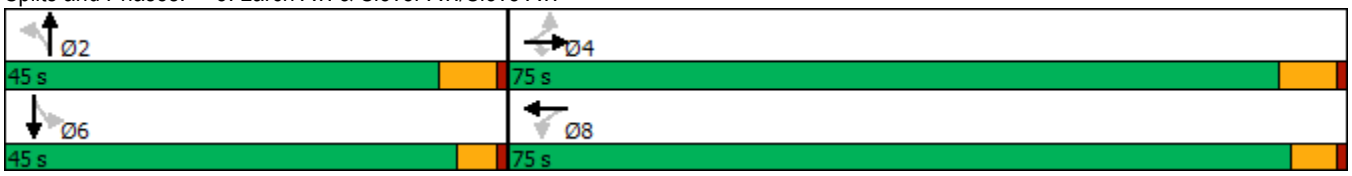
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

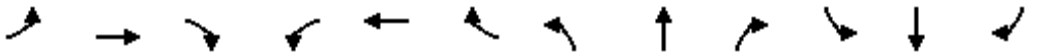
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	56	865	80	74	538	90	183	64	54
Future Volume (vph)	56	865	80	74	538	90	183	64	54
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	75.0	75.0	75.0	75.0	75.0	45.0	45.0	45.0	45.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 112.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	865	80	74	538	86	90	183	97	64	54	52
Future Volume (veh/h)	56	865	80	74	538	86	90	183	97	64	54	52
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		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	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	59	911	70	78	566	77	95	193	84	67	57	42
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	484	1202	997	227	2020	274	133	229	94	144	120	74
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	757	1900	1577	552	3193	433	362	898	368	384	469	289
Grp Volume(v), veh/h	59	911	70	78	319	324	372	0	0	166	0	0
Grp Sat Flow(s),veh/h/ln	757	1900	1577	552	1805	1822	1628	0	0	1141	0	0
Q Serve(g_s), s	4.2	37.4	1.9	12.8	8.7	8.8	10.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.0	37.4	1.9	50.2	8.7	8.8	24.4	0.0	0.0	13.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.24	0.26		0.23	0.40		0.25
Lane Grp Cap(c), veh/h	484	1202	997	227	1142	1152	456	0	0	337	0	0
V/C Ratio(X)	0.12	0.76	0.07	0.34	0.28	0.28	0.81	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	484	1202	997	227	1142	1152	614	0	0	495	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	12.0	14.3	7.8	32.1	9.1	9.1	39.7	0.0	0.0	35.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	4.5	0.1	4.1	0.6	0.6	6.2	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	0.7	14.6	0.6	1.9	3.1	3.1	10.3	0.0	0.0	4.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	18.8	7.9	36.1	9.7	9.7	45.9	0.0	0.0	36.1	0.0	0.0
LnGrp LOS	B	B	A	D	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1040			721			372			166	
Approach Delay, s/veh		17.7			12.5			45.9			36.1	
Approach LOS		B			B			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.4		76.1		34.4		76.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		38.8		68.8		* 40		* 70				
Max Q Clear Time (g_c+I1), s		26.4		39.4		15.5		52.2				
Green Ext Time (p_c), s		1.8		7.8		1.1		4.0				

Intersection Summary		
HCM 6th Ctrl Delay		22.0
HCM 6th LOS		C

Notes

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

Intersection	
Int Delay, s/veh	13.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	682	71	98	367	203	108
Future Vol, veh/h	682	71	98	367	203	108
Conflicting Peds, #/hr	0	1	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	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	718	75	103	386	214	114

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	794	0	1156	398
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	399	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	836	-	~ 193	607
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	652	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	835	-	~ 163	606
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	550	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	63.6
HCM LOS			F

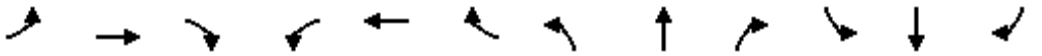
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	357	-	-	835	-
HCM Lane V/C Ratio	0.917	-	-	0.124	-
HCM Control Delay (s)	63.6	-	-	9.9	0.5
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	9.4	-	-	0.4	-

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	662	2	640	712	2020	1573	606
Future Volume (vph)	662	2	640	712	2020	1573	606
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.8	10.8	10.8	9.6	23.2	11.2	11.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	27.2	27.2	27.2	15.4	50.8	30.8	30.8
Actuated g/C Ratio	0.30	0.30	0.30	0.17	0.56	0.34	0.34
v/c Ratio	0.93	0.97	0.81	1.25	0.73	0.74	0.66
Control Delay	57.5	67.7	36.7	159.8	16.3	28.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	47.5	0.0	0.0
Total Delay	57.5	67.7	36.7	159.8	63.8	28.5	5.6
LOS	E	E	D	F	E	C	A
Approach Delay		54.4			88.8	22.2	
Approach LOS		D			F	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 58.2	Intersection LOS: E
Intersection Capacity Utilization 163.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	662	2	640	712	2020	0	0	1573	606
Future Volume (veh/h)	0	0	0	662	2	640	712	2020	0	0	1573	606
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				849	0	324	749	2126	0	0	1656	503
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				991	0	441	625	3046	0	0	2327	573
Arrive On Green				0.27	0.00	0.27	0.18	0.59	0.00	0.00	0.36	0.36
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				849	0	324	749	2126	0	0	1656	503
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				19.2	0.0	15.8	15.4	24.8	0.0	0.0	18.9	25.3
Cycle Q Clear(g_c), s				19.2	0.0	15.8	15.4	24.8	0.0	0.0	18.9	25.3
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				991	0	441	625	3046	0	0	2327	573
V/C Ratio(X)				0.86	0.00	0.73	1.20	0.70	0.00	0.00	0.71	0.88
Avail Cap(c_a), veh/h				1138	0	506	625	3046	0	0	2327	573
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.8	0.0	28.5	35.5	12.5	0.0	0.0	24.0	26.1
Incr Delay (d2), s/veh				6.0	0.0	4.7	104.2	1.4	0.0	0.0	1.9	17.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.5	0.0	6.2	15.1	7.7	0.0	0.0	6.8	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				35.7	0.0	33.3	139.7	13.8	0.0	0.0	25.9	43.2
LnGrp LOS				D	A	C	F	B	A	A	C	D
Approach Vol, veh/h					1173			2875			2159	
Approach Delay, s/veh					35.1			46.6			29.9	
Approach LOS					D			D			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		57.0			20.0	37.0		29.5				
Change Period (Y+Rc), s		6.2			4.6	6.2		5.8				
Max Green Setting (Gmax), s		50.8			15.4	30.8		27.2				
Max Q Clear Time (g_c+I1), s		26.8			17.4	27.3		21.2				
Green Ext Time (p_c), s		16.4			0.0	3.0		2.4				

Intersection Summary												
HCM 6th Ctrl Delay			38.6									
HCM 6th LOS			D									

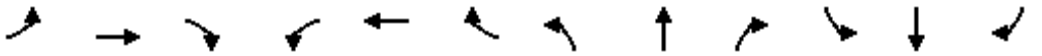
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	765	4	559	1967	599	1636
Future Volume (vph)	765	4	559	1967	599	1636
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.0	18.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	48.9%	20.0%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	22.2	22.2	22.2	37.8	13.4	55.8
Actuated g/C Ratio	0.25	0.25	0.25	0.42	0.15	0.62
v/c Ratio	1.14	1.15	0.98	1.43	1.21	0.77
Control Delay	121.9	124.2	66.8	222.4	147.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.9
Total Delay	121.9	124.2	66.8	222.4	147.0	63.3
LOS	F	F	E	F	F	E
Approach Delay		105.3		222.4		85.7
Approach LOS		F		F		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.43	
Intersection Signal Delay: 151.7	Intersection LOS: F
Intersection Capacity Utilization 163.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	765	4	559	0	0	0	0	1967	989	599	1636	0
Future Volume (veh/h)	765	4	559	0	0	0	0	1967	989	599	1636	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	957	0	325				0	2071	930	631	1722	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	893	0	397				0	1539	603	523	2238	0
Arrive On Green	0.25	0.00	0.25				0.00	0.42	0.42	0.15	0.62	0.00
Sat Flow, veh/h	3619	0	1610				0	3836	1435	3510	3705	0
Grp Volume(v), veh/h	957	0	325				0	1937	1064	631	1722	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1642	1755	1805	0
Q Serve(g_s), s	22.2	0.0	17.1				0.0	37.8	37.8	13.4	31.2	0.0
Cycle Q Clear(g_c), s	22.2	0.0	17.1				0.0	37.8	37.8	13.4	31.2	0.0
Prop In Lane	1.00		1.00				0.00		0.87	1.00		0.00
Lane Grp Cap(c), veh/h	893	0	397				0	1452	690	523	2238	0
V/C Ratio(X)	1.07	0.00	0.82				0.00	1.33	1.54	1.21	0.77	0.00
Avail Cap(c_a), veh/h	893	0	397				0	1452	690	523	2238	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.9	0.0	32.0				0.0	26.1	26.1	38.3	12.4	0.0
Incr Delay (d2), s/veh	51.4	0.0	12.6				0.0	154.9	251.7	110.2	2.6	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
%ile BackOfQ(50%),veh/ln	15.4	0.0	7.6				0.0	44.7	60.9	13.4	10.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.3	0.0	44.6				0.0	181.0	277.8	148.5	15.0	0.0
LnGrp LOS	F	A	D				A	F	F	F	B	A
Approach Vol, veh/h		1282						3001			2353	
Approach Delay, s/veh		75.0						215.3			50.8	
Approach LOS		E						F			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	18.0	44.0		28.0		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.4	37.8		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.4	39.8		24.2		33.2
Green Ext Time (p_c), s	0.0	0.0		0.0		13.1

Intersection Summary		
HCM 6th Ctrl Delay		129.9
HCM 6th LOS		F

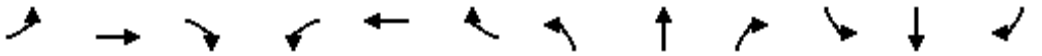
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	587	302	57	10	62	2012	40	1529
Future Volume (vph)	587	302	57	10	62	2012	40	1529
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	38.0	38.0	38.0	38.0	9.6	42.4	9.6	42.4
Total Split (%)	42.2%	42.2%	42.2%	42.2%	10.7%	47.1%	10.7%	47.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	32.3	32.3	32.3	32.3	5.0	38.2	5.0	36.3
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.06	0.43	0.06	0.41
v/c Ratio	1.28	0.47	0.26	0.09	0.63	1.38	0.40	1.37
Control Delay	168.8	18.0	24.3	5.3	69.1	198.4	53.0	196.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	168.8	18.0	24.3	5.3	69.1	198.4	53.0	196.2
LOS	F	B	C	A	E	F	D	F
Approach Delay		92.9		11.8		194.6		193.3
Approach LOS		F		B		F		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 88.1	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 166.6	Intersection LOS: F
Intersection Capacity Utilization 113.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	587	302	293	57	10	100	62	2012	68	40	1529	413
Future Volume (veh/h)	587	302	293	57	10	100	62	2012	68	40	1529	413
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	605	311	282	59	10	84	64	2074	70	41	1576	393
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	537	655	580	280	653	582	83	1484	50	65	1172	279
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.05	0.42	0.42	0.04	0.41	0.41
Sat Flow, veh/h	1396	1812	1605	884	1805	1610	1810	3564	120	1810	2883	687
Grp Volume(v), veh/h	605	310	283	59	10	84	64	1045	1099	41	959	1010
Grp Sat Flow(s),veh/h/ln	1396	1805	1611	884	1805	1610	1810	1805	1878	1810	1805	1766
Q Serve(g_s), s	29.1	11.8	12.1	4.9	0.3	3.1	3.1	37.1	37.1	2.0	36.2	36.2
Cycle Q Clear(g_c), s	32.2	11.8	12.1	17.1	0.3	3.1	3.1	37.1	37.1	2.0	36.2	36.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.39
Lane Grp Cap(c), veh/h	537	653	582	280	653	582	83	751	782	65	734	718
V/C Ratio(X)	1.13	0.47	0.49	0.21	0.02	0.14	0.77	1.39	1.41	0.63	1.31	1.41
Avail Cap(c_a), veh/h	537	653	582	280	653	582	102	751	782	102	734	718
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	32.2	21.9	22.0	28.6	18.3	19.2	42.0	26.0	26.0	42.4	26.4	26.4
Incr Delay (d2), s/veh	79.0	0.5	0.6	0.4	0.0	0.1	20.0	183.7	190.3	3.8	148.1	191.5
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	23.1	4.7	4.3	1.0	0.1	1.1	1.8	52.0	55.6	0.9	43.7	51.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.2	22.5	22.7	29.0	18.3	19.3	62.0	209.7	216.3	46.1	174.6	217.9
LnGrp LOS	F	C	C	C	B	B	E	F	F	D	F	F
Approach Vol, veh/h		1198			153			2208			2010	
Approach Delay, s/veh		67.3			23.0			208.7			193.7	
Approach LOS		E			C			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	43.3		38.0	8.7	42.4		38.0				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	36.2		32.2	5.0	36.2		32.2				
Max Q Clear Time (g_c+I1), s	4.0	39.1		34.2	5.1	38.2		19.1				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		167.8	
HCM 6th LOS		F	

APPENDIX 7.2:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

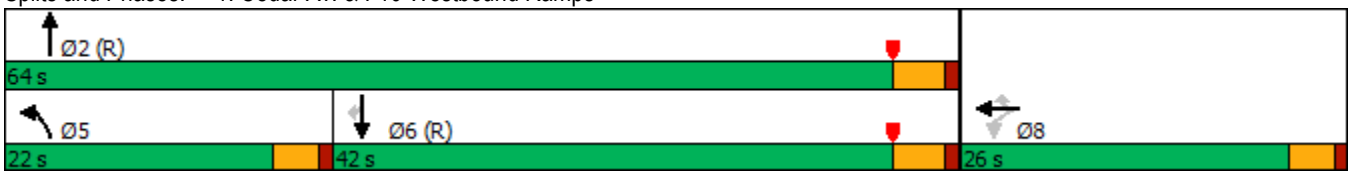
This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	400	475	1480	1758	997
Future Volume (vph)	16	400	475	1480	1758	997
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	26.0	26.0	22.0	64.0	42.0	42.0
Total Split (%)	28.9%	28.9%	24.4%	71.1%	46.7%	46.7%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 59 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	541	16	400	475	1480	0	0	1758	997
Future Volume (veh/h)	0	0	0	541	16	400	475	1480	0	0	1758	997
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				569	17	281	500	1558	0	0	1851	793
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				430	13	394	362	2387	0	0	2161	671
Arrive On Green				0.24	0.24	0.24	0.13	0.44	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1759	53	1610	1810	3705	0	0	5358	1610
Grp Volume(v), veh/h				586	0	281	500	1558	0	0	1851	793
Grp Sat Flow(s),veh/h/ln				1812	0	1610	1810	1805	0	0	1729	1610
Q Serve(g_s), s				22.0	0.0	14.4	18.0	30.4	0.0	0.0	29.1	37.5
Cycle Q Clear(g_c), s				22.0	0.0	14.4	18.0	30.4	0.0	0.0	29.1	37.5
Prop In Lane				0.97		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				443	0	394	362	2387	0	0	2161	671
V/C Ratio(X)				1.32	0.00	0.71	1.38	0.65	0.00	0.00	0.86	1.18
Avail Cap(c_a), veh/h				443	0	394	362	2387	0	0	2161	671
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.11	0.11	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.0	0.0	31.1	39.0	17.0	0.0	0.0	23.8	26.3
Incr Delay (d2), s/veh				160.4	0.0	6.0	173.7	0.2	0.0	0.0	4.6	96.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				28.7	0.0	5.9	25.6	12.8	0.0	0.0	11.7	30.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				194.4	0.0	37.1	212.6	17.1	0.0	0.0	28.4	122.9
LnGrp LOS				F	A	D	F	B	A	A	C	F
Approach Vol, veh/h					867			2058			2644	
Approach Delay, s/veh					143.4			64.6			56.8	
Approach LOS					F			E			E	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		64.0			22.0	42.0		26.0				
Change Period (Y+Rc), s		4.5			4.0	4.5		4.0				
Max Green Setting (Gmax), s		59.5			18.0	37.5		22.0				
Max Q Clear Time (g_c+I1), s		32.4			20.0	39.5		24.0				
Green Ext Time (p_c), s		13.6			0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	73.2	
HCM 6th LOS	E	

Notes

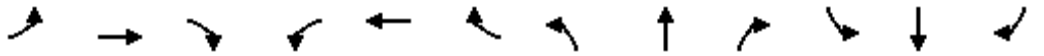
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	556	4	1398	688	566	1732
Future Volume (vph)	556	4	1398	688	566	1732
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	30.0	30.0	31.0	31.0	29.0	60.0
Total Split (%)	33.3%	33.3%	34.4%	34.4%	32.2%	66.7%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 17 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	556	4	550	0	0	0	0	1398	688	566	1732	0
Future Volume (veh/h)	556	4	550	0	0	0	0	1398	688	566	1732	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	555	47	520				0	1472	647	596	1823	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	523	39	432				0	1527	474	503	2226	0
Arrive On Green	0.29	0.29	0.29				0.00	0.29	0.29	0.28	0.62	0.00
Sat Flow, veh/h	1810	135	1496				0	5358	1610	1810	3705	0
Grp Volume(v), veh/h	555	0	567				0	1472	647	596	1823	0
Grp Sat Flow(s),veh/h/ln	1810	0	1631				0	1729	1610	1810	1805	0
Q Serve(g_s), s	26.0	0.0	26.0				0.0	25.2	26.5	25.0	35.2	0.0
Cycle Q Clear(g_c), s	26.0	0.0	26.0				0.0	25.2	26.5	25.0	35.2	0.0
Prop In Lane	1.00		0.92				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	523	0	471				0	1527	474	503	2226	0
V/C Ratio(X)	1.06	0.00	1.20				0.00	0.96	1.36	1.19	0.82	0.00
Avail Cap(c_a), veh/h	523	0	471				0	1527	474	503	2226	0
HCM Platoon Ratio	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				0.00	0.09	0.09	0.40	0.40	0.00
Uniform Delay (d), s/veh	32.0	0.0	32.0				0.0	31.3	31.8	32.5	13.4	0.0
Incr Delay (d2), s/veh	56.7	0.0	110.3				0.0	2.5	165.4	91.9	1.4	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
%ile BackOfQ(50%),veh/ln	18.7	0.0	23.8				0.0	10.1	31.4	23.1	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.7	0.0	142.3				0.0	33.7	197.1	124.4	14.8	0.0
LnGrp LOS	F	A	F				A	C	F	F	B	A
Approach Vol, veh/h		1122						2119			2419	
Approach Delay, s/veh		115.8						83.6			41.8	
Approach LOS		F						F			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.0	31.0		30.0		60.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	25.0	26.5		26.0		55.5
Max Q Clear Time (g_c+I1), s	27.0	28.5		28.0		37.2
Green Ext Time (p_c), s	0.0	0.0		0.0		9.4

Intersection Summary	
HCM 6th Ctrl Delay	72.1
HCM 6th LOS	E

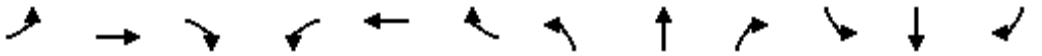
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	361	7	10	1	19	1613	157	1567	559
Future Volume (vph)	361	7	10	1	19	1613	157	1567	559
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	44.0	44.0	44.0	44.0	9.6	62.2	13.8	66.4	66.4
Total Split (%)	36.7%	36.7%	36.7%	36.7%	8.0%	51.8%	11.5%	55.3%	55.3%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 119.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	361	7	29	10	1	112	19	1613	46	157	1567	559
Future Volume (veh/h)	361	7	29	10	1	112	19	1613	46	157	1567	559
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		1.00	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	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	380	7	29	11	1	67	20	1698	47	165	1649	426
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	463	97	403	80	29	410	131	1798	50	192	1978	882
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.02	0.50	0.50	0.07	0.55	0.55
Sat Flow, veh/h	1283	322	1336	147	97	1359	1714	3588	99	1714	3610	1610
Grp Volume(v), veh/h	380	0	36	79	0	0	20	852	893	165	1649	426
Grp Sat Flow(s),veh/h/ln	1283	0	1658	1602	0	0	1714	1805	1882	1714	1805	1610
Q Serve(g_s), s	27.7	0.0	1.8	0.0	0.0	0.0	0.6	50.5	51.1	5.6	43.1	18.4
Cycle Q Clear(g_c), s	31.7	0.0	1.8	4.0	0.0	0.0	0.6	50.5	51.1	5.6	43.1	18.4
Prop In Lane	1.00		0.81	0.14		0.85	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	463	0	501	520	0	0	131	905	943	192	1978	882
V/C Ratio(X)	0.82	0.00	0.07	0.15	0.00	0.00	0.15	0.94	0.95	0.86	0.83	0.48
Avail Cap(c_a), veh/h	521	0	575	592	0	0	171	905	943	216	1978	882
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	0.0	28.2	29.0	0.0	0.0	20.2	26.7	26.8	28.5	21.3	15.8
Incr Delay (d2), s/veh	8.1	0.0	0.0	0.0	0.0	0.0	0.2	18.7	19.0	23.4	4.3	1.9
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	11.3	0.0	0.7	1.6	0.0	0.0	0.2	24.6	26.0	3.4	17.7	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	0.0	28.3	29.1	0.0	0.0	20.4	45.4	45.8	52.0	25.7	17.6
LnGrp LOS	D	A	C	C	A	A	C	D	D	D	C	B
Approach Vol, veh/h		416			79			1765			2240	
Approach Delay, s/veh		44.8			29.1			45.3			26.1	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.2	62.2		38.9	6.9	67.5		38.9				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	9.2	56.8		* 39	5.0	61.0		* 39				
Max Q Clear Time (g_c+I1), s	7.6	53.1		33.7	2.6	45.1		6.0				
Green Ext Time (p_c), s	0.0	3.1		0.5	0.0	11.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		35.4	
HCM 6th LOS		D	

Notes

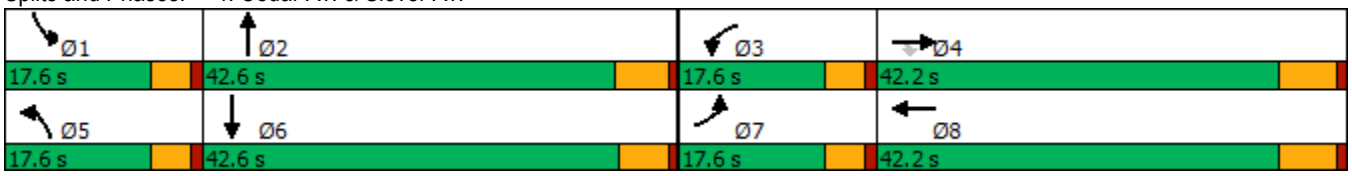
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

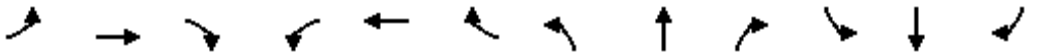
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	265	157	53	20	191	90	1176	269	1172
Future Volume (vph)	265	157	53	20	191	90	1176	269	1172
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 98.8
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	157	53	20	191	237	90	1176	46	269	1172	164
Future Volume (veh/h)	265	157	53	20	191	237	90	1176	46	269	1172	164
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		1.00	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	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	279	165	43	21	201	228	95	1238	48	283	1234	170
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	218	1023	456	38	321	287	119	1276	49	218	1332	183
Arrive On Green	0.13	0.28	0.28	0.02	0.18	0.18	0.07	0.36	0.36	0.13	0.42	0.42
Sat Flow, veh/h	1714	3610	1608	1714	1805	1610	1714	3543	137	1714	3189	437
Grp Volume(v), veh/h	279	165	43	21	201	228	95	630	656	283	696	708
Grp Sat Flow(s),veh/h/ln	1714	1805	1608	1714	1805	1610	1714	1805	1875	1714	1805	1821
Q Serve(g_s), s	13.0	3.5	2.0	1.2	10.5	13.9	5.6	35.1	35.2	13.0	37.3	37.8
Cycle Q Clear(g_c), s	13.0	3.5	2.0	1.2	10.5	13.9	5.6	35.1	35.2	13.0	37.3	37.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.24
Lane Grp Cap(c), veh/h	218	1023	456	38	321	287	119	650	675	218	754	761
V/C Ratio(X)	1.28	0.16	0.09	0.56	0.63	0.80	0.80	0.97	0.97	1.30	0.92	0.93
Avail Cap(c_a), veh/h	218	1272	567	218	636	567	218	650	675	218	754	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	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	44.6	27.5	27.0	49.5	38.8	40.2	46.8	32.2	32.2	44.6	28.2	28.3
Incr Delay (d2), s/veh	156.2	0.1	0.1	4.7	2.0	5.0	4.5	27.8	27.5	163.5	16.9	17.9
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	14.7	1.4	0.7	0.6	4.6	5.6	2.4	19.2	19.9	15.3	18.5	19.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	200.8	27.6	27.1	54.2	40.8	45.2	51.4	60.0	59.6	208.1	45.1	46.3
LnGrp LOS	F	C	C	D	D	D	D	E	E	F	D	D
Approach Vol, veh/h		487			450			1381			1687	
Approach Delay, s/veh		126.8			43.7			59.2			72.9	
Approach LOS		F			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	42.6	6.8	35.2	11.7	48.5	17.6	24.4
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	15.0	37.2	3.2	5.5	7.6	39.8	15.0	15.9
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	71.5
HCM 6th LOS	E

Notes

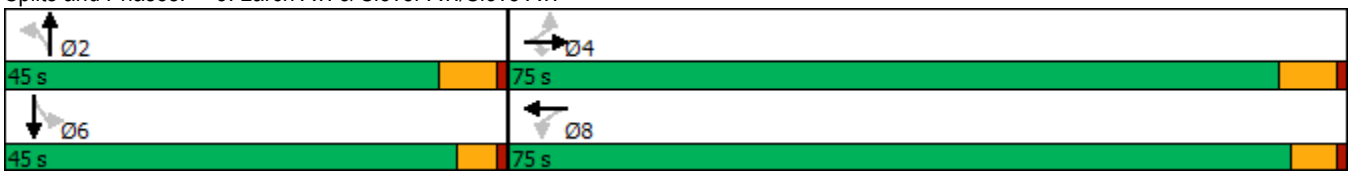
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

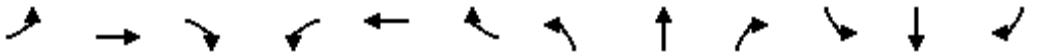
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	9	384	79	48	374	67	66	48	42
Future Volume (vph)	9	384	79	48	374	67	66	48	42
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	75.0	75.0	75.0	75.0	75.0	45.0	45.0	45.0	45.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 97.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	384	79	48	374	40	67	66	29	48	42	7
Future Volume (veh/h)	9	384	79	48	374	40	67	66	29	48	42	7
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		1.00	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	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	9	404	74	51	394	28	71	69	25	51	44	6
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	738	1416	1200	673	2548	180	134	98	32	136	104	12
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	929	1900	1610	882	3419	242	648	799	258	640	848	94
Grp Volume(v), veh/h	9	404	74	51	207	215	165	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	929	1900	1610	882	1805	1856	1705	0	0	1582	0	0
Q Serve(g_s), s	0.3	6.5	1.2	1.9	3.1	3.1	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.4	6.5	1.2	8.3	3.1	3.1	8.6	0.0	0.0	5.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.13	0.43		0.15	0.50		0.06
Lane Grp Cap(c), veh/h	738	1416	1200	673	1345	1383	264	0	0	252	0	0
V/C Ratio(X)	0.01	0.29	0.06	0.08	0.15	0.16	0.63	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	738	1416	1200	673	1345	1383	728	0	0	727	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	3.9	3.9	3.2	5.2	3.4	3.4	39.7	0.0	0.0	38.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.1	0.2	0.2	0.2	2.4	0.0	0.0	1.0	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	1.7	0.3	0.3	0.8	0.8	3.8	0.0	0.0	2.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.0	4.4	3.3	5.4	3.7	3.7	42.2	0.0	0.0	39.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		487			473			165			101	
Approach Delay, s/veh		4.2			3.9			42.2			39.4	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.7		76.1		17.7		76.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		38.8		68.8		* 40		* 70				
Max Q Clear Time (g_c+I1), s		10.6		8.5		7.4		10.3				
Green Ext Time (p_c), s		0.9		2.6		0.6		2.6				

Intersection Summary		
HCM 6th Ctrl Delay	12.1	
HCM 6th LOS	B	

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	379	11	6	293	3	2
Future Vol, veh/h	379	11	6	293	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	399	12	6	308	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	411	0	571	206
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	166	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1159	-	456	807
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1159	-	454	807
Mov Cap-2 Maneuver	-	-	-	-	533	-
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	848	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	617	-	-	1159	-
HCM Lane V/C Ratio	0.009	-	-	0.005	-
HCM Control Delay (s)	10.9	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	376	4	5	297	1	2
Future Vol, veh/h	376	4	5	297	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	396	4	5	313	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	400	0	565	200
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	167	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1170	-	460	814
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1170	-	458	814
Mov Cap-2 Maneuver	-	-	-	-	537	-
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	848	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	695	-	-	1170	-
HCM Lane V/C Ratio	0.005	-	-	0.004	-
HCM Control Delay (s)	10.2	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	227	150	103	216	87	58
Future Vol, veh/h	227	150	103	216	87	58
Conflicting Peds, #/hr	0	1	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	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	239	158	108	227	92	61

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	398	0	649	200
Stage 1	-	-	-	-	319	-
Stage 2	-	-	-	-	330	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1172	-	407	814
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1171	-	363	813
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	632	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	566	-	-	1171	-
HCM Lane V/C Ratio	0.27	-	-	0.093	-
HCM Control Delay (s)	13.7	-	-	8.4	0.2
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	141	241	12
Future Vol, veh/h	4	0	0	141	241	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	0	0	148	254	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	409	261	267	0	-	0
Stage 1	261	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	602	783	1308	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	602	783	1308	-	-	-
Mov Cap-2 Maneuver	602	-	-	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	884	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1308	-	602	-	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	0	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	140	237	4
Future Vol, veh/h	1	0	1	140	237	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	0	1	147	249	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	400	251	253	0	-	0
Stage 1	251	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	610	793	1324	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	609	793	1324	-	-	-
Mov Cap-2 Maneuver	609	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	884	-	-	-	-	-

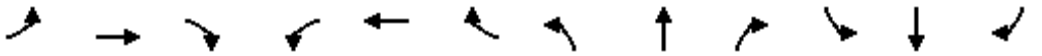
Approach	EB	NB	SB
HCM Control Delay, s	10.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1324	-	609	-	-
HCM Lane V/C Ratio	0.001	-	0.002	-	-
HCM Control Delay (s)	7.7	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	877	0	477	604	1094	1785	715
Future Volume (vph)	877	0	477	604	1094	1785	715
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	15.8	15.8	15.8	9.6	23.2	16.2	16.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	27.2	27.2	27.2	15.4	50.8	30.8	30.8
Actuated g/C Ratio	0.30	0.30	0.30	0.17	0.56	0.34	0.34
v/c Ratio	0.94	0.88	0.84	1.06	0.39	0.84	0.74
Control Delay	60.5	42.8	39.6	91.7	11.5	31.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	60.5	42.8	39.6	91.7	12.2	31.6	8.2
LOS	E	D	D	F	B	C	A
Approach Delay		47.9			40.5	24.9	
Approach LOS		D			D	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 35.2	Intersection LOS: D
Intersection Capacity Utilization 159.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	877	0	477	604	1094	0	0	1785	715
Future Volume (veh/h)	0	0	0	877	0	477	604	1094	0	0	1785	715
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				1011	0	189	636	1152	0	0	1879	588
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1083	0	482	603	2940	0	0	2246	553
Arrive On Green				0.30	0.00	0.30	0.17	0.57	0.00	0.00	0.34	0.34
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				1011	0	189	636	1152	0	0	1879	588
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				24.3	0.0	8.4	15.4	11.1	0.0	0.0	23.7	30.8
Cycle Q Clear(g_c), s				24.3	0.0	8.4	15.4	11.1	0.0	0.0	23.7	30.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1083	0	482	603	2940	0	0	2246	553
V/C Ratio(X)				0.93	0.00	0.39	1.05	0.39	0.00	0.00	0.84	1.06
Avail Cap(c_a), veh/h				1098	0	489	603	2940	0	0	2246	553
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.5	0.0	24.9	37.1	10.8	0.0	0.0	27.1	29.4
Incr Delay (d2), s/veh				13.9	0.0	0.5	51.8	0.4	0.0	0.0	3.9	56.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.8	0.0	3.0	10.5	3.6	0.0	0.0	8.9	19.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				44.4	0.0	25.4	88.9	11.2	0.0	0.0	31.0	85.4
LnGrp LOS				D	A	C	F	B	A	A	C	F
Approach Vol, veh/h					1200			1788			2467	
Approach Delay, s/veh					41.5			38.8			44.0	
Approach LOS					D			D			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.0		20.0	37.0		32.6						
Change Period (Y+Rc), s	6.2		4.6	6.2		5.8						
Max Green Setting (Gmax), s	50.8		15.4	30.8		27.2						
Max Q Clear Time (g_c+I1), s	13.1		17.4	32.8		26.3						
Green Ext Time (p_c), s	8.9		0.0	0.0		0.5						

Intersection Summary		
HCM 6th Ctrl Delay	41.7	
HCM 6th LOS	D	

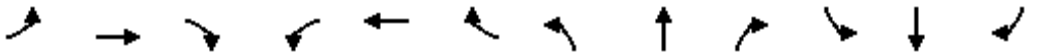
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	472	0	773	1227	666	1997
Future Volume (vph)	472	0	773	1227	666	1997
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.1	17.9	62.0
Total Split (%)	31.1%	31.1%	31.1%	49.0%	19.9%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	22.2	22.2	22.2	37.9	13.3	55.8
Actuated g/C Ratio	0.25	0.25	0.25	0.42	0.15	0.62
v/c Ratio	1.08	1.01	0.98	1.08dr	1.38	0.96
Control Delay	101.5	73.4	66.2	47.8	217.0	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	43.7
Total Delay	101.5	73.4	66.2	47.8	217.0	72.4
LOS	F	E	E	D	F	E
Approach Delay		80.6		47.8		108.5
Approach LOS		F		D		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 81.8	Intersection LOS: F
Intersection Capacity Utilization 159.7%	ICU Level of Service H
Analysis Period (min) 15	
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	472	0	773	0	0	0	0	1227	830	666	1997	0
Future Volume (veh/h)	472	0	773	0	0	0	0	1227	830	666	1997	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	749	0	427				0	1319	815	716	2147	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	893	0	397				0	1456	678	519	2238	0
Arrive On Green	0.25	0.00	0.25				0.00	0.42	0.42	0.15	0.62	0.00
Sat Flow, veh/h	3619	0	1610				0	3629	1609	3510	3705	0
Grp Volume(v), veh/h	749	0	427				0	1319	815	716	2147	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1755	1805	0
Q Serve(g_s), s	17.7	0.0	22.2				0.0	32.1	37.9	13.3	50.2	0.0
Cycle Q Clear(g_c), s	17.7	0.0	22.2				0.0	32.1	37.9	13.3	50.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	893	0	397				0	1456	678	519	2238	0
V/C Ratio(X)	0.84	0.00	1.08				0.00	0.91	1.20	1.38	0.96	0.00
Avail Cap(c_a), veh/h	893	0	397				0	1456	678	519	2238	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.2	0.0	33.9				0.0	24.4	26.1	38.3	16.0	0.0
Incr Delay (d2), s/veh	7.2	0.0	66.7				0.0	9.7	105.0	182.9	11.6	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
%ile BackOfQ(50%),veh/ln	8.1	0.0	15.4				0.0	13.4	32.3	18.5	18.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	0.0	100.6				0.0	34.1	131.0	221.2	27.6	0.0
LnGrp LOS	D	A	F				A	C	F	F	C	A
Approach Vol, veh/h		1176						2134			2863	
Approach Delay, s/veh		61.6						71.1			76.0	
Approach LOS		E						E			E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	17.9	44.1		28.0		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.3	37.9		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.3	39.9		24.2		52.2
Green Ext Time (p_c), s	0.0	0.0		0.0		3.3

Intersection Summary		
HCM 6th Ctrl Delay		71.6
HCM 6th LOS		E

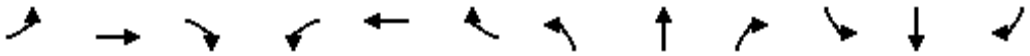
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	402	43	77	34	119	1634	35	2062
Future Volume (vph)	402	43	77	34	119	1634	35	2062
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	32.8	32.8	32.8	32.8	9.6	47.6	9.6	47.6
Total Split (%)	36.4%	36.4%	36.4%	36.4%	10.7%	52.9%	10.7%	52.9%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	27.0	27.0	27.0	27.0	5.0	45.2	5.0	41.4
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.06	0.50	0.06	0.46
v/c Ratio	1.13	0.18	0.23	0.14	1.27	0.98	0.37	1.64
Control Delay	119.2	9.8	25.8	8.1	216.9	41.5	51.8	312.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.2	9.8	25.8	8.1	216.9	41.5	51.8	312.3
LOS	F	A	C	A	F	D	D	F
Approach Delay		86.0		14.6		53.2		308.8
Approach LOS		F		B		D		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.64	
Intersection Signal Delay: 182.6	Intersection LOS: F
Intersection Capacity Utilization 127.4%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	402	43	132	77	34	99	119	1634	36	35	2062	456
Future Volume (veh/h)	402	43	132	77	34	99	119	1634	36	35	2062	456
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		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	428	46	134	82	36	88	127	1738	34	37	2194	416
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	433	541	482	385	542	483	101	1746	34	61	1401	257
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.06	0.48	0.48	0.03	0.46	0.46
Sat Flow, veh/h	1359	1805	1607	1289	1805	1610	1810	3621	71	1810	3045	559
Grp Volume(v), veh/h	428	46	134	82	36	88	127	864	908	37	1272	1338
Grp Sat Flow(s),veh/h/ln	1359	1805	1607	1289	1805	1610	1810	1805	1887	1810	1805	1799
Q Serve(g_s), s	23.4	1.6	5.7	4.7	1.3	3.6	5.0	42.8	43.2	1.8	41.4	41.4
Cycle Q Clear(g_c), s	27.0	1.6	5.7	10.4	1.3	3.6	5.0	42.8	43.2	1.8	41.4	41.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.31
Lane Grp Cap(c), veh/h	433	542	482	385	542	483	101	870	910	61	830	828
V/C Ratio(X)	0.99	0.08	0.28	0.21	0.07	0.18	1.26	0.99	1.00	0.61	1.53	1.62
Avail Cap(c_a), veh/h	433	542	482	385	542	483	101	870	910	101	830	828
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	35.4	22.6	24.1	28.0	22.5	23.3	42.5	23.2	23.3	42.9	24.3	24.3
Incr Delay (d2), s/veh	40.4	0.1	0.3	0.3	0.1	0.2	176.2	28.9	29.3	3.6	245.2	283.3
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	14.0	0.7	2.1	1.4	0.5	1.3	7.0	22.2	23.5	0.8	71.5	80.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.7	22.7	24.4	28.3	22.5	23.5	218.7	52.1	52.6	46.6	269.5	307.6
LnGrp LOS	E	C	C	C	C	C	F	D	D	D	F	F
Approach Vol, veh/h		608			206			1899			2647	
Approach Delay, s/veh		60.4			25.2			63.5			285.7	
Approach LOS		E			C			E			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	49.6		32.8	9.6	47.6		32.8				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	41.4		27.0	5.0	41.4		27.0				
Max Q Clear Time (g_c+I1), s	3.8	45.2		29.0	7.0	43.4		12.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.7				

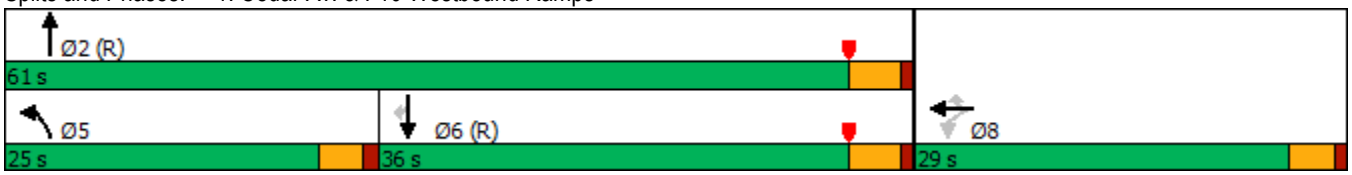
Intersection Summary												
HCM 6th Ctrl Delay			171.4									
HCM 6th LOS			F									

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	501	517	1875	1509	684
Future Volume (vph)	5	501	517	1875	1509	684
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	29.0	29.0	25.0	61.0	36.0	36.0
Total Split (%)	32.2%	32.2%	27.8%	67.8%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	433	5	501	517	1875	0	0	1509	684
Future Volume (veh/h)	0	0	0	433	5	501	517	1875	0	0	1509	684
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				456	50	491	544	1974	0	0	1588	522
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				455	50	447	422	2266	0	0	1815	556
Arrive On Green				0.28	0.28	0.28	0.31	0.83	0.00	0.00	0.35	0.35
Sat Flow, veh/h				1638	180	1610	1810	3705	0	0	5358	1587
Grp Volume(v), veh/h				506	0	491	544	1974	0	0	1588	522
Grp Sat Flow(s),veh/h/ln				1818	0	1610	1810	1805	0	0	1729	1587
Q Serve(g_s), s				25.0	0.0	25.0	21.0	29.8	0.0	0.0	25.8	28.7
Cycle Q Clear(g_c), s				25.0	0.0	25.0	21.0	29.8	0.0	0.0	25.8	28.7
Prop In Lane				0.90		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				505	0	447	422	2266	0	0	1815	556
V/C Ratio(X)				1.00	0.00	1.10	1.29	0.87	0.00	0.00	0.87	0.94
Avail Cap(c_a), veh/h				505	0	447	422	2266	0	0	1815	556
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				32.5	0.0	32.5	31.0	5.2	0.0	0.0	27.4	28.3
Incr Delay (d2), s/veh				40.5	0.0	71.7	131.5	0.5	0.0	0.0	6.2	25.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				15.8	0.0	17.9	23.3	3.6	0.0	0.0	10.9	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				73.0	0.0	104.2	162.5	5.7	0.0	0.0	33.6	54.1
LnGrp LOS				F	A	F	F	A	A	A	C	D
Approach Vol, veh/h					997			2518			2110	
Approach Delay, s/veh					88.4			39.6			38.7	
Approach LOS					F			D			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	61.0		25.0	36.0		29.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	56.5		21.0	31.5		25.0						
Max Q Clear Time (g_c+I1), s	31.8		23.0	30.7		27.0						
Green Ext Time (p_c), s	17.1		0.0	0.8		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	47.9	
HCM 6th LOS	D	

Notes

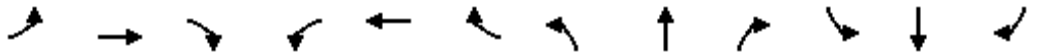
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	936	1	1457	683	586	1357
Future Volume (vph)	936	1	1457	683	586	1357
Turn Type	Perm	NA	NA	Perm	Prot	NA
Protected Phases		4	2		1	6
Permitted Phases	4			2		
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	33.0	33.0	29.0	29.0	28.0	57.0
Total Split (%)	36.7%	36.7%	32.2%	32.2%	31.1%	63.3%
Yellow Time (s)	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	936	1	425	0	0	0	0	1457	683	586	1357	0
Future Volume (veh/h)	936	1	425	0	0	0	0	1457	683	586	1357	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	705	393	424				0	1534	631	617	1428	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	583	269	291				0	1412	438	483	2106	0
Arrive On Green	0.32	0.32	0.32				0.00	0.27	0.27	0.18	0.39	0.00
Sat Flow, veh/h	1810	836	902				0	5358	1608	1810	3705	0
Grp Volume(v), veh/h	705	0	817				0	1534	631	617	1428	0
Grp Sat Flow(s),veh/h/ln	1810	0	1738				0	1729	1608	1810	1805	0
Q Serve(g_s), s	29.0	0.0	29.0				0.0	24.5	24.5	24.0	29.5	0.0
Cycle Q Clear(g_c), s	29.0	0.0	29.0				0.0	24.5	24.5	24.0	29.5	0.0
Prop In Lane	1.00		0.52				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	583	0	560				0	1412	438	483	2106	0
V/C Ratio(X)	1.21	0.00	1.46				0.00	1.09	1.44	1.28	0.68	0.00
Avail Cap(c_a), veh/h	583	0	560				0	1412	438	483	2106	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.23	0.23	0.36	0.36	0.00
Uniform Delay (d), s/veh	30.5	0.0	30.5				0.0	32.8	32.8	37.0	20.4	0.0
Incr Delay (d2), s/veh	109.5	0.0	216.4				0.0	42.3	201.6	131.3	0.6	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
%ile BackOfQ(50%),veh/ln	29.2	0.0	44.7				0.0	15.1	33.4	28.3	12.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	140.0	0.0	246.9				0.0	75.0	234.3	168.2	21.1	0.0
LnGrp LOS	F	A	F				A	F	F	F	C	A
Approach Vol, veh/h		1522						2165			2045	
Approach Delay, s/veh		197.3						121.4			65.5	
Approach LOS		F						F			E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	28.0	29.0		33.0		57.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	24.0	24.5		29.0		52.5
Max Q Clear Time (g_c+I1), s	26.0	26.5		31.0		31.5
Green Ext Time (p_c), s	0.0	0.0		0.0		7.2

Intersection Summary	
HCM 6th Ctrl Delay	121.6
HCM 6th LOS	F

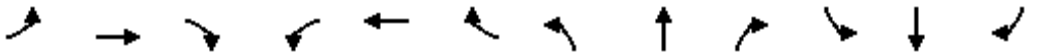
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	217	60	43	2	17	1619	63	1424	295
Future Volume (vph)	217	60	43	2	17	1619	63	1424	295
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.7	28.7	14.6	14.6	9.6	22.4	9.6	26.4	26.4
Total Split (s)	46.6	46.6	46.6	46.6	9.6	63.6	9.8	63.8	63.8
Total Split (%)	38.8%	38.8%	38.8%	38.8%	8.0%	53.0%	8.2%	53.2%	53.2%
Yellow Time (s)	3.7	3.7	3.6	3.6	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7		4.6	4.6	5.4	4.6	5.4	5.4
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 114.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Cedar Av. & Orange St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	60	31	43	2	305	17	1619	16	63	1424	295
Future Volume (veh/h)	217	60	31	43	2	305	17	1619	16	63	1424	295
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		1.00	1.00		0.98	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	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	228	63	30	45	2	256	18	1704	17	66	1499	215
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	311	384	183	89	26	424	152	1886	19	155	1930	859
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.02	0.52	0.52	0.04	0.53	0.53
Sat Flow, veh/h	1079	1216	579	165	81	1340	1714	3661	36	1714	3610	1607
Grp Volume(v), veh/h	228	0	93	303	0	0	18	839	882	66	1499	215
Grp Sat Flow(s),veh/h/ln	1079	0	1795	1586	0	0	1714	1805	1892	1714	1805	1607
Q Serve(g_s), s	15.3	0.0	4.2	7.6	0.0	0.0	0.6	47.6	47.8	2.0	37.3	8.1
Cycle Q Clear(g_c), s	33.2	0.0	4.2	17.9	0.0	0.0	0.6	47.6	47.8	2.0	37.3	8.1
Prop In Lane	1.00		0.32	0.15		0.84	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	311	0	567	538	0	0	152	930	975	155	1930	859
V/C Ratio(X)	0.73	0.00	0.16	0.56	0.00	0.00	0.12	0.90	0.90	0.43	0.78	0.25
Avail Cap(c_a), veh/h	370	0	665	625	0	0	196	930	975	168	1930	859
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	0.0	27.9	32.4	0.0	0.0	18.2	24.8	24.9	24.7	20.9	14.1
Incr Delay (d2), s/veh	4.5	0.0	0.0	0.3	0.0	0.0	0.1	13.7	13.4	0.7	3.1	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	6.6	0.0	1.9	7.1	0.0	0.0	0.2	22.2	23.2	0.9	15.3	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	0.0	27.9	32.8	0.0	0.0	18.4	38.5	38.2	25.4	24.1	14.8
LnGrp LOS	D	A	C	C	A	A	B	D	D	C	C	B
Approach Vol, veh/h		321			303			1739			1780	
Approach Delay, s/veh		40.3			32.8			38.2			23.0	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	63.6		40.4	6.8	65.8		40.4				
Change Period (Y+Rc), s	4.6	5.4		* 4.7	4.6	5.4		* 4.7				
Max Green Setting (Gmax), s	5.2	58.2		* 42	5.0	58.4		* 42				
Max Q Clear Time (g_c+I1), s	4.0	49.8		35.2	2.6	39.3		19.9				
Green Ext Time (p_c), s	0.0	6.3		0.6	0.0	11.3		1.4				

Intersection Summary		
HCM 6th Ctrl Delay		31.4
HCM 6th LOS		C

Notes

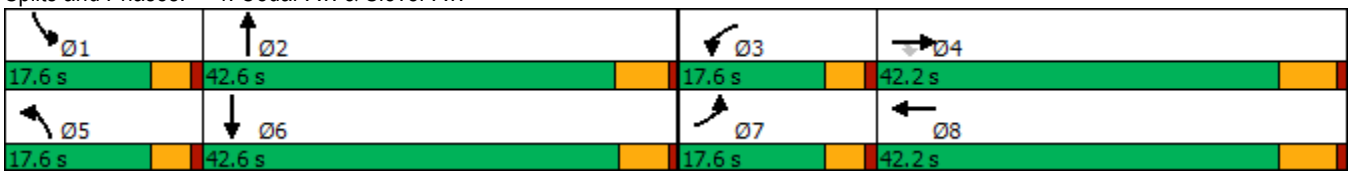
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

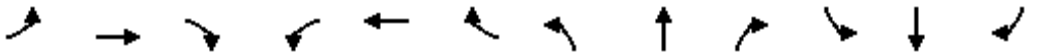
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	259	580	160	51	324	106	1061	328	1055
Future Volume (vph)	259	580	160	51	324	106	1061	328	1055
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	32.2	32.2	9.6	34.2	9.6	33.8	9.6	33.4
Total Split (s)	17.6	42.2	42.2	17.6	42.2	17.6	42.6	17.6	42.6
Total Split (%)	14.7%	35.2%	35.2%	14.7%	35.2%	14.7%	35.5%	14.7%	35.5%
Yellow Time (s)	3.6	5.2	5.2	3.6	5.2	3.6	4.8	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	4.6	6.2	4.6	5.8	4.6	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 106.2
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	580	160	51	324	332	106	1061	103	328	1055	115
Future Volume (veh/h)	259	580	160	51	324	332	106	1061	103	328	1055	115
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	1.00		1.00	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	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	273	611	120	54	341	315	112	1117	106	345	1111	118
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	203	1134	498	69	426	375	137	1115	106	203	1225	130
Arrive On Green	0.12	0.31	0.31	0.04	0.24	0.24	0.08	0.33	0.33	0.12	0.37	0.37
Sat Flow, veh/h	1714	3610	1585	1714	1805	1588	1714	3332	316	1714	3287	349
Grp Volume(v), veh/h	273	611	120	54	341	315	112	605	618	345	609	620
Grp Sat Flow(s),veh/h/ln	1714	1805	1585	1714	1805	1588	1714	1805	1843	1714	1805	1831
Q Serve(g_s), s	13.0	15.4	6.2	3.4	19.6	20.8	7.1	36.8	36.8	13.0	35.1	35.3
Cycle Q Clear(g_c), s	13.0	15.4	6.2	3.4	19.6	20.8	7.1	36.8	36.8	13.0	35.1	35.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		0.19
Lane Grp Cap(c), veh/h	203	1134	498	69	426	375	137	604	617	203	673	682
V/C Ratio(X)	1.35	0.54	0.24	0.79	0.80	0.84	0.82	1.00	1.00	1.70	0.91	0.91
Avail Cap(c_a), veh/h	203	1182	519	203	591	520	203	604	617	203	673	682
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	48.5	31.1	28.0	52.3	39.6	40.0	49.8	36.6	36.6	48.5	32.6	32.7
Incr Delay (d2), s/veh	185.2	0.4	0.2	7.2	5.4	8.6	9.2	36.8	36.9	336.2	15.9	16.0
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	15.7	6.4	2.3	1.6	8.8	8.6	3.3	21.4	21.8	24.3	17.5	17.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	233.6	31.6	28.2	59.5	44.9	48.7	59.0	73.4	73.5	384.6	48.6	48.7
LnGrp LOS	F	C	C	E	D	D	E	F	F	F	D	D
Approach Vol, veh/h		1004			710			1335			1574	
Approach Delay, s/veh		86.1			47.7			72.2			122.3	
Approach LOS		F			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	42.6	9.0	40.7	13.4	46.8	17.6	32.1
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	13.0	36.8	13.0	36.0	13.0	* 37	13.0	36.0
Max Q Clear Time (g_c+I1), s	15.0	38.8	5.4	17.4	9.1	37.3	15.0	22.8
Green Ext Time (p_c), s	0.0	0.0	0.0	3.8	0.0	0.0	0.0	3.1

Intersection Summary	
HCM 6th Ctrl Delay	88.5
HCM 6th LOS	F

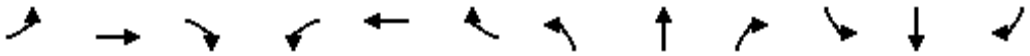
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	56	875	80	74	565	90	183	64	54
Future Volume (vph)	56	875	80	74	565	90	183	64	54
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	16.2	16.2	23.2	23.2	16.2	16.2	34.2	34.2
Total Split (s)	76.0	76.0	76.0	76.0	76.0	44.0	44.0	44.0	44.0
Total Split (%)	63.3%	63.3%	63.3%	63.3%	63.3%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	5.2	5.2	5.2	4.1	4.1	5.2	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.2	6.2	6.2	5.1	5.1		6.2		4.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 114.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Larch Av. & Slover Av./Slove Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	875	80	74	565	86	90	183	97	64	54	52
Future Volume (veh/h)	56	875	80	74	565	86	90	183	97	64	54	52
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		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	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	59	921	70	78	595	77	95	193	84	67	57	42
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	470	1205	1000	223	2039	263	133	228	93	143	119	73
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	737	1900	1577	547	3215	415	362	895	367	382	466	287
Grp Volume(v), veh/h	59	921	70	78	334	338	372	0	0	166	0	0
Grp Sat Flow(s),veh/h/ln	737	1900	1577	547	1805	1825	1624	0	0	1135	0	0
Q Serve(g_s), s	4.4	38.5	1.9	13.2	9.3	9.3	11.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.7	38.5	1.9	51.7	9.3	9.3	24.8	0.0	0.0	13.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.23	0.26		0.23	0.40		0.25
Lane Grp Cap(c), veh/h	470	1205	1000	223	1145	1158	454	0	0	334	0	0
V/C Ratio(X)	0.13	0.76	0.07	0.35	0.29	0.29	0.82	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	470	1205	1000	223	1145	1158	592	0	0	474	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	12.2	14.5	7.8	32.8	9.2	9.2	40.2	0.0	0.0	35.5	0.0	0.0
Incr Delay (d2), s/veh	0.5	4.6	0.1	4.3	0.6	0.6	6.9	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	0.7	15.1	0.6	1.9	3.3	3.3	10.5	0.0	0.0	4.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	19.1	8.0	37.1	9.8	9.8	47.2	0.0	0.0	36.6	0.0	0.0
LnGrp LOS	B	B	A	D	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1050			750			372			166	
Approach Delay, s/veh		18.0			12.7			47.2			36.6	
Approach LOS		B			B			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.7		77.1		34.7		77.1				
Change Period (Y+Rc), s		6.2		6.2		* 6.2		* 6.2				
Max Green Setting (Gmax), s		37.8		69.8		* 39		* 71				
Max Q Clear Time (g_c+I1), s		26.8		40.5		15.8		53.7				
Green Ext Time (p_c), s		1.7		7.9		1.0		4.1				

Intersection Summary		
HCM 6th Ctrl Delay		22.3
HCM 6th LOS		C

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	758	4	2	585	12	6
Future Vol, veh/h	758	4	2	585	12	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	798	4	2	616	13	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	802	0	1112	401
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	312	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	830	-	206	604
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	721	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	830	-	206	604
Mov Cap-2 Maneuver	-	-	-	-	320	-
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	720	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	379	-	-	830	-
HCM Lane V/C Ratio	0.05	-	-	0.003	-
HCM Control Delay (s)	15	-	-	9.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	763	2	2	582	5	5
Future Vol, veh/h	763	2	2	582	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	803	2	2	613	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	805	0	1115	403
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	311	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	828	-	205	603
Stage 1	-	-	-	-	406	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	828	-	205	603
Mov Cap-2 Maneuver	-	-	-	-	319	-
Stage 1	-	-	-	-	406	-
Stage 2	-	-	-	-	721	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	417	-	-	828	-
HCM Lane V/C Ratio	0.025	-	-	0.003	-
HCM Control Delay (s)	13.9	-	-	9.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	17.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	693	75	101	371	213	115
Future Vol, veh/h	693	75	101	371	213	115
Conflicting Peds, #/hr	0	1	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	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	729	79	106	391	224	121

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	809	0	1178	405
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	408	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	825	-	~ 187	601
Stage 1	-	-	-	-	423	-
Stage 2	-	-	-	-	646	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	824	-	~ 156	600
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	423	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	79.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	350	-	-	824	-
HCM Lane V/C Ratio	0.986	-	-	0.129	-
HCM Control Delay (s)	79.9	-	-	10	0.5
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	11.1	-	-	0.4	-

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	0	0	315	172	5
Future Vol, veh/h	13	0	0	315	172	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	0	0	332	181	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	516	184	186	0	-	0
Stage 1	184	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	523	864	1401	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	523	864	1401	-	-	-
Mov Cap-2 Maneuver	523	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1401	-	523	-	-
HCM Lane V/C Ratio	-	-	0.026	-	-
HCM Control Delay (s)	0	-	12.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1	1	311	170	2
Future Vol, veh/h	4	1	1	311	170	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	1	1	327	179	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	509	180	181	0	-	0
Stage 1	180	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	528	868	1407	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	527	868	1407	-	-	-
Mov Cap-2 Maneuver	527	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	734	-	-	-	-	-

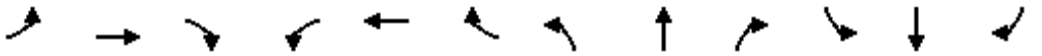
Approach	EB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1407	-	572	-	-
HCM Lane V/C Ratio	0.001	-	0.009	-	-
HCM Control Delay (s)	7.6	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	667	2	640	712	2021	1574	606
Future Volume (vph)	667	2	640	712	2021	1574	606
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		8		5	2	6	
Permitted Phases	8		8				6
Detector Phase	8	8	8	5	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.8	10.8	10.8	9.6	23.2	11.2	11.2
Total Split (s)	33.0	33.0	33.0	20.0	57.0	37.0	37.0
Total Split (%)	36.7%	36.7%	36.7%	22.2%	63.3%	41.1%	41.1%
Yellow Time (s)	4.8	4.8	4.8	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	4.6	6.2	6.2	6.2
Lead/Lag				Lead		Lag	Lag
Lead-Lag Optimize?				Yes		Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max
Act Effct Green (s)	27.2	27.2	27.2	15.4	50.8	30.8	30.8
Actuated g/C Ratio	0.30	0.30	0.30	0.17	0.56	0.34	0.34
v/c Ratio	0.92	0.97	0.83	1.25	0.73	0.74	0.66
Control Delay	56.2	68.2	37.9	159.8	16.3	28.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	47.5	0.0	0.0
Total Delay	56.2	68.2	37.9	159.8	63.8	28.5	5.6
LOS	E	E	D	F	E	C	A
Approach Delay		54.4			88.8	22.2	
Approach LOS		D			F	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 58.2	Intersection LOS: E
Intersection Capacity Utilization 164.0%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 11: Riverside Av. & I-10 WB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	667	2	640	712	2021	0	0	1574	606
Future Volume (veh/h)	0	0	0	667	2	640	712	2021	0	0	1574	606
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				854	0	324	749	2127	0	0	1657	503
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				995	0	443	624	3042	0	0	2324	573
Arrive On Green				0.27	0.00	0.27	0.18	0.59	0.00	0.00	0.36	0.36
Sat Flow, veh/h				3619	0	1610	3510	5358	0	0	6802	1610
Grp Volume(v), veh/h				854	0	324	749	2127	0	0	1657	503
Grp Sat Flow(s),veh/h/ln				1810	0	1610	1755	1729	0	0	1634	1610
Q Serve(g_s), s				19.4	0.0	15.8	15.4	24.9	0.0	0.0	19.0	25.4
Cycle Q Clear(g_c), s				19.4	0.0	15.8	15.4	24.9	0.0	0.0	19.0	25.4
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				995	0	443	624	3042	0	0	2324	573
V/C Ratio(X)				0.86	0.00	0.73	1.20	0.70	0.00	0.00	0.71	0.88
Avail Cap(c_a), veh/h				1137	0	506	624	3042	0	0	2324	573
HCM Platoon Ratio				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	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.8	0.0	28.5	35.6	12.5	0.0	0.0	24.1	26.2
Incr Delay (d2), s/veh				6.1	0.0	4.7	104.8	1.4	0.0	0.0	1.9	17.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.6	0.0	6.2	15.2	7.8	0.0	0.0	6.8	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				35.9	0.0	33.2	140.4	13.9	0.0	0.0	26.0	43.4
LnGrp LOS				D	A	C	F	B	A	A	C	D
Approach Vol, veh/h					1178			2876			2160	
Approach Delay, s/veh					35.2			46.9			30.0	
Approach LOS					D			D			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		57.0			20.0	37.0		29.6				
Change Period (Y+Rc), s		6.2			4.6	6.2		5.8				
Max Green Setting (Gmax), s		50.8			15.4	30.8		27.2				
Max Q Clear Time (g_c+I1), s		26.9			17.4	27.4		21.4				
Green Ext Time (p_c), s		16.3			0.0	3.0		2.4				

Intersection Summary												
HCM 6th Ctrl Delay			38.8									
HCM 6th LOS			D									

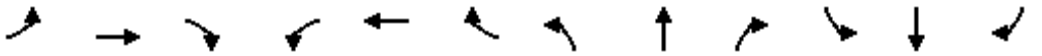
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	765	4	559	1968	599	1641
Future Volume (vph)	765	4	559	1968	599	1641
Turn Type	Perm	NA	Perm	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		4			
Detector Phase	4	4	4	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	9.6	16.2
Total Split (s)	28.0	28.0	28.0	44.0	18.0	62.0
Total Split (%)	31.1%	31.1%	31.1%	48.9%	20.0%	68.9%
Yellow Time (s)	4.8	4.8	4.8	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	4.6	6.2
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None	None	Max	None	Max
Act Effct Green (s)	22.2	22.2	22.2	37.8	13.4	55.8
Actuated g/C Ratio	0.25	0.25	0.25	0.42	0.15	0.62
v/c Ratio	1.14	1.15	0.98	1.44	1.21	0.77
Control Delay	121.9	124.2	66.8	225.7	147.0	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.9
Total Delay	121.9	124.2	66.8	225.7	147.0	63.4
LOS	F	F	E	F	F	E
Approach Delay		105.3		225.7		85.7
Approach LOS		F		F		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.44	
Intersection Signal Delay: 153.3	Intersection LOS: F
Intersection Capacity Utilization 164.0%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	765	4	559	0	0	0	0	1968	1002	599	1641	0
Future Volume (veh/h)	765	4	559	0	0	0	0	1968	1002	599	1641	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	957	0	325				0	2072	944	631	1727	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	893	0	397				0	1533	608	523	2238	0
Arrive On Green	0.25	0.00	0.25				0.00	0.42	0.42	0.15	0.62	0.00
Sat Flow, veh/h	3619	0	1610				0	3821	1447	3510	3705	0
Grp Volume(v), veh/h	957	0	325				0	1946	1070	631	1727	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1640	1755	1805	0
Q Serve(g_s), s	22.2	0.0	17.1				0.0	37.8	37.8	13.4	31.4	0.0
Cycle Q Clear(g_c), s	22.2	0.0	17.1				0.0	37.8	37.8	13.4	31.4	0.0
Prop In Lane	1.00		1.00				0.00		0.88	1.00		0.00
Lane Grp Cap(c), veh/h	893	0	397				0	1452	689	523	2238	0
V/C Ratio(X)	1.07	0.00	0.82				0.00	1.34	1.55	1.21	0.77	0.00
Avail Cap(c_a), veh/h	893	0	397				0	1452	689	523	2238	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.9	0.0	32.0				0.0	26.1	26.1	38.3	12.5	0.0
Incr Delay (d2), s/veh	51.4	0.0	12.6				0.0	157.8	256.1	110.2	2.6	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
%ile BackOfQ(50%),veh/ln	15.4	0.0	7.6				0.0	45.3	61.7	13.4	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.3	0.0	44.6				0.0	183.9	282.2	148.5	15.1	0.0
LnGrp LOS	F	A	D				A	F	F	F	B	A
Approach Vol, veh/h		1282						3016			2358	
Approach Delay, s/veh		75.0						218.8			50.8	
Approach LOS		E						F			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	18.0	44.0		28.0		62.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	13.4	37.8		22.2		55.8
Max Q Clear Time (g_c+I1), s	15.4	39.8		24.2		33.4
Green Ext Time (p_c), s	0.0	0.0		0.0		13.1

Intersection Summary		
HCM 6th Ctrl Delay		131.6
HCM 6th LOS		F

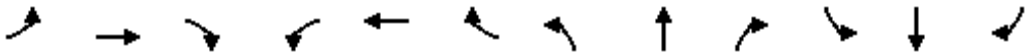
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	601	303	57	11	63	2012	40	1529
Future Volume (vph)	601	303	57	11	63	2012	40	1529
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	32.8	32.8	28.8	28.8	9.6	27.2	9.6	30.2
Total Split (s)	38.0	38.0	38.0	38.0	9.6	42.4	9.6	42.4
Total Split (%)	42.2%	42.2%	42.2%	42.2%	10.7%	47.1%	10.7%	47.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	32.3	32.3	32.3	32.3	5.0	38.2	5.0	36.3
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.06	0.43	0.06	0.41
v/c Ratio	1.31	0.47	0.26	0.09	0.64	1.38	0.40	1.37
Control Delay	182.0	18.1	24.4	5.4	70.0	198.4	53.0	197.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	182.0	18.1	24.4	5.4	70.0	198.4	53.0	197.3
LOS	F	B	C	A	E	F	D	F
Approach Delay		100.2		11.9		194.6		194.4
Approach LOS		F		B		F		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 88.1	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 168.3	Intersection LOS: F
Intersection Capacity Utilization 114.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	601	303	296	57	11	100	63	2012	68	40	1529	418
Future Volume (veh/h)	601	303	296	57	11	100	63	2012	68	40	1529	418
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	620	312	285	59	11	84	65	2074	70	41	1576	398
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	536	652	582	278	652	582	84	1485	50	65	1168	282
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.05	0.42	0.42	0.04	0.41	0.41
Sat Flow, veh/h	1395	1805	1610	880	1805	1610	1810	3564	120	1810	2876	694
Grp Volume(v), veh/h	620	312	285	59	11	84	65	1045	1099	41	962	1012
Grp Sat Flow(s),veh/h/ln	1395	1805	1610	880	1805	1610	1810	1805	1878	1810	1805	1764
Q Serve(g_s), s	29.1	11.9	12.2	5.0	0.3	3.1	3.2	37.1	37.1	2.0	36.2	36.2
Cycle Q Clear(g_c), s	32.2	11.9	12.2	17.2	0.3	3.1	3.2	37.1	37.1	2.0	36.2	36.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.39
Lane Grp Cap(c), veh/h	536	652	582	278	652	582	84	752	783	65	733	717
V/C Ratio(X)	1.16	0.48	0.49	0.21	0.02	0.14	0.77	1.39	1.40	0.63	1.31	1.41
Avail Cap(c_a), veh/h	536	652	582	278	652	582	102	752	783	102	733	717
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	32.2	22.0	22.1	28.8	18.3	19.2	42.0	26.0	26.0	42.4	26.5	26.5
Incr Delay (d2), s/veh	90.3	0.5	0.6	0.4	0.0	0.1	20.7	183.0	189.7	3.8	150.0	194.0
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	24.8	4.7	4.3	1.0	0.1	1.1	1.8	52.0	55.5	0.9	44.0	51.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	122.5	22.5	22.7	29.2	18.3	19.3	62.8	209.0	215.7	46.2	176.5	220.5
LnGrp LOS	F	C	C	C	B	B	E	F	F	D	F	F
Approach Vol, veh/h		1217			154			2209			2015	
Approach Delay, s/veh		73.5			23.0			208.0			195.9	
Approach LOS		E			C			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	43.3		38.0	8.7	42.4		38.0				
Change Period (Y+Rc), s	4.6	6.2		5.8	4.6	6.2		5.8				
Max Green Setting (Gmax), s	5.0	36.2		32.2	5.0	36.2		32.2				
Max Q Clear Time (g_c+I1), s	4.0	39.1		34.2	5.2	38.2		19.2				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		169.3	
HCM 6th LOS		F	

APPENDIX 7.3:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		HY WP
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Slover Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 1**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **2** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **12,564** vpd Minor Street Future ADT = **114** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	8,000	5,600	2,400	1,680
2 + **12,564** / *1* **114**	9,600	6,720 *	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	12,000	8,400	1,200	850
2 + **12,564** / *1* **114**	14,400	10,080 *	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 7% B: 13%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		HY WP
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Slover Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 2**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **2** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **12,532** vpd Minor Street Future ADT = **63** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	8,000	5,600	2,400	1,680
2 + **12,532** / *1* **63**	9,600	6,720 *	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 / *1*	12,000	8,400	1,200	850
2 + **12,532** / *1* **63**	14,400	10,080 *	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 4% B: 7%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		HY WP	
				CALC	CS	DATE	04/10/19
Jurisdiction:	**County of San Bernardino**			CHK	CS	DATE	04/10/19
Major Street:	**Cactus Av.**			Critical Approach Speed (Major)		45	mph
Minor Street:	**Driveway 3**			Critical Approach Speed (Minor)		25	mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **5,297** vpd Minor Street Future ADT = **81** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX / XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **5,297** / 1 **81**	8,000	5,600	2,400	1,680
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **5,297** / 1 **81**	12,000	8,400	1,200	850
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,400	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 5% B: 9%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		HY WP
				CALC CS	DATE	04/10/19
Jurisdiction: **County of San Bernardino**				CHK CS	DATE	04/10/19
Major Street: **Cactus Av.**				Critical Approach Speed (Major)		45 mph
Minor Street: **Driveway 4**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **5,198** vpd Minor Street Future ADT = **36** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **5,198** / *1* **36**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **5,198** / *1* **36**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 2% B: 4%				

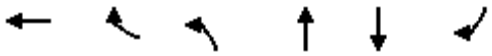
Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

APPENDIX 7.4:

HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

This Page Intentionally Left Blank



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	628	379	494	1558	1849	1049
v/c Ratio	1.49	0.89	1.37	0.65	0.86	1.05
Control Delay	261.9	52.2	196.9	3.1	28.8	55.4
Queue Delay	2.3	0.0	0.0	42.8	46.9	0.0
Total Delay	264.3	52.2	196.9	45.8	75.7	55.4
Queue Length 50th (ft)	~529	184	~358	0	339	~448
Queue Length 95th (ft)	#750	#361	m#364	m0	406	#691
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	421	425	361	2386	2161	1003
Starvation Cap Reductn	0	0	0	952	0	0
Spillback Cap Reductn	86	0	0	0	528	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.87	0.89	1.37	1.09	1.13	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	526	621	1465	724	596	1822
v/c Ratio	1.06	1.34	0.96	0.82	1.19	0.82
Control Delay	91.1	196.1	47.3	15.5	114.3	21.3
Queue Delay	0.0	0.0	28.0	0.0	0.0	48.3
Total Delay	91.1	196.1	75.3	15.5	114.3	69.6
Queue Length 50th (ft)	~350	~485	298	65	~416	580
Queue Length 95th (ft)	#554	#705	#400	#299	m#454	m595
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	495	463	1527	882	501	2226
Starvation Cap Reductn	0	0	0	0	0	996
Spillback Cap Reductn	0	0	150	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.34	1.06	0.82	1.19	1.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

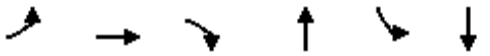
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	499	491	445	645	1172	1878	753
v/c Ratio	0.96	0.88	0.84	1.08	0.40	0.84	0.74
Control Delay	64.2	43.4	39.2	96.3	11.5	31.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	64.2	43.4	39.2	96.3	12.3	31.6	8.2
Queue Length 50th (ft)	292	239	198	~212	128	283	21
Queue Length 95th (ft)	#502	#445	#376	#319	157	331	137
Internal Link Dist (ft)		1238			270	316	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	518	557	529	599	2927	2236	1012
Starvation Cap Reductn	0	0	0	0	1308	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.88	0.84	1.08	0.72	0.84	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



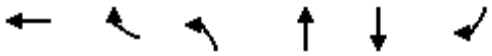
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	471	447	446	2237	722	2141
v/c Ratio	1.11	1.02	0.99	1.10dr	1.40	0.96
Control Delay	112.2	76.3	69.6	51.3	221.8	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	43.9
Total Delay	112.2	76.3	69.6	51.3	221.8	72.1
Queue Length 50th (ft)	~326	~238	217	~472	~285	543
Queue Length 95th (ft)	#523	#454	#427	#570	#396	#780
Internal Link Dist (ft)		1268		1816		270
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	439	449	2175	517	2238
Starvation Cap Reductn	0	0	0	0	0	535
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	1.02	0.99	1.03	1.40	1.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	519	469	522	1973	1587	720
v/c Ratio	1.09	0.99	1.24	0.87	0.87	0.76
Control Delay	99.8	68.6	137.4	21.2	34.1	10.5
Queue Delay	0.0	0.0	0.0	47.7	8.5	0.0
Total Delay	99.8	68.6	137.4	68.9	42.5	10.5
Queue Length 50th (ft)	~350	245	~373	648	305	46
Queue Length 95th (ft)	#557	#460	m#287	m534	368	190
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	477	474	421	2266	1815	949
Starvation Cap Reductn	0	0	0	987	0	0
Spillback Cap Reductn	0	0	0	0	214	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.99	1.24	1.54	0.99	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	739	687	1511	719	617	1427
v/c Ratio	1.34	1.27	1.07	0.82	1.28	0.68
Control Delay	192.8	161.3	77.9	13.9	155.7	5.8
Queue Delay	4.5	4.3	12.8	0.0	0.0	26.7
Total Delay	197.4	165.6	90.7	13.9	155.7	32.5
Queue Length 50th (ft)	~582	~508	~352	45	~437	23
Queue Length 95th (ft)	#809	#736	#445	#229	m#501	m25
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	552	543	1412	882	481	2105
Starvation Cap Reductn	0	0	0	0	0	740
Spillback Cap Reductn	213	201	171	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	2.18	2.01	1.22	0.82	1.28	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

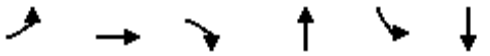
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	481	464	438	755	2121	1656	647
v/c Ratio	0.93	0.98	0.83	1.26	0.72	0.74	0.66
Control Delay	57.5	68.7	37.9	163.8	16.3	28.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	47.5	0.0	0.0
Total Delay	57.5	68.7	37.9	163.8	63.8	28.5	5.6
Queue Length 50th (ft)	277	282	193	~280	303	238	0
Queue Length 95th (ft)	#476	#502	#367	#392	360	281	76
Internal Link Dist (ft)		1163			240	366	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	518	475	529	599	2927	2236	978
Starvation Cap Reductn	0	0	0	0	1049	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.98	0.83	1.26	1.13	0.74	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	491	473	442	3128	633	1731
v/c Ratio	1.16	1.15	0.98	1.44	1.21	0.77
Control Delay	128.7	124.1	67.3	225.9	148.4	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.9
Total Delay	128.7	124.1	67.3	225.9	148.4	63.4
Queue Length 50th (ft)	~351	~339	214	~880	~229	343
Queue Length 95th (ft)	#551	#549	#422	#975	#336	436
Internal Link Dist (ft)		1277		1822		240
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	411	449	2169	521	2238
Starvation Cap Reductn	0	0	0	0	0	742
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.16	1.15	0.98	1.44	1.21	1.16

Intersection Summary

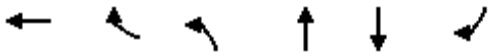
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

APPENDIX 7.5:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

This Page Intentionally Left Blank



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	628	379	500	1558	1851	1049
v/c Ratio	1.49	0.89	1.39	0.65	0.86	1.05
Control Delay	261.9	52.2	201.6	2.8	28.8	55.4
Queue Delay	2.3	0.0	0.0	43.7	46.9	0.0
Total Delay	264.3	52.2	201.6	46.5	75.8	55.4
Queue Length 50th (ft)	~529	184	~365	0	340	~449
Queue Length 95th (ft)	#750	#361	m#367	m0	407	#691
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	421	425	361	2386	2161	1003
Starvation Cap Reductn	0	0	0	955	0	0
Spillback Cap Reductn	86	0	0	0	528	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.87	0.89	1.39	1.09	1.13	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	526	642	1472	724	596	1823
v/c Ratio	1.06	1.39	0.96	0.82	1.19	0.82
Control Delay	91.1	216.3	48.1	15.5	114.3	21.3
Queue Delay	0.0	0.0	28.3	0.0	0.0	48.3
Total Delay	91.1	216.3	76.4	15.5	114.3	69.6
Queue Length 50th (ft)	~350	~512	300	65	~416	580
Queue Length 95th (ft)	#554	#735	#402	#299	m#453	m595
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	495	462	1527	882	501	2226
Starvation Cap Reductn	0	0	0	0	0	996
Spillback Cap Reductn	0	0	146	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.39	1.07	0.82	1.19	1.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

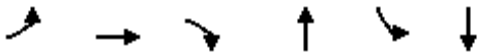
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	506	492	450	645	1172	1879	753
v/c Ratio	0.98	0.88	0.85	1.08	0.40	0.84	0.74
Control Delay	67.2	43.6	40.2	96.3	11.5	31.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	67.2	43.6	40.2	96.3	12.3	31.6	8.2
Queue Length 50th (ft)	297	240	202	~212	128	283	21
Queue Length 95th (ft)	#511	#446	#385	#319	157	331	137
Internal Link Dist (ft)		1238			270	316	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	518	557	529	599	2927	2236	1012
Starvation Cap Reductn	0	0	0	0	1308	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.88	0.85	1.08	0.72	0.84	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



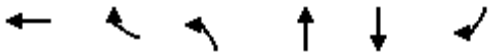
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	471	447	446	2242	722	2156
v/c Ratio	1.11	1.02	0.99	1.10dr	1.40	0.96
Control Delay	112.2	76.3	69.6	51.8	221.8	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	43.3
Total Delay	112.2	76.3	69.6	51.8	221.8	72.7
Queue Length 50th (ft)	~326	~238	217	~474	~285	552
Queue Length 95th (ft)	#523	#454	#427	#572	#396	#790
Internal Link Dist (ft)		1268		1816		270
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	439	449	2176	517	2238
Starvation Cap Reductn	0	0	0	0	0	529
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	1.02	0.99	1.03	1.40	1.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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



Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	519	469	544	1974	1588	720
v/c Ratio	1.09	0.99	1.29	0.87	0.87	0.76
Control Delay	99.8	68.6	160.1	21.3	34.1	10.7
Queue Delay	0.0	0.0	0.0	47.7	8.3	0.0
Total Delay	99.8	68.6	160.1	69.0	42.5	10.7
Queue Length 50th (ft)	~350	245	~399	648	305	47
Queue Length 95th (ft)	#557	#460	m#304	m522	368	193
Internal Link Dist (ft)	1484			334	521	
Turn Bay Length (ft)		480				
Base Capacity (vph)	477	474	421	2266	1815	947
Starvation Cap Reductn	0	0	0	990	0	0
Spillback Cap Reductn	0	0	0	0	212	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.99	1.29	1.55	0.99	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	739	694	1534	719	617	1428
v/c Ratio	1.34	1.28	1.09	0.82	1.28	0.68
Control Delay	192.8	166.6	83.6	13.9	155.7	5.8
Queue Delay	4.5	4.3	6.2	0.0	0.0	27.0
Total Delay	197.4	170.9	89.8	13.9	155.7	32.8
Queue Length 50th (ft)	~582	~517	~362	45	~436	23
Queue Length 95th (ft)	#809	#745	#455	#229	m#501	m25
Internal Link Dist (ft)		1503	982			334
Turn Bay Length (ft)	400			555		
Base Capacity (vph)	552	543	1412	882	481	2105
Starvation Cap Reductn	0	0	0	0	0	740
Spillback Cap Reductn	213	201	175	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	2.18	2.03	1.24	0.82	1.28	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

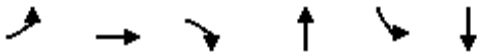
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	485	466	438	755	2122	1657	647
v/c Ratio	0.94	0.98	0.83	1.26	0.72	0.74	0.66
Control Delay	58.9	69.7	37.9	163.8	16.3	28.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	47.5	0.0	0.0
Total Delay	58.9	69.7	37.9	163.8	63.8	28.5	5.6
Queue Length 50th (ft)	281	284	193	~280	303	238	0
Queue Length 95th (ft)	#483	#506	#367	#392	360	281	76
Internal Link Dist (ft)		1163			240	366	
Turn Bay Length (ft)	360		360	160			210
Base Capacity (vph)	518	475	529	599	2927	2236	978
Starvation Cap Reductn	0	0	0	0	1049	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.98	0.83	1.26	1.13	0.74	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	491	473	442	3143	633	1736
v/c Ratio	1.16	1.15	0.98	1.45	1.21	0.78
Control Delay	128.7	125.2	67.3	228.7	148.4	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.8
Total Delay	128.7	125.2	67.3	228.7	148.4	63.5
Queue Length 50th (ft)	~351	~340	214	~886	~229	344
Queue Length 95th (ft)	#551	#550	#422	#980	#336	438
Internal Link Dist (ft)		1277		1822		240
Turn Bay Length (ft)			290			
Base Capacity (vph)	423	410	449	2170	521	2238
Starvation Cap Reductn	0	0	0	0	0	739
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.16	1.15	0.98	1.45	1.21	1.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

APPENDIX 7.6:

HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7619	Heavy Vehicle Adjustment Factor (f_{HV})	0.893
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2318
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.97
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	55.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	41.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7094	Heavy Vehicle Adjustment Factor (f_{HV})	0.893
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1727
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.72
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7129	Heavy Vehicle Adjustment Factor (f_{HV})	0.901
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2150
Total Trucks, %	11.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.90
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	36.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7546	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1754
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	26.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7714	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2223
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	57.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	38.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7957	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2312
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.96
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	55.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	41.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7817	Heavy Vehicle Adjustment Factor (f_{HV})	0.901
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2358
Total Trucks, %	11.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.98
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	54.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	43.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7571	Heavy Vehicle Adjustment Factor (f_{HV})	0.901
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1827
Total Trucks, %	11.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.76
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7551	Heavy Vehicle Adjustment Factor (f_{HV})	0.893
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2298
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.96
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	56.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	41.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7445	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1682
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7360	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2060
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.86
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	33.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7633	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2136
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	35.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

APPENDIX 7.7:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7625	Heavy Vehicle Adjustment Factor (f_{HV})	0.893
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2320
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.97
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	55.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	41.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7094	Heavy Vehicle Adjustment Factor (f_{HV})	0.893
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1727
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.72
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7141	Heavy Vehicle Adjustment Factor (f_{HV})	0.901
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2154
Total Trucks, %	11.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.90
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	36.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7566	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1759
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	26.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7714	Heavy Vehicle Adjustment Factor (f_{HV})	0.943
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2223
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	57.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	38.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7961	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2314
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.96
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	55.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	41.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7838	Heavy Vehicle Adjustment Factor (f_{HV})	0.901
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2364
Total Trucks, %	11.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.99
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	54.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	43.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7571	Heavy Vehicle Adjustment Factor (f_{HV})	0.901
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1827
Total Trucks, %	11.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.76
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7556	Heavy Vehicle Adjustment Factor (f_{HV})	0.893
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2299
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.96
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	56.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	41.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7452	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1684
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	67.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7360	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2060
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.86
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	33.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7646	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2140
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	35.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

APPENDIX 7.8:

HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS RAMP JUNCTION ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6137	1482
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	12.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.893	0.909
Flow Rate (vi),pc/h	7470	1772
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.96	0.84

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	35.0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.678
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2241
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	51.0
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	63.7
Flow in Lanes 1 and 2 (v12), pc/h	2988	Ramp Junction Speed (S), mi/h	56.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	4760	Average Density (D), pc/mi/ln	40.9
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7094	957
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	12.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.893	0.917
Flow Rate (vi),pc/h	8635	1134
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.72	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	22.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.400
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1629
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.3
Flow in Lanes 1 and 2 (v12), pc/h	3651	Ramp Junction Speed (S), mi/h	65.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.5
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7129	1363
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	11.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.901	0.909
Flow Rate (vi),pc/h	8600	1630
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.72	0.78

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	27.5
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.445
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1481
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.9
Flow in Lanes 1 and 2 (v12), pc/h	3919	Ramp Junction Speed (S), mi/h	63.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.9
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6456	1090
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	14.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.877
Flow Rate (vi),pc/h	7371	1351
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.61	0.64

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	19.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.420
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1282
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.7
Flow in Lanes 1 and 2 (v12), pc/h	3333	Ramp Junction Speed (S), mi/h	64.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.8
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7714	1258
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	6.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.943	0.909
Flow Rate (vi),pc/h	8892	1504
Capacity (c), pc/h	8800	2100
Volume-to-Capacity Ratio (v/c)	1.18	0.72

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	39.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	-
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2668
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	45.9
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.030	Outer Lanes Freeway Speed (SO), mi/h	61.3
Flow in Lanes 1 and 2 (v12), pc/h	3557	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5061	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6446	1511
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	6.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.943	0.885
Flow Rate (vi),pc/h	7430	1856
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.97	0.88

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	35.1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.704
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2229
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	50.3
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	63.8
Flow in Lanes 1 and 2 (v12), pc/h	2972	Ramp Junction Speed (S), mi/h	56.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	4828	Average Density (D), pc/mi/ln	41.5
Level of Service (LOS)	E		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6632	1185
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	11.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.901	0.935
Flow Rate (vi),pc/h	8001	1378
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.98	0.66

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	33.8
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.602
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2401
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	53.1
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.046	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	3200	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	4578	Average Density (D), pc/mi/ln	40.6
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7571	939
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	11.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.901	0.935
Flow Rate (vi),pc/h	9134	1092
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.76	0.52

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	23.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.396
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1753
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	73.9
Flow in Lanes 1 and 2 (v12), pc/h	3802	Ramp Junction Speed (S), mi/h	65.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.0
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7551	1314
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	12.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.893	0.909
Flow Rate (vi),pc/h	9191	1571
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.77	0.75

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	29.0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.439
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1630
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.3
Flow in Lanes 1 and 2 (v12), pc/h	4092	Ramp Junction Speed (S), mi/h	64.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.7
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6090	1355
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.901
Flow Rate (vi),pc/h	6817	1635
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.57	0.78

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	20.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.445
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1173
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	76.1
Flow in Lanes 1 and 2 (v12), pc/h	3449	Ramp Junction Speed (S), mi/h	63.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.4
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) NP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7360	1270
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.935
Flow Rate (vi),pc/h	8239	1476
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	1.01	0.70

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	36.9
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	-
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2472
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.033	Outer Lanes Freeway Speed (SO), mi/h	62.4
Flow in Lanes 1 and 2 (v12), pc/h	3296	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4772	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

Managed Lane Geometric Data

Managed Lane Type	Continuous Access	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, ln	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-
Managed Lane Adjustment Factors			
Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1804
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	1804
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	500	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6024	1609
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	2.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.980	0.935
Flow Rate (vi),pc/h	6681	1870
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.89	0.89

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	32.8
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.583
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2005
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	53.7
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	2672	Ramp Junction Speed (S), mi/h	58.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	4542	Average Density (D), pc/mi/ln	36.7
Level of Service (LOS)	D		

This Page Intentionally Left Blank

APPENDIX 7.9:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS RAMP JUNCTION ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6137	1488
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	12.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.893	0.909
Flow Rate (vi),pc/h	7470	1779
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.96	0.85

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	35.1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.681
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2241
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	50.9
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	63.7
Flow in Lanes 1 and 2 (v12), pc/h	2988	Ramp Junction Speed (S), mi/h	56.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	4767	Average Density (D), pc/mi/ln	41.0
Level of Service (LOS)	E		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7094	957
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	12.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.893	0.917
Flow Rate (vi),pc/h	8635	1134
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.72	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	22.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.400
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1629
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.3
Flow in Lanes 1 and 2 (v12), pc/h	3651	Ramp Junction Speed (S), mi/h	65.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.5
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7141	1375
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	11.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.901	0.909
Flow Rate (vi),pc/h	8615	1644
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.72	0.78

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	27.6
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.446
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1480
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.9
Flow in Lanes 1 and 2 (v12), pc/h	3932	Ramp Junction Speed (S), mi/h	63.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	27.0
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6456	1110
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	5.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.952	0.885
Flow Rate (vi),pc/h	7371	1363
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.61	0.65

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	19.5
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.421
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1278
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.7
Flow in Lanes 1 and 2 (v12), pc/h	3340	Ramp Junction Speed (S), mi/h	64.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.8
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7714	1258
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	6.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.943	0.909
Flow Rate (vi),pc/h	8892	1504
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	1.08	0.72

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	39.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	-
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2668
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	45.9
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.030	Outer Lanes Freeway Speed (SO), mi/h	61.3
Flow in Lanes 1 and 2 (v12), pc/h	3557	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5061	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6446	1515
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	6.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.943	0.885
Flow Rate (vi),pc/h	7430	1861
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.97	0.89

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	35.1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.706
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2229
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	63.8
Flow in Lanes 1 and 2 (v12), pc/h	2972	Ramp Junction Speed (S), mi/h	55.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4833	Average Density (D), pc/mi/ln	41.6
Level of Service (LOS)	E		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6632	1206
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	11.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.901	0.935
Flow Rate (vi),pc/h	8001	1402
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.98	0.67

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	34.0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.612
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2401
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	52.9
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.043	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	3200	Ramp Junction Speed (S), mi/h	57.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	4602	Average Density (D), pc/mi/ln	40.8
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7571	939
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	11.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.901	0.935
Flow Rate (vi),pc/h	9134	1092
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.76	0.52

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	23.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.396
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1753
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	73.9
Flow in Lanes 1 and 2 (v12), pc/h	3802	Ramp Junction Speed (S), mi/h	65.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.0
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7556	1319
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	12.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.893	0.909
Flow Rate (vi),pc/h	9197	1577
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.77	0.75

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	29.0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.440
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1630
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.3
Flow in Lanes 1 and 2 (v12), pc/h	4097	Ramp Junction Speed (S), mi/h	64.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.7
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6090	1362
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.901
Flow Rate (vi),pc/h	6817	1643
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.57	0.78

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	20.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.446
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1171
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	76.1
Flow in Lanes 1 and 2 (v12), pc/h	3453	Ramp Junction Speed (S), mi/h	63.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.4
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	7360	1270
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.935
Flow Rate (vi),pc/h	8239	1476
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	1.01	0.70

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	36.9
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	-
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2472
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.033	Outer Lanes Freeway Speed (SO), mi/h	62.4
Flow in Lanes 1 and 2 (v12), pc/h	3296	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4772	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6024	1622
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	2.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.980	0.935
Flow Rate (vi),pc/h	6681	1886
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.89	0.90

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	33.0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.589
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2005
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	53.5
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	2672	Ramp Junction Speed (S), mi/h	58.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4558	Average Density (D), pc/mi/ln	36.8
Level of Service (LOS)	D		

APPENDIX 7.10:

HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

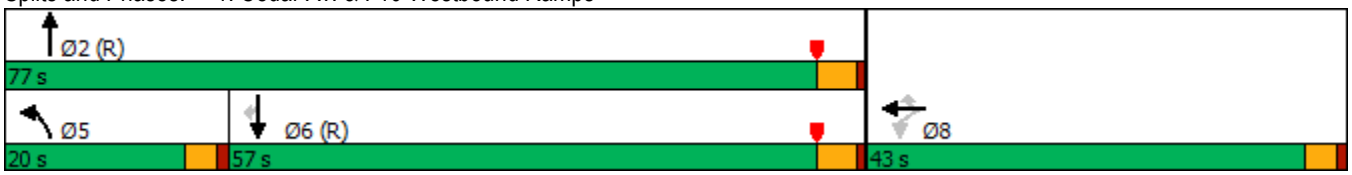
This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	400	469	1480	1757	997
Future Volume (vph)	16	400	469	1480	1757	997
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	43.0	43.0	20.0	77.0	57.0	57.0
Total Split (%)	35.8%	35.8%	16.7%	64.2%	47.5%	47.5%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	541	16	400	469	1480	0	0	1757	997
Future Volume (veh/h)	0	0	0	541	16	400	469	1480	0	0	1757	997
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				569	17	281	494	1558	0	0	1849	793
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				572	17	523	468	2181	0	0	2269	704
Arrive On Green				0.32	0.32	0.32	0.27	1.00	0.00	0.00	0.44	0.44
Sat Flow, veh/h				1759	53	1610	3510	3705	0	0	5358	1610
Grp Volume(v), veh/h				586	0	281	494	1558	0	0	1849	793
Grp Sat Flow(s),veh/h/ln				1812	0	1610	1755	1805	0	0	1729	1610
Q Serve(g_s), s				38.7	0.0	17.1	16.0	0.0	0.0	0.0	37.4	52.5
Cycle Q Clear(g_c), s				38.7	0.0	17.1	16.0	0.0	0.0	0.0	37.4	52.5
Prop In Lane				0.97		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				589	0	523	468	2181	0	0	2269	704
V/C Ratio(X)				1.00	0.00	0.54	1.06	0.71	0.00	0.00	0.81	1.13
Avail Cap(c_a), veh/h				589	0	523	468	2181	0	0	2269	704
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.64	0.64	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				40.4	0.0	33.1	44.0	0.0	0.0	0.0	29.5	33.8
Incr Delay (d2), s/veh				35.8	0.0	1.1	48.9	1.3	0.0	0.0	3.4	74.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				22.2	0.0	6.6	8.9	0.4	0.0	0.0	15.4	33.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				76.2	0.0	34.2	92.9	1.3	0.0	0.0	32.9	107.8
LnGrp LOS				E	A	C	F	A	A	A	C	F
Approach Vol, veh/h					867			2052			2642	
Approach Delay, s/veh					62.6			23.3			55.3	
Approach LOS					E			C			E	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	77.0		20.0	57.0		43.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	72.5		16.0	52.5		39.0						
Max Q Clear Time (g_c+I1), s	2.0		18.0	54.5		40.7						
Green Ext Time (p_c), s	18.6		0.0	0.0		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	44.7	
HCM 6th LOS	D	

Notes

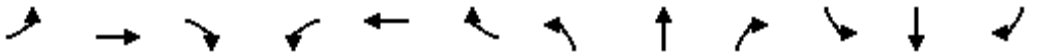
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	556	4	530	1392	688	566	1731
Future Volume (vph)	556	4	530	1392	688	566	1731
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	44.0	44.0	44.0	49.0	49.0	27.0	76.0
Total Split (%)	36.7%	36.7%	36.7%	40.8%	40.8%	22.5%	63.3%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	556	4	530	0	0	0	0	1392	688	566	1731	0
Future Volume (veh/h)	556	4	530	0	0	0	0	1392	688	566	1731	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	742	0	334				0	1465	647	596	1822	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	883	0	393				0	2437	756	639	2474	0
Arrive On Green	0.24	0.00	0.24				0.00	0.47	0.47	0.36	1.00	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1610	3510	3705	0
Grp Volume(v), veh/h	742	0	334				0	1465	647	596	1822	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1610	1755	1805	0
Q Serve(g_s), s	23.4	0.0	23.7				0.0	25.0	42.7	19.6	0.0	0.0
Cycle Q Clear(g_c), s	23.4	0.0	23.7				0.0	25.0	42.7	19.6	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	883	0	393				0	2437	756	639	2474	0
V/C Ratio(X)	0.84	0.00	0.85				0.00	0.60	0.86	0.93	0.74	0.00
Avail Cap(c_a), veh/h	1206	0	537				0	2437	756	673	2474	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.09	0.09	0.47	0.47	0.00
Uniform Delay (d), s/veh	43.1	0.0	43.3				0.0	23.5	28.2	37.4	0.0	0.0
Incr Delay (d2), s/veh	4.0	0.0	9.3				0.0	0.1	1.2	10.7	0.9	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
%ile BackOfQ(50%),veh/ln	10.6	0.0	10.1				0.0	9.8	15.8	7.5	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.2	0.0	52.6				0.0	23.6	29.4	48.1	0.9	0.0
LnGrp LOS	D	A	D				A	C	C	D	A	A
Approach Vol, veh/h		1076						2112			2418	
Approach Delay, s/veh		48.9						25.4			12.6	
Approach LOS		D						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.9	60.9		33.3		86.7
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	23.0	44.5		40.0		71.5
Max Q Clear Time (g_c+I1), s	21.6	44.7		25.7		2.0
Green Ext Time (p_c), s	0.2	0.0		3.5		14.1

Intersection Summary		
HCM 6th Ctrl Delay		24.4
HCM 6th LOS		C

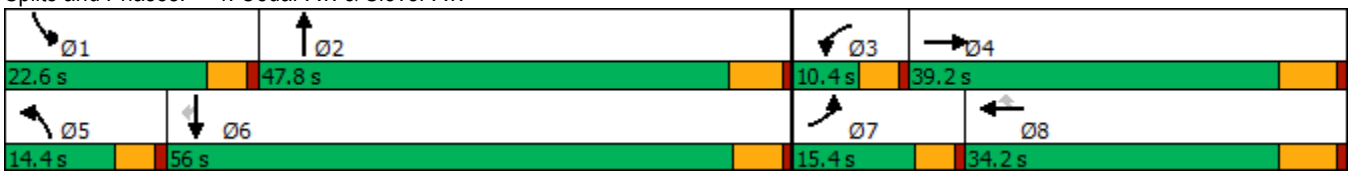
Notes

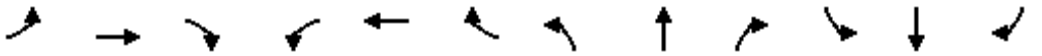
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	265	156	19	191	231	90	1176	248	1172	164
Future Volume (vph)	265	156	19	191	231	90	1176	248	1172	164
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	34.2	9.6	33.8	9.6	33.4	33.4
Total Split (s)	15.4	39.2	10.4	34.2	34.2	14.4	47.8	22.6	56.0	56.0
Total Split (%)	12.8%	32.7%	8.7%	28.5%	28.5%	12.0%	39.8%	18.8%	46.7%	46.7%
Yellow Time (s)	3.6	5.2	3.6	5.2	5.2	3.6	4.8	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	6.2	4.6	5.8	4.6	5.4	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 106.2
Natural Cycle: 120
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	156	53	19	191	231	90	1176	43	248	1172	164
Future Volume (veh/h)	265	156	53	19	191	231	90	1176	43	248	1172	164
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		1.00	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	1700	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	279	164	43	20	201	222	95	1238	45	261	1234	170
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	312	696	177	36	599	267	118	1331	48	283	1701	758
Arrive On Green	0.10	0.24	0.24	0.02	0.17	0.17	0.07	0.37	0.37	0.17	0.47	0.47
Sat Flow, veh/h	3141	2847	726	1714	3610	1610	1714	3553	129	1714	3610	1610
Grp Volume(v), veh/h	279	102	105	20	201	222	95	629	654	261	1234	170
Grp Sat Flow(s),veh/h/ln	1570	1805	1768	1714	1805	1610	1714	1805	1877	1714	1805	1610
Q Serve(g_s), s	9.6	4.9	5.2	1.3	5.4	14.5	5.9	36.4	36.4	16.3	29.9	6.8
Cycle Q Clear(g_c), s	9.6	4.9	5.2	1.3	5.4	14.5	5.9	36.4	36.4	16.3	29.9	6.8
Prop In Lane	1.00		0.41	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	312	441	432	36	599	267	118	676	703	283	1701	758
V/C Ratio(X)	0.90	0.23	0.24	0.56	0.34	0.83	0.80	0.93	0.93	0.92	0.73	0.22
Avail Cap(c_a), veh/h	312	547	536	91	928	414	154	696	724	283	1701	758
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	48.5	32.9	33.0	52.8	40.1	43.9	49.9	32.7	32.7	44.7	23.1	17.0
Incr Delay (d2), s/veh	25.8	0.3	0.3	5.0	0.3	8.1	15.5	18.7	18.4	32.8	1.6	0.1
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	2.1	2.2	0.6	2.3	6.1	3.0	18.3	19.0	9.3	12.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.3	33.2	33.3	57.8	40.4	52.0	65.4	51.3	51.0	77.6	24.7	17.2
LnGrp LOS	E	C	C	E	D	D	E	D	D	E	C	B
Approach Vol, veh/h		486			443			1378			1665	
Approach Delay, s/veh		56.8			47.0			52.2			32.2	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.6	46.6	6.9	32.8	12.1	57.1	15.4	24.3
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	18.0	42.0	5.8	33.0	9.8	* 51	10.8	28.0
Max Q Clear Time (g_c+I1), s	18.3	38.4	3.3	7.2	7.9	31.9	11.6	16.5
Green Ext Time (p_c), s	0.0	2.4	0.0	1.0	0.0	9.0	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	43.8
HCM 6th LOS	D

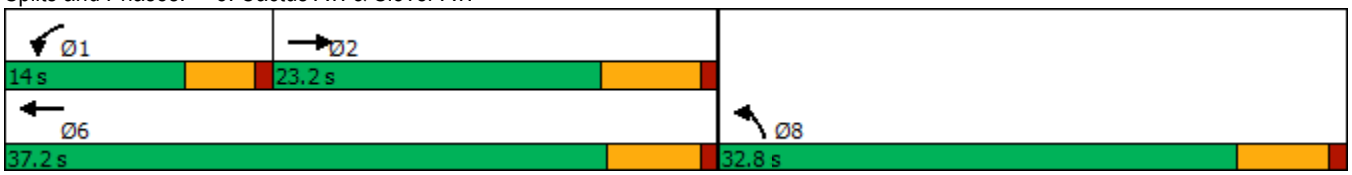
Notes

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

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	224	96	205	84
Future Volume (vph)	224	96	205	84
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	10.0	5.0	10.0	10.0
Minimum Split (s)	23.2	9.6	15.8	32.8
Total Split (s)	23.2	14.0	37.2	32.8
Total Split (%)	33.1%	20.0%	53.1%	46.9%
Yellow Time (s)	5.2	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	4.6	5.8	5.8
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	Min

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 44.4
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 8: Cactus Av. & Slover Av.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	224	141	96	205	84	56
Future Volume (veh/h)	224	141	96	205	84	56
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	236	148	101	216	88	59
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	542	327	153	1624	256	172
Arrive On Green	0.25	0.25	0.08	0.45	0.25	0.25
Sat Flow, veh/h	2258	1304	1810	3705	1026	688
Grp Volume(v), veh/h	195	189	101	216	148	0
Grp Sat Flow(s),veh/h/ln	1805	1662	1810	1805	1725	0
Q Serve(g_s), s	3.6	3.8	2.2	1.4	2.8	0.0
Cycle Q Clear(g_c), s	3.6	3.8	2.2	1.4	2.8	0.0
Prop In Lane		0.78	1.00		0.59	0.40
Lane Grp Cap(c), veh/h	452	417	153	1624	431	0
V/C Ratio(X)	0.43	0.45	0.66	0.13	0.34	0.00
Avail Cap(c_a), veh/h	767	706	425	2834	1164	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	12.6	12.7	17.8	6.4	12.3	0.0
Incr Delay (d2), s/veh	0.7	0.8	1.8	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	0.8	0.3	0.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.2	13.4	19.6	6.5	12.8	0.0
LnGrp LOS	B	B	B	A	B	A
Approach Vol, veh/h	384			317	148	
Approach Delay, s/veh	13.3			10.7	12.8	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.0	16.2				24.2	15.8
Change Period (Y+Rc), s	4.6	6.2				* 6.2	5.8
Max Green Setting (Gmax), s	9.4	17.0				* 31	27.0
Max Q Clear Time (g_c+I1), s	4.2	5.8				3.4	4.8
Green Ext Time (p_c), s	0.0	1.5				1.2	0.4

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Notes

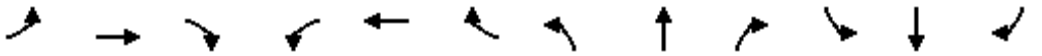
User approved volume balancing among the lanes for turning movement.

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	472	0	773	1227	826	666	1983
Future Volume (vph)	472	0	773	1227	826	666	1983
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	37.0	37.0	37.0	58.0	58.0	25.0	83.0
Total Split (%)	30.8%	30.8%	30.8%	48.3%	48.3%	20.8%	69.2%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.2	31.2	31.2	51.8	51.8	20.4	76.8
Actuated g/C Ratio	0.26	0.26	0.26	0.43	0.43	0.17	0.64
v/c Ratio	1.03	1.01	0.98	0.82	0.58	1.20	0.92
Control Delay	93.7	82.3	74.2	32.6	4.8	149.7	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	45.7
Total Delay	93.7	82.3	74.2	32.6	4.8	149.7	73.0
LOS	F	F	E	C	A	F	E
Approach Delay		83.5		26.2			92.3
Approach LOS		F		C			F

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.20	
Intersection Signal Delay: 67.7	Intersection LOS: E
Intersection Capacity Utilization 151.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	472	0	773	0	0	0	0	1227	826	666	1983	0
Future Volume (veh/h)	472	0	773	0	0	0	0	1227	826	666	1983	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	749	0	427				0	1158	918	716	2132	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	941	0	419				0	1640	1389	597	2310	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	3800	3217	3510	3705	0
Grp Volume(v), veh/h	749	0	427				0	1158	918	716	2132	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1608	1755	1805	0
Q Serve(g_s), s	23.2	0.0	31.2				0.0	29.9	27.2	20.4	62.3	0.0
Cycle Q Clear(g_c), s	23.2	0.0	31.2				0.0	29.9	27.2	20.4	62.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	941	0	419				0	1640	1389	597	2310	0
V/C Ratio(X)	0.80	0.00	1.02				0.00	0.71	0.66	1.20	0.92	0.00
Avail Cap(c_a), veh/h	941	0	419				0	1640	1389	597	2310	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	0.0	44.4				0.0	27.9	27.1	49.8	19.0	0.0
Incr Delay (d2), s/veh	4.8	0.0	49.1				0.0	2.6	2.5	105.4	7.6	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
%ile BackOfQ(50%),veh/ln	10.6	0.0	17.7				0.0	13.2	10.2	17.3	23.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	0.0	93.5				0.0	30.5	29.6	155.2	26.6	0.0
LnGrp LOS	D	A	F				A	C	C	F	C	A
Approach Vol, veh/h		1176						2076			2848	
Approach Delay, s/veh		63.4						30.1			58.9	
Approach LOS		E						C			E	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.0	58.0		37.0		83.0						
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2						
Max Green Setting (Gmax), s	20.4	51.8		31.2		76.8						
Max Q Clear Time (g_c+I1), s	22.4	31.9		33.2		64.3						
Green Ext Time (p_c), s	0.0	11.8		0.0		10.2						

Intersection Summary			
HCM 6th Ctrl Delay			50.0
HCM 6th LOS			D

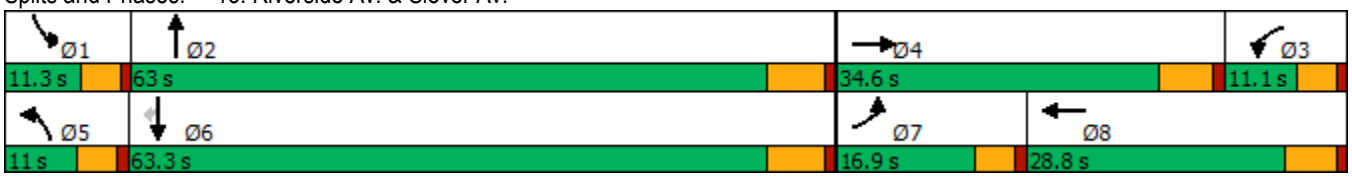
Notes

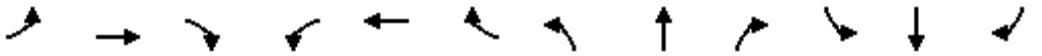
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	398	43	77	33	116	1634	35	2062	442
Future Volume (vph)	398	43	77	33	116	1634	35	2062	442
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	16.9	34.6	11.1	28.8	11.0	63.0	11.3	63.3	63.3
Total Split (%)	14.1%	28.8%	9.3%	24.0%	9.2%	52.5%	9.4%	52.8%	52.8%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	12.3	13.1	11.6	12.4	6.4	61.6	6.1	57.2	57.2
Actuated g/C Ratio	0.11	0.12	0.11	0.11	0.06	0.56	0.06	0.52	0.52
v/c Ratio	1.08	0.39	0.43	0.31	1.17	0.56	0.37	1.11	0.48
Control Delay	113.6	19.5	55.4	17.3	187.9	17.4	61.7	82.6	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	113.6	19.5	55.4	17.3	187.9	17.4	61.7	82.6	8.8
LOS	F	B	E	B	F	B	E	F	A
Approach Delay		84.9		31.4		28.5		69.5	
Approach LOS		F		C		C		E	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 109.6	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 55.3	Intersection LOS: E
Intersection Capacity Utilization 100.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	398	43	131	77	33	99	116	1634	36	35	2062	442
Future Volume (veh/h)	398	43	131	77	33	99	116	1634	36	35	2062	442
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		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	423	46	133	82	35	88	123	1738	34	37	2194	401
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	402	201	178	161	175	156	108	3121	61	56	2020	856
Arrive On Green	0.11	0.11	0.11	0.09	0.10	0.10	0.06	0.56	0.56	0.03	0.53	0.53
Sat Flow, veh/h	3510	1805	1601	1810	1805	1610	1810	5571	109	1810	3800	1610
Grp Volume(v), veh/h	423	46	133	82	35	88	123	1185	587	37	2194	401
Grp Sat Flow(s),veh/h/ln	1755	1805	1601	1810	1805	1610	1810	1900	1880	1810	1900	1610
Q Serve(g_s), s	12.3	2.5	8.6	4.6	1.9	5.6	6.4	21.4	21.4	2.2	57.1	16.7
Cycle Q Clear(g_c), s	12.3	2.5	8.6	4.6	1.9	5.6	6.4	21.4	21.4	2.2	57.1	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	402	201	178	161	175	156	108	2129	1053	56	2020	856
V/C Ratio(X)	1.05	0.23	0.75	0.51	0.20	0.56	1.14	0.56	0.56	0.66	1.09	0.47
Avail Cap(c_a), veh/h	402	484	429	161	387	345	108	2129	1053	113	2020	856
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	47.5	43.5	46.3	46.7	44.7	46.3	50.5	15.1	15.1	51.5	25.1	15.7
Incr Delay (d2), s/veh	59.2	0.6	6.1	2.6	0.6	3.2	129.4	1.1	2.1	4.8	47.8	1.8
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	8.5	1.1	3.6	2.1	0.9	2.3	6.7	8.4	8.6	1.0	35.4	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	106.8	44.1	52.4	49.3	45.2	49.5	179.9	16.2	17.2	56.2	72.9	17.5
LnGrp LOS	F	D	D	D	D	D	F	B	B	E	F	B
Approach Vol, veh/h		602			205			1895			2632	
Approach Delay, s/veh		90.0			48.7			27.1			64.2	
Approach LOS		F			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	66.4	15.4	17.7	11.0	63.3	16.9	16.2
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	6.7	56.8	6.5	* 29	6.4	57.1	12.3	23.0
Max Q Clear Time (g_c+I1), s	4.2	23.4	6.6	10.6	8.4	59.1	14.3	7.6
Green Ext Time (p_c), s	0.0	14.8	0.0	0.8	0.0	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	53.4
HCM 6th LOS	D

Notes

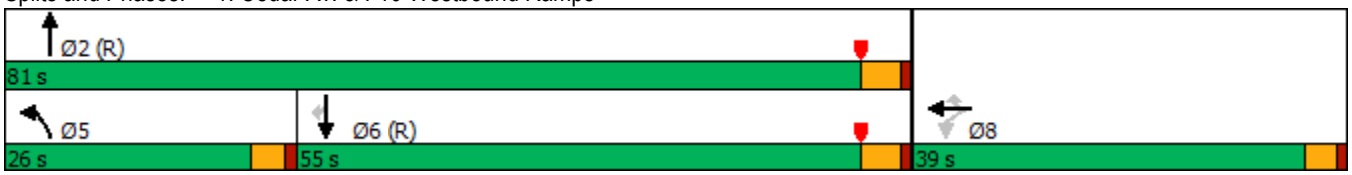
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	501	496	1874	1508	684
Future Volume (vph)	5	501	496	1874	1508	684
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	39.0	39.0	26.0	81.0	55.0	55.0
Total Split (%)	32.5%	32.5%	21.7%	67.5%	45.8%	45.8%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	433	5	501	496	1874	0	0	1508	684
Future Volume (veh/h)	0	0	0	433	5	501	496	1874	0	0	1508	684
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				456	50	491	522	1973	0	0	1587	522
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				478	52	470	576	2301	0	0	2283	699
Arrive On Green				0.29	0.29	0.29	0.33	1.00	0.00	0.00	0.44	0.44
Sat Flow, veh/h				1638	180	1610	3510	3705	0	0	5358	1588
Grp Volume(v), veh/h				506	0	491	522	1973	0	0	1587	522
Grp Sat Flow(s),veh/h/ln				1818	0	1610	1755	1805	0	0	1729	1588
Q Serve(g_s), s				32.8	0.0	35.0	17.1	0.0	0.0	0.0	29.6	32.9
Cycle Q Clear(g_c), s				32.8	0.0	35.0	17.1	0.0	0.0	0.0	29.6	32.9
Prop In Lane				0.90		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				530	0	470	576	2301	0	0	2283	699
V/C Ratio(X)				0.95	0.00	1.05	0.91	0.86	0.00	0.00	0.70	0.75
Avail Cap(c_a), veh/h				530	0	470	644	2301	0	0	2283	699
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.44	0.44	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				41.7	0.0	42.5	39.4	0.0	0.0	0.0	27.1	28.0
Incr Delay (d2), s/veh				27.9	0.0	53.9	7.9	2.0	0.0	0.0	1.8	7.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				18.2	0.0	20.3	6.5	0.6	0.0	0.0	12.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				69.6	0.0	96.4	47.4	2.0	0.0	0.0	28.9	35.2
LnGrp LOS				E	A	F	D	A	A	A	C	D
Approach Vol, veh/h					997			2495			2109	
Approach Delay, s/veh					82.8			11.5			30.4	
Approach LOS					F			B			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	81.0		23.7	57.3		39.0						
Change Period (Y+Rc), s	4.5		4.0	4.5		4.0						
Max Green Setting (Gmax), s	76.5		22.0	50.5		35.0						
Max Q Clear Time (g_c+I1), s	2.0		19.1	34.9		37.0						
Green Ext Time (p_c), s	31.2		0.6	11.0		0.0						

Intersection Summary	
HCM 6th Ctrl Delay	31.3
HCM 6th LOS	C

Notes

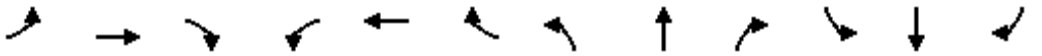
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	936	1	418	1435	683	586	1356
Future Volume (vph)	936	1	418	1435	683	586	1356
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	49.0	49.0	49.0	46.0	46.0	25.0	71.0
Total Split (%)	40.8%	40.8%	40.8%	38.3%	38.3%	20.8%	59.2%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	936	1	418	0	0	0	0	1435	683	586	1356	0
Future Volume (veh/h)	936	1	418	0	0	0	0	1435	683	586	1356	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	1115	0	278				0	1511	631	617	1427	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	1229	0	547				0	1977	613	614	2128	0
Arrive On Green	0.34	0.00	0.34				0.00	0.38	0.38	0.35	1.00	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1609	3510	3705	0
Grp Volume(v), veh/h	1115	0	278				0	1511	631	617	1427	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1755	1805	0
Q Serve(g_s), s	35.3	0.0	16.5				0.0	30.5	45.7	21.0	0.0	0.0
Cycle Q Clear(g_c), s	35.3	0.0	16.5				0.0	30.5	45.7	21.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1229	0	547				0	1977	613	614	2128	0
V/C Ratio(X)	0.91	0.00	0.51				0.00	0.76	1.03	1.00	0.67	0.00
Avail Cap(c_a), veh/h	1357	0	604				0	1977	613	614	2128	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.26	0.26	0.63	0.63	0.00
Uniform Delay (d), s/veh	37.8	0.0	31.6				0.0	32.4	37.1	39.0	0.0	0.0
Incr Delay (d2), s/veh	8.5	0.0	0.7				0.0	0.8	26.4	29.9	1.1	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
%ile BackOfQ(50%),veh/ln	16.3	0.0	6.3				0.0	12.4	21.6	9.6	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	0.0	32.3				0.0	33.2	63.6	68.9	1.1	0.0
LnGrp LOS	D	A	C				A	C	F	F	A	A
Approach Vol, veh/h		1393						2142			2044	
Approach Delay, s/veh		43.5						42.1			21.5	
Approach LOS		D						D			C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.0	50.2		44.8		75.2						
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5						
Max Green Setting (Gmax), s	21.0	41.5		45.0		66.5						
Max Q Clear Time (g_c+I1), s	23.0	47.7		37.3		2.0						
Green Ext Time (p_c), s	0.0	0.0		3.5		8.7						

Intersection Summary			
HCM 6th Ctrl Delay			34.9
HCM 6th LOS			C

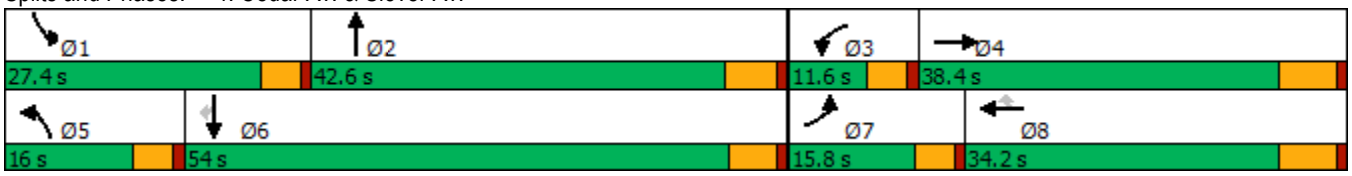
Notes

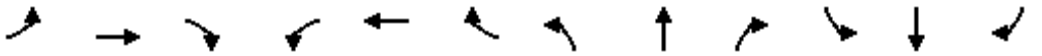
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	259	579	48	323	310	106	1061	320	1055	115
Future Volume (vph)	259	579	48	323	310	106	1061	320	1055	115
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	34.2	9.6	33.8	9.6	33.4	33.4
Total Split (s)	15.8	38.4	11.6	34.2	34.2	16.0	42.6	27.4	54.0	54.0
Total Split (%)	13.2%	32.0%	9.7%	28.5%	28.5%	13.3%	35.5%	22.8%	45.0%	45.0%
Yellow Time (s)	3.6	5.2	3.6	5.2	5.2	3.6	4.8	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	6.2	4.6	5.8	4.6	5.4	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 115.8
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	579	160	48	323	310	106	1061	102	320	1055	115
Future Volume (veh/h)	259	579	160	48	323	310	106	1061	102	320	1055	115
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	1.00		1.00	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	1700	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	273	609	120	51	340	187	112	1117	105	337	1111	118
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	316	709	139	65	627	275	137	1102	104	351	1644	722
Arrive On Green	0.10	0.24	0.24	0.04	0.17	0.17	0.08	0.33	0.33	0.20	0.46	0.46
Sat Flow, veh/h	3141	2998	589	1714	3610	1587	1714	3335	313	1714	3610	1586
Grp Volume(v), veh/h	273	366	363	51	340	187	112	604	618	337	1111	118
Grp Sat Flow(s),veh/h/ln	1570	1805	1782	1714	1805	1587	1714	1805	1843	1714	1805	1586
Q Serve(g_s), s	9.5	21.6	21.7	3.3	9.6	12.3	7.2	36.8	36.8	21.7	27.0	4.9
Cycle Q Clear(g_c), s	9.5	21.6	21.7	3.3	9.6	12.3	7.2	36.8	36.8	21.7	27.0	4.9
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	316	427	421	65	627	275	137	597	609	351	1644	722
V/C Ratio(X)	0.86	0.86	0.86	0.79	0.54	0.68	0.82	1.01	1.01	0.96	0.68	0.16
Avail Cap(c_a), veh/h	316	522	515	108	908	399	176	597	609	351	1644	722
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	49.3	40.7	40.7	53.1	42.0	43.1	50.4	37.3	37.3	43.8	23.8	17.8
Incr Delay (d2), s/veh	20.3	11.5	11.9	7.7	0.7	2.9	16.4	39.9	40.1	37.1	1.1	0.1
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	4.5	10.5	10.4	1.5	4.1	4.8	3.6	21.9	22.4	12.5	11.1	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.7	52.2	52.7	60.9	42.7	46.0	66.8	77.2	77.3	80.9	25.0	17.9
LnGrp LOS	E	D	D	E	D	D	E	F	F	F	C	B
Approach Vol, veh/h		1002			578			1334			1566	
Approach Delay, s/veh		57.1			45.4			76.4			36.5	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.4	42.6	8.8	32.5	13.5	56.5	15.8	25.5
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	22.8	36.8	7.0	32.2	11.4	* 49	11.2	28.0
Max Q Clear Time (g_c+I1), s	23.7	38.8	5.3	23.7	9.2	29.0	11.5	14.3
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	0.0	8.0	0.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	54.1
HCM 6th LOS	D

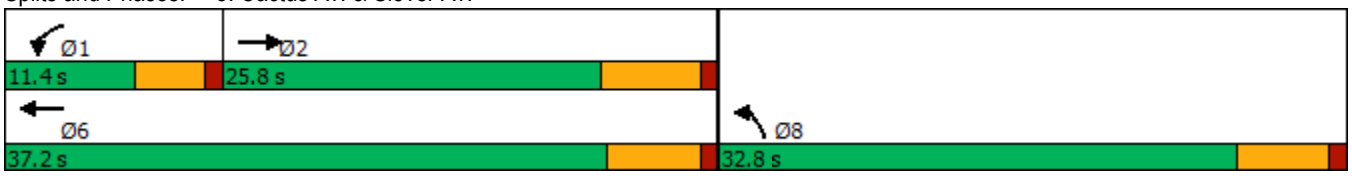
Notes

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

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	682	98	367	203
Future Volume (vph)	682	98	367	203
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	10.0	5.0	10.0	10.0
Minimum Split (s)	23.2	9.6	15.8	32.8
Total Split (s)	25.8	11.4	37.2	32.8
Total Split (%)	36.9%	16.3%	53.1%	46.9%
Yellow Time (s)	5.2	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	4.6	5.8	5.8
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	Min

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 54
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 8: Cactus Av. & Slover Av.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	682	71	98	367	203	108
Future Volume (veh/h)	682	71	98	367	203	108
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	718	75	103	386	214	114
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	1003	105	146	1765	273	146
Arrive On Green	0.30	0.30	0.08	0.49	0.24	0.24
Sat Flow, veh/h	3385	343	1810	3705	1129	601
Grp Volume(v), veh/h	394	399	103	386	329	0
Grp Sat Flow(s),veh/h/ln	1805	1829	1810	1805	1735	0
Q Serve(g_s), s	8.6	8.7	2.5	2.7	7.9	0.0
Cycle Q Clear(g_c), s	8.6	8.7	2.5	2.7	7.9	0.0
Prop In Lane		0.19	1.00		0.65	0.35
Lane Grp Cap(c), veh/h	550	558	146	1765	420	0
V/C Ratio(X)	0.72	0.72	0.70	0.22	0.78	0.00
Avail Cap(c_a), veh/h	793	803	276	2541	1050	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	13.8	13.8	20.0	6.5	15.8	0.0
Incr Delay (d2), s/veh	1.8	1.7	2.3	0.1	3.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.7	0.9	0.6	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.5	15.5	22.3	6.6	19.0	0.0
LnGrp LOS	B	B	C	A	B	A
Approach Vol, veh/h	793			489	329	
Approach Delay, s/veh	15.5			9.9	19.0	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.2	19.8				28.0	16.6
Change Period (Y+Rc), s	4.6	6.2				* 6.2	5.8
Max Green Setting (Gmax), s	6.8	19.6				* 31	27.0
Max Q Clear Time (g_c+I1), s	4.5	10.7				4.7	9.9
Green Ext Time (p_c), s	0.0	2.9				2.3	0.9

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

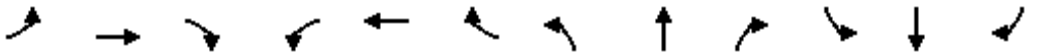
User approved volume balancing among the lanes for turning movement.

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	765	4	559	1967	989	599	1636
Future Volume (vph)	765	4	559	1967	989	599	1636
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	37.0	37.0	37.0	58.0	58.0	25.0	83.0
Total Split (%)	30.8%	30.8%	30.8%	48.3%	48.3%	20.8%	69.2%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.2	31.2	31.2	51.8	51.8	20.4	76.8
Actuated g/C Ratio	0.26	0.26	0.26	0.43	0.43	0.17	0.64
v/c Ratio	1.09	1.11	0.98	1.16	0.72	1.06	0.75
Control Delay	109.9	116.2	74.7	108.2	7.6	101.6	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	15.5	48.1
Total Delay	109.9	116.2	74.7	108.2	7.6	117.1	65.6
LOS	F	F	E	F	A	F	E
Approach Delay		100.9		85.7			79.4
Approach LOS		F		F			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 86.6	Intersection LOS: F
Intersection Capacity Utilization 148.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	765	4	559	0	0	0	0	1967	989	599	1636	0
Future Volume (veh/h)	765	4	559	0	0	0	0	1967	989	599	1636	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	957	0	325				0	2341	750	631	1722	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	941	0	419				0	2460	695	597	2310	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	5700	1610	3510	3705	0
Grp Volume(v), veh/h	957	0	325				0	2341	750	631	1722	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	1755	1805	0
Q Serve(g_s), s	31.2	0.0	22.5				0.0	47.5	51.8	20.4	39.4	0.0
Cycle Q Clear(g_c), s	31.2	0.0	22.5				0.0	47.5	51.8	20.4	39.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	941	0	419				0	2461	695	597	2310	0
V/C Ratio(X)	1.02	0.00	0.78				0.00	0.95	1.08	1.06	0.75	0.00
Avail Cap(c_a), veh/h	941	0	419				0	2461	695	597	2310	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	0.0	41.2				0.0	32.9	34.1	49.8	14.9	0.0
Incr Delay (d2), s/veh	33.7	0.0	8.9				0.0	9.9	57.5	52.9	2.2	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
%ile BackOfQ(50%),veh/ln	17.8	0.0	9.6				0.0	22.3	29.6	13.0	14.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.1	0.0	50.1				0.0	42.8	91.6	102.7	17.1	0.0
LnGrp LOS	F	A	D				A	D	F	F	B	A
Approach Vol, veh/h		1282						3091			2353	
Approach Delay, s/veh		71.0						54.6			40.1	
Approach LOS		E						D			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	58.0		37.0		83.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	51.8		31.2		76.8
Max Q Clear Time (g_c+I1), s	22.4	53.8		33.2		41.4
Green Ext Time (p_c), s	0.0	0.0		0.0		16.7

Intersection Summary		
HCM 6th Ctrl Delay		52.6
HCM 6th LOS		D

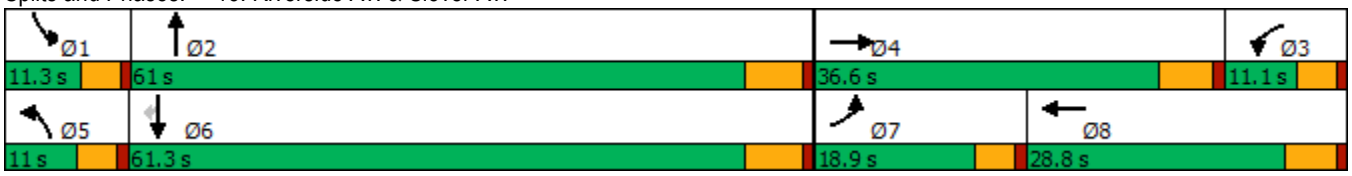
Notes

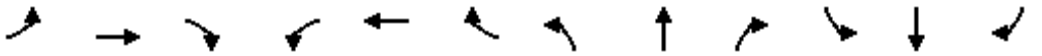
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	587	302	57	10	62	2012	40	1529	413
Future Volume (vph)	587	302	57	10	62	2012	40	1529	413
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	18.9	36.6	11.1	28.8	11.0	61.0	11.3	61.3	61.3
Total Split (%)	15.8%	30.5%	9.3%	24.0%	9.2%	50.8%	9.4%	51.1%	51.1%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	14.4	25.4	6.4	15.0	6.2	57.5	6.2	55.4	55.4
Actuated g/C Ratio	0.13	0.23	0.06	0.14	0.06	0.52	0.06	0.50	0.50
v/c Ratio	1.32	0.70	0.56	0.22	0.63	0.72	0.41	0.82	0.44
Control Delay	198.9	35.8	73.9	13.1	80.7	23.4	65.0	29.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	198.9	35.8	73.9	13.1	80.7	23.4	65.0	29.2	6.2
LOS	F	D	E	B	F	C	E	C	A
Approach Delay		116.8		33.9		25.1		25.1	
Approach LOS		F		C		C		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 110.1	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.32	
Intersection Signal Delay: 45.2	Intersection LOS: D
Intersection Capacity Utilization 89.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	587	302	293	57	10	100	62	2012	68	40	1529	413
Future Volume (veh/h)	587	302	293	57	10	100	62	2012	68	40	1529	413
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	605	311	282	59	10	84	64	2074	70	41	1576	393
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	455	379	335	76	239	213	83	2813	95	59	1899	794
Arrive On Green	0.13	0.21	0.21	0.04	0.13	0.13	0.05	0.51	0.51	0.03	0.50	0.50
Sat Flow, veh/h	3510	1812	1605	1810	1805	1610	1810	5482	185	1810	3800	1589
Grp Volume(v), veh/h	605	310	283	59	10	84	64	1436	708	41	1576	393
Grp Sat Flow(s),veh/h/ln	1755	1805	1611	1810	1805	1610	1810	1900	1867	1810	1900	1589
Q Serve(g_s), s	14.3	18.1	18.6	3.6	0.5	5.3	3.9	32.6	32.8	2.5	39.1	18.1
Cycle Q Clear(g_c), s	14.3	18.1	18.6	3.6	0.5	5.3	3.9	32.6	32.8	2.5	39.1	18.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	455	377	337	76	239	213	83	1950	958	59	1899	794
V/C Ratio(X)	1.33	0.82	0.84	0.77	0.04	0.39	0.77	0.74	0.74	0.70	0.83	0.49
Avail Cap(c_a), veh/h	455	504	450	107	377	336	105	1950	958	110	1899	794
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	48.0	41.6	41.8	52.3	41.7	43.8	52.0	21.0	21.1	52.8	23.6	18.3
Incr Delay (d2), s/veh	162.4	7.9	10.3	20.0	0.1	1.2	17.9	2.5	5.1	5.5	4.4	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	0.0
%ile BackOfQ(50%),veh/ln	16.3	8.5	8.1	2.0	0.2	2.1	2.1	13.5	14.0	1.2	16.7	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	210.3	49.5	52.1	72.3	41.8	44.9	69.9	23.5	26.2	58.3	27.9	20.5
LnGrp LOS	F	D	D	E	D	D	E	C	C	E	C	C
Approach Vol, veh/h		1198			153			2208			2010	
Approach Delay, s/veh		131.3			55.3			25.7			27.1	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	62.8	10.5	28.8	9.6	61.3	18.9	20.4
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	6.7	54.8	6.5	* 31	6.4	55.1	14.3	23.0
Max Q Clear Time (g_c+I1), s	4.5	34.8	5.6	20.6	5.9	41.1	16.3	7.3
Green Ext Time (p_c), s	0.0	13.9	0.0	2.5	0.0	9.7	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	49.7
HCM 6th LOS	D

Notes

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

APPENDIX 7.11:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

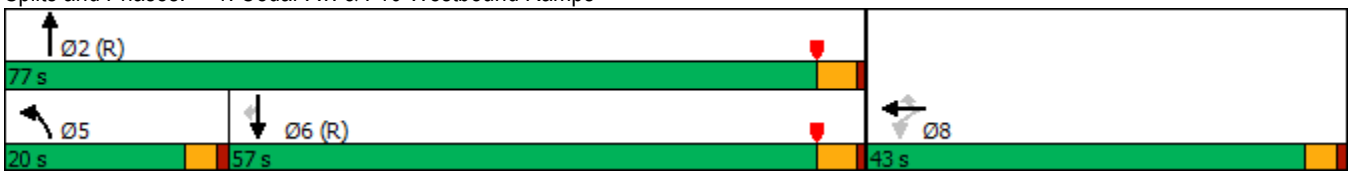
This Page Intentionally Left Blank

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	400	475	1480	1758	997
Future Volume (vph)	16	400	475	1480	1758	997
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	43.0	43.0	20.0	77.0	57.0	57.0
Total Split (%)	35.8%	35.8%	16.7%	64.2%	47.5%	47.5%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	541	16	400	475	1480	0	0	1758	997
Future Volume (veh/h)	0	0	0	541	16	400	475	1480	0	0	1758	997
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				569	17	281	500	1558	0	0	1851	793
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				572	17	523	468	2181	0	0	2269	704
Arrive On Green				0.32	0.32	0.32	0.27	1.00	0.00	0.00	0.44	0.44
Sat Flow, veh/h				1759	53	1610	3510	3705	0	0	5358	1610
Grp Volume(v), veh/h				586	0	281	500	1558	0	0	1851	793
Grp Sat Flow(s),veh/h/ln				1812	0	1610	1755	1805	0	0	1729	1610
Q Serve(g_s), s				38.7	0.0	17.1	16.0	0.0	0.0	0.0	37.5	52.5
Cycle Q Clear(g_c), s				38.7	0.0	17.1	16.0	0.0	0.0	0.0	37.5	52.5
Prop In Lane				0.97		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				589	0	523	468	2181	0	0	2269	704
V/C Ratio(X)				1.00	0.00	0.54	1.07	0.71	0.00	0.00	0.82	1.13
Avail Cap(c_a), veh/h				589	0	523	468	2181	0	0	2269	704
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.63	0.63	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				40.4	0.0	33.1	44.0	0.0	0.0	0.0	29.5	33.8
Incr Delay (d2), s/veh				35.8	0.0	1.1	52.8	1.3	0.0	0.0	3.4	74.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				22.2	0.0	6.6	9.1	0.4	0.0	0.0	15.5	33.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				76.2	0.0	34.2	96.8	1.3	0.0	0.0	32.9	107.8
LnGrp LOS				E	A	C	F	A	A	A	C	F
Approach Vol, veh/h					867			2058			2644	
Approach Delay, s/veh					62.6			24.5			55.4	
Approach LOS					E			C			E	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.0			20.0	57.0		43.0				
Change Period (Y+Rc), s		4.5			4.0	4.5		4.0				
Max Green Setting (Gmax), s		72.5			16.0	52.5		39.0				
Max Q Clear Time (g_c+I1), s		2.0			18.0	54.5		40.7				
Green Ext Time (p_c), s		18.6			0.0	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			45.1									
HCM 6th LOS			D									

Notes

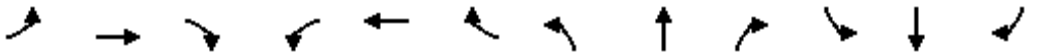
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	556	4	550	1398	688	566	1732
Future Volume (vph)	556	4	550	1398	688	566	1732
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	44.0	44.0	44.0	49.0	49.0	27.0	76.0
Total Split (%)	36.7%	36.7%	36.7%	40.8%	40.8%	22.5%	63.3%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	556	4	550	0	0	0	0	1398	688	566	1732	0
Future Volume (veh/h)	556	4	550	0	0	0	0	1398	688	566	1732	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	748	0	348				0	1472	647	596	1823	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	912	0	406				0	2394	743	639	2444	0
Arrive On Green	0.25	0.00	0.25				0.00	0.46	0.46	0.36	1.00	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1610	3510	3705	0
Grp Volume(v), veh/h	748	0	348				0	1472	647	596	1823	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1610	1755	1805	0
Q Serve(g_s), s	23.4	0.0	24.7				0.0	25.6	43.4	19.6	0.0	0.0
Cycle Q Clear(g_c), s	23.4	0.0	24.7				0.0	25.6	43.4	19.6	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	912	0	406				0	2394	743	639	2444	0
V/C Ratio(X)	0.82	0.00	0.86				0.00	0.61	0.87	0.93	0.75	0.00
Avail Cap(c_a), veh/h	1206	0	537				0	2394	743	673	2444	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.09	0.09	0.47	0.47	0.00
Uniform Delay (d), s/veh	42.3	0.0	42.8				0.0	24.3	29.1	37.4	0.0	0.0
Incr Delay (d2), s/veh	3.5	0.0	10.3				0.0	0.1	1.4	10.7	1.0	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
%ile BackOfQ(50%),veh/ln	10.5	0.0	10.6				0.0	10.0	16.1	7.5	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.8	0.0	53.1				0.0	24.4	30.5	48.1	1.0	0.0
LnGrp LOS	D	A	D				A	C	C	D	A	A
Approach Vol, veh/h		1096						2119			2419	
Approach Delay, s/veh		48.1						26.3			12.6	
Approach LOS		D						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.9	59.9		34.3		85.7
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	23.0	44.5		40.0		71.5
Max Q Clear Time (g_c+I1), s	21.6	45.4		26.7		2.0
Green Ext Time (p_c), s	0.2	0.0		3.5		14.1

Intersection Summary		
HCM 6th Ctrl Delay		24.6
HCM 6th LOS		C

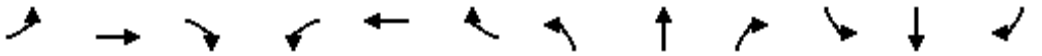
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	265	157	20	191	237	90	1176	269	1172	164
Future Volume (vph)	265	157	20	191	237	90	1176	269	1172	164
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	34.2	9.6	33.8	9.6	33.4	33.4
Total Split (s)	15.0	38.8	10.4	34.2	34.2	14.4	46.8	24.0	56.4	56.4
Total Split (%)	12.5%	32.3%	8.7%	28.5%	28.5%	12.0%	39.0%	20.0%	47.0%	47.0%
Yellow Time (s)	3.6	5.2	3.6	5.2	5.2	3.6	4.8	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	6.2	4.6	5.8	4.6	5.4	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 106.2
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	157	53	20	191	237	90	1176	46	269	1172	164
Future Volume (veh/h)	265	157	53	20	191	237	90	1176	46	269	1172	164
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		1.00	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	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	279	165	43	21	201	228	95	1238	48	283	1234	170
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	314	690	175	37	610	272	118	1304	51	302	1715	765
Arrive On Green	0.09	0.24	0.24	0.02	0.17	0.17	0.07	0.37	0.37	0.18	0.48	0.48
Sat Flow, veh/h	3326	2851	723	1714	3610	1610	1714	3543	137	1714	3610	1610
Grp Volume(v), veh/h	279	103	105	21	201	228	95	630	656	283	1234	170
Grp Sat Flow(s),veh/h/ln	1663	1805	1769	1714	1805	1610	1714	1805	1875	1714	1805	1610
Q Serve(g_s), s	9.1	5.0	5.3	1.3	5.4	15.1	6.0	37.4	37.4	17.9	30.0	6.8
Cycle Q Clear(g_c), s	9.1	5.0	5.3	1.3	5.4	15.1	6.0	37.4	37.4	17.9	30.0	6.8
Prop In Lane	1.00		0.41	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	314	437	428	37	610	272	118	664	690	302	1715	765
V/C Ratio(X)	0.89	0.24	0.25	0.57	0.33	0.84	0.80	0.95	0.95	0.94	0.72	0.22
Avail Cap(c_a), veh/h	314	534	523	90	917	409	152	672	698	302	1715	765
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	49.3	33.6	33.7	53.4	40.3	44.3	50.6	33.8	33.8	44.8	23.1	17.0
Incr Delay (d2), s/veh	24.5	0.3	0.3	5.0	0.3	9.2	16.2	22.8	22.5	35.2	1.5	0.1
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	2.1	2.2	0.6	2.3	6.4	3.0	19.5	20.2	10.4	12.3	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.8	33.8	34.0	58.4	40.6	53.6	66.7	56.6	56.3	80.0	24.5	17.1
LnGrp LOS	E	C	C	E	D	D	E	E	E	E	C	B
Approach Vol, veh/h		487			450			1381			1687	
Approach Delay, s/veh		56.7			48.0			57.2			33.1	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	46.3	7.0	32.9	12.2	58.1	15.0	24.8
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	19.4	41.0	5.8	32.6	9.8	* 51	10.4	28.0
Max Q Clear Time (g_c+I1), s	19.9	39.4	3.3	7.3	8.0	32.0	11.1	17.1
Green Ext Time (p_c), s	0.0	1.1	0.0	1.0	0.0	9.0	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

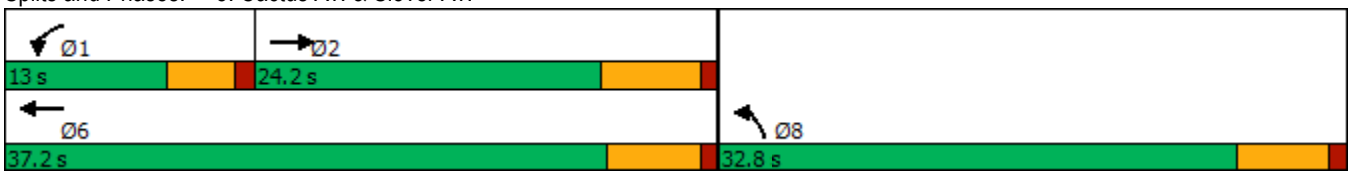
Notes

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

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	227	103	216	87
Future Volume (vph)	227	103	216	87
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	10.0	5.0	10.0	10.0
Minimum Split (s)	24.2	9.6	23.8	32.8
Total Split (s)	24.2	13.0	37.2	32.8
Total Split (%)	34.6%	18.6%	53.1%	46.9%
Yellow Time (s)	5.2	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	4.6	5.8	5.8
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	Max

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 60.7
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 8: Cactus Av. & Slover Av.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	227	150	103	216	87	58
Future Volume (veh/h)	227	150	103	216	87	58
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	239	158	108	227	92	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	366	232	140	1189	479	317
Arrive On Green	0.17	0.17	0.08	0.33	0.46	0.46
Sat Flow, veh/h	2210	1344	1810	3705	1031	683
Grp Volume(v), veh/h	203	194	108	227	154	0
Grp Sat Flow(s),veh/h/ln	1805	1654	1810	1805	1725	0
Q Serve(g_s), s	6.1	6.4	3.4	2.6	3.1	0.0
Cycle Q Clear(g_c), s	6.1	6.4	3.4	2.6	3.1	0.0
Prop In Lane		0.81	1.00		0.60	0.40
Lane Grp Cap(c), veh/h	312	286	140	1189	801	0
V/C Ratio(X)	0.65	0.68	0.77	0.19	0.19	0.00
Avail Cap(c_a), veh/h	559	512	261	1950	801	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	22.4	22.5	26.3	14.0	9.2	0.0
Incr Delay (d2), s/veh	2.3	2.8	3.4	0.1	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.3	1.4	0.9	1.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.7	25.4	29.8	14.0	9.7	0.0
LnGrp LOS	C	C	C	B	A	A
Approach Vol, veh/h	397			335	154	
Approach Delay, s/veh	25.0			19.1	9.7	
Approach LOS	C			B	A	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	9.1	16.3				25.3	32.8
Change Period (Y+Rc), s	4.6	6.2				* 6.2	5.8
Max Green Setting (Gmax), s	8.4	18.0				* 31	27.0
Max Q Clear Time (g_c+I1), s	5.4	8.4				4.6	5.1
Green Ext Time (p_c), s	0.0	1.4				1.3	0.4

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

Notes

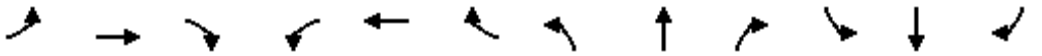
User approved volume balancing among the lanes for turning movement.

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	472	0	773	1227	830	666	1997
Future Volume (vph)	472	0	773	1227	830	666	1997
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	37.0	37.0	37.0	58.0	58.0	25.0	83.0
Total Split (%)	30.8%	30.8%	30.8%	48.3%	48.3%	20.8%	69.2%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.2	31.2	31.2	51.8	51.8	20.4	76.8
Actuated g/C Ratio	0.26	0.26	0.26	0.43	0.43	0.17	0.64
v/c Ratio	1.03	1.01	0.98	0.82	0.57	1.20	0.93
Control Delay	93.7	82.3	74.2	32.7	4.7	149.7	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	45.5
Total Delay	93.7	82.3	74.2	32.7	4.7	149.7	73.5
LOS	F	F	E	C	A	F	E
Approach Delay		83.5		26.4			92.5
Approach LOS		F		C			F

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.20	
Intersection Signal Delay: 67.9	Intersection LOS: E
Intersection Capacity Utilization 151.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	472	0	773	0	0	0	0	1227	830	666	1997	0
Future Volume (veh/h)	472	0	773	0	0	0	0	1227	830	666	1997	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	749	0	427				0	1161	920	716	2147	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	941	0	419				0	1640	1389	597	2310	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	3800	3217	3510	3705	0
Grp Volume(v), veh/h	749	0	427				0	1161	920	716	2147	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1608	1755	1805	0
Q Serve(g_s), s	23.2	0.0	31.2				0.0	30.0	27.3	20.4	63.4	0.0
Cycle Q Clear(g_c), s	23.2	0.0	31.2				0.0	30.0	27.3	20.4	63.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	941	0	419				0	1640	1389	597	2310	0
V/C Ratio(X)	0.80	0.00	1.02				0.00	0.71	0.66	1.20	0.93	0.00
Avail Cap(c_a), veh/h	941	0	419				0	1640	1389	597	2310	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	0.0	44.4				0.0	27.9	27.1	49.8	19.2	0.0
Incr Delay (d2), s/veh	4.8	0.0	49.1				0.0	2.6	2.5	105.4	8.1	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
%ile BackOfQ(50%),veh/ln	10.6	0.0	17.7				0.0	13.3	10.2	17.3	24.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	0.0	93.5				0.0	30.5	29.6	155.2	27.3	0.0
LnGrp LOS	D	A	F				A	C	C	F	C	A
Approach Vol, veh/h		1176						2081			2863	
Approach Delay, s/veh		63.4						30.1			59.3	
Approach LOS		E						C			E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	58.0		37.0		83.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	51.8		31.2		76.8
Max Q Clear Time (g_c+I1), s	22.4	32.0		33.2		65.4
Green Ext Time (p_c), s	0.0	11.8		0.0		9.5

Intersection Summary		
HCM 6th Ctrl Delay		50.2
HCM 6th LOS		D

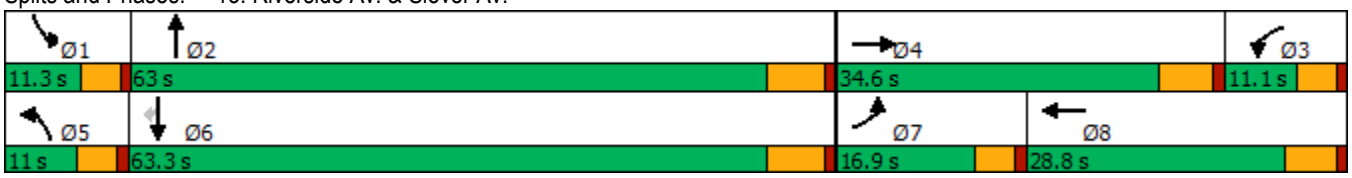
Notes

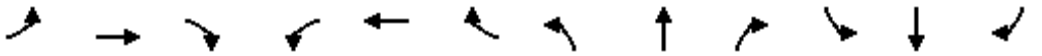
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	402	43	77	34	119	1634	35	2062	456
Future Volume (vph)	402	43	77	34	119	1634	35	2062	456
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	16.9	34.6	11.1	28.8	11.0	63.0	11.3	63.3	63.3
Total Split (%)	14.1%	28.8%	9.3%	24.0%	9.2%	52.5%	9.4%	52.8%	52.8%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	12.3	13.1	11.6	12.4	6.4	61.6	6.1	57.2	57.2
Actuated g/C Ratio	0.11	0.12	0.11	0.11	0.06	0.56	0.06	0.52	0.52
v/c Ratio	1.09	0.39	0.43	0.31	1.21	0.56	0.37	1.11	0.50
Control Delay	117.2	19.7	55.4	17.4	200.0	17.4	61.7	82.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.2	19.7	55.4	17.4	200.0	17.4	61.7	82.6	9.0
LOS	F	B	E	B	F	B	E	F	A
Approach Delay		87.7		31.4		29.6		69.2	
Approach LOS		F		C		C		E	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 109.6	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 55.9	Intersection LOS: E
Intersection Capacity Utilization 101.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	402	43	132	77	34	99	119	1634	36	35	2062	456
Future Volume (veh/h)	402	43	132	77	34	99	119	1634	36	35	2062	456
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		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	428	46	134	82	36	88	127	1738	34	37	2194	416
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	402	202	179	160	175	156	108	3121	61	56	2020	856
Arrive On Green	0.11	0.11	0.11	0.09	0.10	0.10	0.06	0.56	0.56	0.03	0.53	0.53
Sat Flow, veh/h	3510	1805	1602	1810	1805	1610	1810	5571	109	1810	3800	1610
Grp Volume(v), veh/h	428	46	134	82	36	88	127	1185	587	37	2194	416
Grp Sat Flow(s),veh/h/ln	1755	1805	1602	1810	1805	1610	1810	1900	1880	1810	1900	1610
Q Serve(g_s), s	12.3	2.5	8.7	4.6	2.0	5.6	6.4	21.4	21.4	2.2	57.1	17.5
Cycle Q Clear(g_c), s	12.3	2.5	8.7	4.6	2.0	5.6	6.4	21.4	21.4	2.2	57.1	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	402	202	179	160	175	156	108	2129	1053	56	2020	856
V/C Ratio(X)	1.06	0.23	0.75	0.51	0.21	0.56	1.18	0.56	0.56	0.66	1.09	0.49
Avail Cap(c_a), veh/h	402	484	430	160	387	345	108	2129	1053	113	2020	856
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	47.5	43.5	46.2	46.7	44.7	46.3	50.5	15.1	15.1	51.5	25.1	15.9
Incr Delay (d2), s/veh	63.0	0.6	6.1	2.8	0.6	3.2	142.2	1.1	2.1	4.8	47.8	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	8.7	1.1	3.7	2.2	0.9	2.3	7.0	8.4	8.6	1.0	35.4	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.6	44.0	52.4	49.5	45.3	49.5	192.7	16.2	17.2	56.2	72.9	17.8
LnGrp LOS	F	D	D	D	D	D	F	B	B	E	F	B
Approach Vol, veh/h		608			206			1899			2647	
Approach Delay, s/veh		92.7			48.8			28.3			64.0	
Approach LOS		F			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	66.4	15.3	17.8	11.0	63.3	16.9	16.2
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	6.7	56.8	6.5	* 29	6.4	57.1	12.3	23.0
Max Q Clear Time (g_c+I1), s	4.2	23.4	6.6	10.7	8.4	59.1	14.3	7.6
Green Ext Time (p_c), s	0.0	14.8	0.0	0.8	0.0	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	54.0
HCM 6th LOS	D

Notes

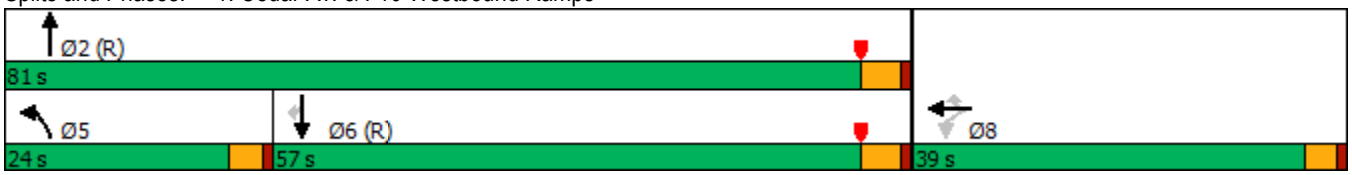
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	501	517	1875	1509	684
Future Volume (vph)	5	501	517	1875	1509	684
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases		8				6
Detector Phase	8	8	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	20.5	9.5	9.5
Total Split (s)	39.0	39.0	24.0	81.0	57.0	57.0
Total Split (%)	32.5%	32.5%	20.0%	67.5%	47.5%	47.5%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Cedar Av. & I-10 Westbound Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	433	5	501	517	1875	0	0	1509	684
Future Volume (veh/h)	0	0	0	433	5	501	517	1875	0	0	1509	684
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				456	50	491	544	1974	0	0	1588	522
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				478	52	470	585	2301	0	0	2270	695
Arrive On Green				0.29	0.29	0.29	0.33	1.00	0.00	0.00	0.44	0.44
Sat Flow, veh/h				1638	180	1610	3510	3705	0	0	5358	1588
Grp Volume(v), veh/h				506	0	491	544	1974	0	0	1588	522
Grp Sat Flow(s),veh/h/ln				1818	0	1610	1755	1805	0	0	1729	1588
Q Serve(g_s), s				32.8	0.0	35.0	18.0	0.0	0.0	0.0	29.8	33.0
Cycle Q Clear(g_c), s				32.8	0.0	35.0	18.0	0.0	0.0	0.0	29.8	33.0
Prop In Lane				0.90		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				530	0	470	585	2301	0	0	2270	695
V/C Ratio(X)				0.95	0.00	1.05	0.93	0.86	0.00	0.00	0.70	0.75
Avail Cap(c_a), veh/h				530	0	470	585	2301	0	0	2270	695
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.41	0.41	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				41.7	0.0	42.5	39.4	0.0	0.0	0.0	27.3	28.3
Incr Delay (d2), s/veh				27.9	0.0	53.9	11.1	1.9	0.0	0.0	1.8	7.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				18.2	0.0	20.3	7.0	0.6	0.0	0.0	12.1	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				69.6	0.0	96.4	50.5	1.9	0.0	0.0	29.2	35.6
LnGrp LOS				E	A	F	D	A	A	A	C	D
Approach Vol, veh/h					997			2518			2110	
Approach Delay, s/veh					82.8			12.4			30.8	
Approach LOS					F			B			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		81.0			24.0	57.0		39.0				
Change Period (Y+Rc), s		4.5			4.0	4.5		4.0				
Max Green Setting (Gmax), s		76.5			20.0	52.5		35.0				
Max Q Clear Time (g_c+I1), s		2.0			20.0	35.0		37.0				
Green Ext Time (p_c), s		31.3			0.0	11.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	31.8	
HCM 6th LOS	C	

Notes

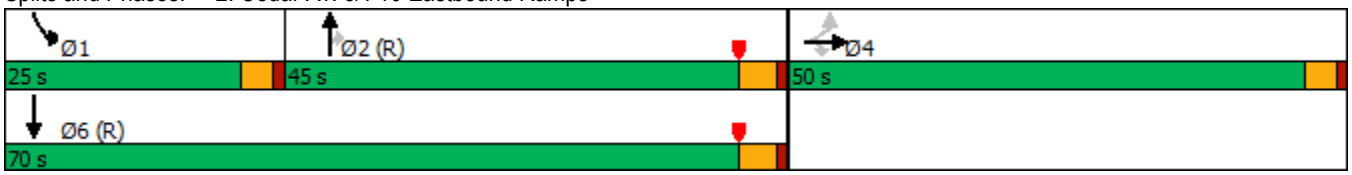
User approved volume balancing among the lanes for turning movement.

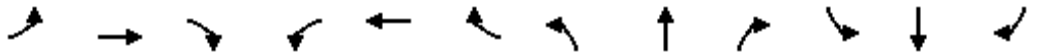
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	936	1	425	1457	683	586	1357
Future Volume (vph)	936	1	425	1457	683	586	1357
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	28.5	28.5	9.0	29.5
Total Split (s)	50.0	50.0	50.0	45.0	45.0	25.0	70.0
Total Split (%)	41.7%	41.7%	41.7%	37.5%	37.5%	20.8%	58.3%
Yellow Time (s)	3.0	3.0	3.0	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.5	4.5	4.0	4.5
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cedar Av. & I-10 Eastbound Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	936	1	425	0	0	0	0	1457	683	586	1357	0
Future Volume (veh/h)	936	1	425	0	0	0	0	1457	683	586	1357	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	1117	0	283				0	1534	631	617	1428	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	1238	0	551				0	1965	610	614	2120	0
Arrive On Green	0.34	0.00	0.34				0.00	0.38	0.38	0.35	1.00	0.00
Sat Flow, veh/h	3619	0	1610				0	5358	1609	3510	3705	0
Grp Volume(v), veh/h	1117	0	283				0	1534	631	617	1428	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1729	1609	1755	1805	0
Q Serve(g_s), s	35.3	0.0	16.8				0.0	31.3	45.5	21.0	0.0	0.0
Cycle Q Clear(g_c), s	35.3	0.0	16.8				0.0	31.3	45.5	21.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1238	0	551				0	1965	610	614	2120	0
V/C Ratio(X)	0.90	0.00	0.51				0.00	0.78	1.04	1.00	0.67	0.00
Avail Cap(c_a), veh/h	1387	0	617				0	1965	610	614	2120	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.23	0.23	0.65	0.65	0.00
Uniform Delay (d), s/veh	37.6	0.0	31.5				0.0	32.9	37.3	39.0	0.0	0.0
Incr Delay (d2), s/veh	7.9	0.0	0.7				0.0	0.7	27.4	30.3	1.1	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
%ile BackOfQ(50%),veh/ln	16.2	0.0	6.4				0.0	12.7	21.7	9.7	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	0.0	32.3				0.0	33.6	64.7	69.3	1.1	0.0
LnGrp LOS	D	A	C				A	C	F	F	A	A
Approach Vol, veh/h		1400						2165			2045	
Approach Delay, s/veh		42.8						42.7			21.7	
Approach LOS		D						D			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	50.0		45.0		75.0
Change Period (Y+Rc), s	4.0	4.5		4.0		4.5
Max Green Setting (Gmax), s	21.0	40.5		46.0		65.5
Max Q Clear Time (g_c+I1), s	23.0	47.5		37.3		2.0
Green Ext Time (p_c), s	0.0	0.0		3.8		8.7

Intersection Summary	
HCM 6th Ctrl Delay	35.1
HCM 6th LOS	D

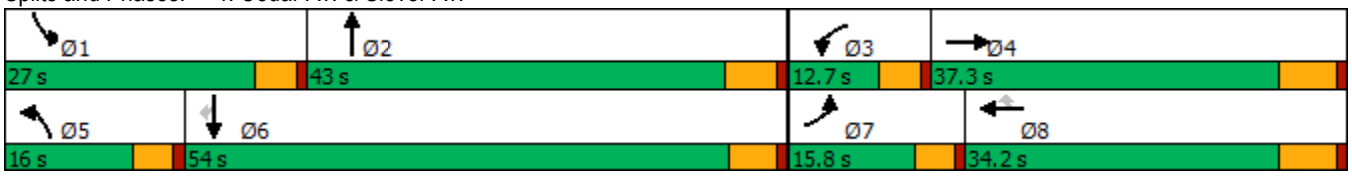
Notes

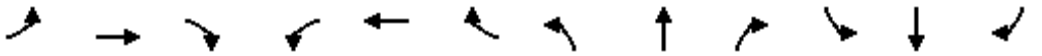
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	259	580	51	324	332	106	1061	328	1055	115
Future Volume (vph)	259	580	51	324	332	106	1061	328	1055	115
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.2	9.6	34.2	34.2	9.6	33.8	9.6	33.4	33.4
Total Split (s)	15.8	37.3	12.7	34.2	34.2	16.0	43.0	27.0	54.0	54.0
Total Split (%)	13.2%	31.1%	10.6%	28.5%	28.5%	13.3%	35.8%	22.5%	45.0%	45.0%
Yellow Time (s)	3.6	5.2	3.6	5.2	5.2	3.6	4.8	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	4.6	6.2	6.2	4.6	5.8	4.6	5.4	5.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 115.9
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Cedar Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	580	160	51	324	332	106	1061	103	328	1055	115
Future Volume (veh/h)	259	580	160	51	324	332	106	1061	103	328	1055	115
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	1.00		1.00	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	1700	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	273	611	120	54	341	210	112	1117	106	345	1111	118
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	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	316	706	138	69	631	277	137	1112	105	344	1642	721
Arrive On Green	0.10	0.24	0.24	0.04	0.17	0.17	0.08	0.33	0.33	0.20	0.45	0.45
Sat Flow, veh/h	3141	3000	588	1714	3610	1587	1714	3332	316	1714	3610	1586
Grp Volume(v), veh/h	273	367	364	54	341	210	112	605	618	345	1111	118
Grp Sat Flow(s),veh/h/ln	1570	1805	1782	1714	1805	1587	1714	1805	1843	1714	1805	1586
Q Serve(g_s), s	9.5	21.8	21.9	3.5	9.6	14.0	7.2	37.2	37.2	22.4	27.0	4.9
Cycle Q Clear(g_c), s	9.5	21.8	21.9	3.5	9.6	14.0	7.2	37.2	37.2	22.4	27.0	4.9
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	316	425	419	69	631	277	137	602	615	344	1642	721
V/C Ratio(X)	0.87	0.86	0.87	0.79	0.54	0.76	0.82	1.00	1.01	1.00	0.68	0.16
Avail Cap(c_a), veh/h	316	504	497	125	907	399	175	602	615	344	1642	721
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	49.4	40.9	41.0	53.0	41.9	43.8	50.5	37.1	37.1	44.5	23.9	17.9
Incr Delay (d2), s/veh	20.5	12.9	13.4	7.3	0.7	5.0	16.5	37.6	37.7	48.9	1.1	0.1
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	4.5	10.7	10.6	1.6	4.2	5.6	3.6	21.7	22.2	13.9	11.1	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.9	53.8	54.3	60.3	42.6	48.8	67.0	74.7	74.8	93.4	25.1	18.0
LnGrp LOS	E	D	D	E	D	D	E	F	F	F	C	B
Approach Vol, veh/h		1004			605			1335			1574	
Approach Delay, s/veh		58.4			46.3			74.1			39.5	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	43.0	9.1	32.4	13.5	56.5	15.8	25.7
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	* 5.8	4.6	6.2
Max Green Setting (Gmax), s	22.4	37.2	8.1	31.1	11.4	* 49	11.2	28.0
Max Q Clear Time (g_c+I1), s	24.4	39.2	5.5	23.9	9.2	29.0	11.5	16.0
Green Ext Time (p_c), s	0.0	0.0	0.0	2.3	0.0	8.0	0.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	54.8
HCM 6th LOS	D

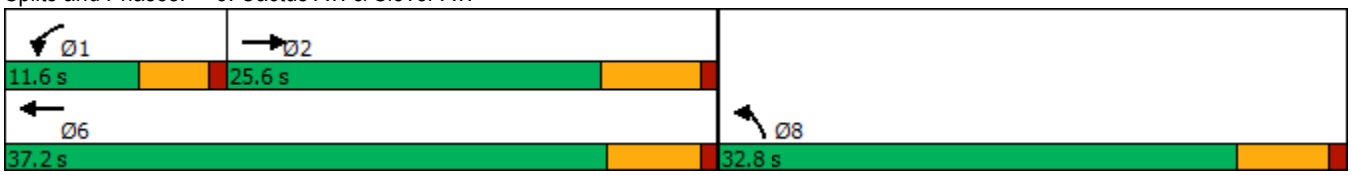
Notes

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

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	693	101	371	213
Future Volume (vph)	693	101	371	213
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	10.0	5.0	10.0	10.0
Minimum Split (s)	23.2	9.6	15.8	32.8
Total Split (s)	25.6	11.6	37.2	32.8
Total Split (%)	36.6%	16.6%	53.1%	46.9%
Yellow Time (s)	5.2	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	4.6	5.8	5.8
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	Min

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 54.6
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 8: Cactus Av. & Slover Av.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	693	75	101	371	213	115
Future Volume (veh/h)	693	75	101	371	213	115
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	729	79	106	391	224	121
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	1000	108	146	1757	282	152
Arrive On Green	0.31	0.31	0.08	0.49	0.25	0.25
Sat Flow, veh/h	3372	355	1810	3705	1123	607
Grp Volume(v), veh/h	401	407	106	391	346	0
Grp Sat Flow(s),veh/h/ln	1805	1826	1810	1805	1735	0
Q Serve(g_s), s	9.1	9.1	2.6	2.9	8.5	0.0
Cycle Q Clear(g_c), s	9.1	9.1	2.6	2.9	8.5	0.0
Prop In Lane		0.19	1.00		0.65	0.35
Lane Grp Cap(c), veh/h	551	558	146	1757	435	0
V/C Ratio(X)	0.73	0.73	0.72	0.22	0.79	0.00
Avail Cap(c_a), veh/h	765	774	277	2478	1024	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	14.2	14.2	20.5	6.8	16.0	0.0
Incr Delay (d2), s/veh	2.2	2.2	2.5	0.1	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	3.0	1.0	0.7	3.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.4	16.4	23.1	6.8	19.4	0.0
LnGrp LOS	B	B	C	A	B	A
Approach Vol, veh/h	808			497	346	
Approach Delay, s/veh	16.4			10.3	19.4	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.3	20.2				28.5	17.3
Change Period (Y+Rc), s	4.6	6.2				* 6.2	5.8
Max Green Setting (Gmax), s	7.0	19.4				* 31	27.0
Max Q Clear Time (g_c+I1), s	4.6	11.1				4.9	10.5
Green Ext Time (p_c), s	0.0	2.8				2.3	0.9

Intersection Summary	
HCM 6th Ctrl Delay	15.2
HCM 6th LOS	B

Notes

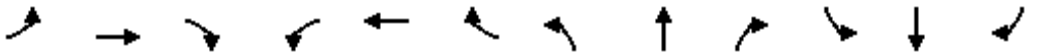
User approved volume balancing among the lanes for turning movement.

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

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	765	4	559	1968	1002	599	1641
Future Volume (vph)	765	4	559	1968	1002	599	1641
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4		4		2		
Detector Phase	4	4	4	2	2	1	6
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	15.8	15.8	15.8	23.2	23.2	9.6	16.2
Total Split (s)	37.0	37.0	37.0	58.0	58.0	25.0	83.0
Total Split (%)	30.8%	30.8%	30.8%	48.3%	48.3%	20.8%	69.2%
Yellow Time (s)	4.8	4.8	4.8	5.2	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	6.2	6.2	4.6	6.2
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max
Act Effct Green (s)	31.2	31.2	31.2	51.8	51.8	20.4	76.8
Actuated g/C Ratio	0.26	0.26	0.26	0.43	0.43	0.17	0.64
v/c Ratio	1.09	1.11	0.98	1.16	0.73	1.06	0.75
Control Delay	109.9	116.2	74.7	109.7	8.0	101.6	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	15.5	48.1
Total Delay	109.9	116.2	74.7	109.7	8.0	117.1	65.6
LOS	F	F	E	F	A	F	E
Approach Delay		100.9		86.7			79.4
Approach LOS		F		F			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 87.1	Intersection LOS: F
Intersection Capacity Utilization 149.1%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 12: Riverside Av. & I-10 EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	765	4	559	0	0	0	0	1968	1002	599	1641	0
Future Volume (veh/h)	765	4	559	0	0	0	0	1968	1002	599	1641	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	957	0	325				0	2358	754	631	1727	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	941	0	419				0	2460	695	597	2310	0
Arrive On Green	0.26	0.00	0.26				0.00	0.43	0.43	0.17	0.64	0.00
Sat Flow, veh/h	3619	0	1610				0	5700	1610	3510	3705	0
Grp Volume(v), veh/h	957	0	325				0	2358	754	631	1727	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	1755	1805	0
Q Serve(g_s), s	31.2	0.0	22.5				0.0	48.1	51.8	20.4	39.6	0.0
Cycle Q Clear(g_c), s	31.2	0.0	22.5				0.0	48.1	51.8	20.4	39.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	941	0	419				0	2461	695	597	2310	0
V/C Ratio(X)	1.02	0.00	0.78				0.00	0.96	1.08	1.06	0.75	0.00
Avail Cap(c_a), veh/h	941	0	419				0	2461	695	597	2310	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	0.0	41.2				0.0	33.1	34.1	49.8	14.9	0.0
Incr Delay (d2), s/veh	33.7	0.0	8.9				0.0	10.7	59.4	52.9	2.3	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
%ile BackOfQ(50%),veh/ln	17.8	0.0	9.6				0.0	22.8	30.0	13.0	14.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.1	0.0	50.1				0.0	43.8	93.5	102.7	17.2	0.0
LnGrp LOS	F	A	D				A	D	F	F	B	A
Approach Vol, veh/h		1282						3112			2358	
Approach Delay, s/veh		71.0						55.8			40.1	
Approach LOS		E						E			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	58.0		37.0		83.0
Change Period (Y+Rc), s	4.6	6.2		5.8		6.2
Max Green Setting (Gmax), s	20.4	51.8		31.2		76.8
Max Q Clear Time (g_c+I1), s	22.4	53.8		33.2		41.6
Green Ext Time (p_c), s	0.0	0.0		0.0		16.7

Intersection Summary		
HCM 6th Ctrl Delay		53.2
HCM 6th LOS		D

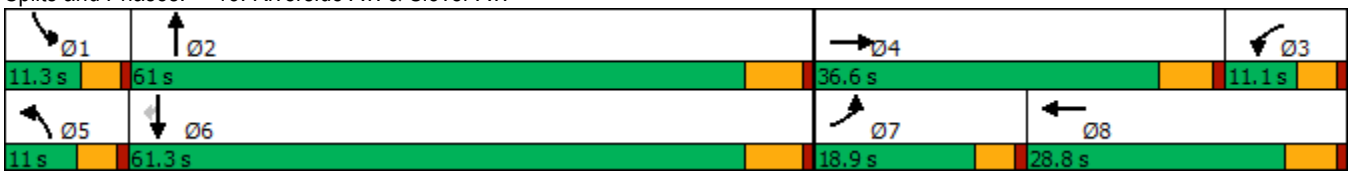
Notes

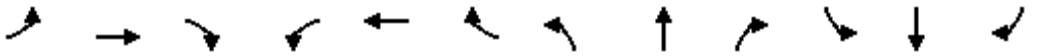
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	601	303	57	11	63	2012	40	1529	418
Future Volume (vph)	601	303	57	11	63	2012	40	1529	418
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	32.8	9.6	28.8	9.6	27.2	9.6	30.2	30.2
Total Split (s)	18.9	36.6	11.1	28.8	11.0	61.0	11.3	61.3	61.3
Total Split (%)	15.8%	30.5%	9.3%	24.0%	9.2%	50.8%	9.4%	51.1%	51.1%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	14.4	25.5	6.4	15.2	6.2	57.5	6.2	55.4	55.4
Actuated g/C Ratio	0.13	0.23	0.06	0.14	0.06	0.52	0.06	0.50	0.50
v/c Ratio	1.36	0.70	0.56	0.22	0.64	0.72	0.41	0.82	0.45
Control Delay	212.5	35.9	74.1	13.2	81.7	23.5	65.1	29.3	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	212.5	35.9	74.1	13.2	81.7	23.5	65.1	29.3	6.2
LOS	F	D	E	B	F	C	E	C	A
Approach Delay		124.4		33.9		25.2		25.1	
Approach LOS		F		C		C		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 110.2	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.36	
Intersection Signal Delay: 47.1	Intersection LOS: D
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 13: Riverside Av. & Slover Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	601	303	296	57	11	100	63	2012	68	40	1529	418
Future Volume (veh/h)	601	303	296	57	11	100	63	2012	68	40	1529	418
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		1.00	1.00		1.00	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	620	312	285	59	11	84	65	2074	70	41	1576	398
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	454	379	338	76	242	215	84	2810	95	59	1895	792
Arrive On Green	0.13	0.21	0.21	0.04	0.13	0.13	0.05	0.51	0.51	0.03	0.50	0.50
Sat Flow, veh/h	3510	1805	1610	1810	1805	1610	1810	5482	185	1810	3800	1589
Grp Volume(v), veh/h	620	312	285	59	11	84	65	1436	708	41	1576	398
Grp Sat Flow(s),veh/h/ln	1755	1805	1610	1810	1805	1610	1810	1900	1867	1810	1900	1589
Q Serve(g_s), s	14.3	18.2	18.8	3.6	0.6	5.3	3.9	32.7	32.9	2.5	39.3	18.5
Cycle Q Clear(g_c), s	14.3	18.2	18.8	3.6	0.6	5.3	3.9	32.7	32.9	2.5	39.3	18.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	454	379	338	76	242	215	84	1948	957	59	1895	792
V/C Ratio(X)	1.36	0.82	0.84	0.77	0.05	0.39	0.77	0.74	0.74	0.70	0.83	0.50
Avail Cap(c_a), veh/h	454	503	449	106	376	335	105	1948	957	110	1895	792
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	48.1	41.7	41.9	52.4	41.7	43.7	52.1	21.1	21.2	52.9	23.7	18.5
Incr Delay (d2), s/veh	177.9	8.1	10.6	20.2	0.1	1.1	18.8	2.5	5.1	5.5	4.4	2.3
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	17.3	8.6	8.2	2.0	0.3	2.1	2.2	13.6	14.1	1.2	16.8	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	226.0	49.8	52.5	72.6	41.8	44.9	70.9	23.6	26.3	58.4	28.2	20.8
LnGrp LOS	F	D	D	E	D	D	E	C	C	E	C	C
Approach Vol, veh/h		1217			154			2209			2015	
Approach Delay, s/veh		140.2			55.3			25.9			27.3	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	62.8	10.5	29.0	9.7	61.3	18.9	20.6
Change Period (Y+Rc), s	4.6	6.2	5.8	* 5.8	4.6	6.2	4.6	5.8
Max Green Setting (Gmax), s	6.7	54.8	6.5	* 31	6.4	55.1	14.3	23.0
Max Q Clear Time (g_c+I1), s	4.5	34.9	5.6	20.8	5.9	41.3	16.3	7.3
Green Ext Time (p_c), s	0.0	13.8	0.0	2.4	0.0	9.6	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	52.1
HCM 6th LOS	D

Notes

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

APPENDIX 7.12:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS WITH IMPROVEMENTS

This Page Intentionally Left Blank

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6558	Heavy Vehicle Adjustment Factor (f_{HV})	0.885
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2014
Total Trucks, %	13.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.84
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	62.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	32.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6027	Heavy Vehicle Adjustment Factor (f_{HV})	0.877
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1494
Total Trucks, %	14.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	69.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6074	Heavy Vehicle Adjustment Factor (f_{HV})	0.885
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1865
Total Trucks, %	13.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	28.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6507	Heavy Vehicle Adjustment Factor (f_{HV})	0.926
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1528
Total Trucks, %	8.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6655	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1934
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6902	Heavy Vehicle Adjustment Factor (f_{HV})	0.926
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2026
Total Trucks, %	8.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.84
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	62.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	32.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB West of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6741	Heavy Vehicle Adjustment Factor (f_{HV})	0.893
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2051
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	33.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6474	Heavy Vehicle Adjustment Factor (f_{HV})	0.885
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1590
Total Trucks, %	13.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6459	Heavy Vehicle Adjustment Factor (f_{HV})	0.877
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2001
Total Trucks, %	14.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.83
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	62.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	32.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB West of Cedar		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6409	Heavy Vehicle Adjustment Factor (f_{HV})	0.952
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1464
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	69.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Cedar		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6317	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1784
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS7 Basic Freeway Report

Project Information

Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - EB East of Riverside		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6603	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1865
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	28.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

APPENDIX 7.13:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS RAMP JUNCTION ANALYSIS WORKSHEETS WITH IMPROVEMENTS

This Page Intentionally Left Blank

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5070	1488
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	14.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.877	0.909
Flow Rate (vi),pc/h	6284	1779
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.84	0.85

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	31.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.508
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1885
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	55.8
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	2514	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	4293	Average Density (D), pc/mi/ln	33.7
Level of Service (LOS)	D		

Managed Lane Geometric Data

Managed Lane Type	Continuous Access	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, ln	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-
Managed Lane Adjustment Factors			
Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1804
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	1804
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	500	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6027	957
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	14.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.877	0.917
Flow Rate (vi),pc/h	7470	1134
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.62	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	18.7
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.400
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1366
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3245	Ramp Junction Speed (S), mi/h	65.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.8
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6074	1375
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.885	0.909
Flow Rate (vi),pc/h	7460	1644
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.62	0.78

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	24.2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.446
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1220
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.9
Flow in Lanes 1 and 2 (v12), pc/h	3529	Ramp Junction Speed (S), mi/h	63.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.4
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5397	1110
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	7.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.885
Flow Rate (vi),pc/h	6274	1363
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.52	0.65

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	17.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.421
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1119
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	76.3
Flow in Lanes 1 and 2 (v12), pc/h	3094	Ramp Junction Speed (S), mi/h	64.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.4
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6655	1258
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	7.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.909
Flow Rate (vi),pc/h	7737	1504
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.96	0.72

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	35.6
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.635
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2321
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	52.2
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.030	Outer Lanes Freeway Speed (SO), mi/h	63.3
Flow in Lanes 1 and 2 (v12), pc/h	3095	Ramp Junction Speed (S), mi/h	57.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4599	Average Density (D), pc/mi/ln	40.4
Level of Service (LOS)	E		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5387	1515
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	7.00	13.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.885
Flow Rate (vi),pc/h	6262	1861
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.85	0.89

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	31.5
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.524
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1879
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	55.3
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	2505	Ramp Junction Speed (S), mi/h	59.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	4366	Average Density (D), pc/mi/ln	34.2
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5535	1206
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	14.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.877	0.935
Flow Rate (vi),pc/h	6860	1402
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.86	0.67

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	30.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.469
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2058
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	56.9
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.043	Outer Lanes Freeway Speed (SO), mi/h	64.4
Flow in Lanes 1 and 2 (v12), pc/h	2744	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	4146	Average Density (D), pc/mi/ln	34.2
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6474	939
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.885	0.935
Flow Rate (vi),pc/h	7951	1092
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.66	0.52

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	19.9
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.396
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1486
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	74.9
Flow in Lanes 1 and 2 (v12), pc/h	3389	Ramp Junction Speed (S), mi/h	65.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.3
Level of Service (LOS)	B		

HCS7 Freeway Diverge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6459	1319
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	14.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.877	0.917
Flow Rate (vi),pc/h	8005	1563
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.67	0.74

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	25.4
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.439
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1365
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3674	Ramp Junction Speed (S), mi/h	64.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB Off-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	5047	1362
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	11.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.901
Flow Rate (vi),pc/h	5650	1643
Capacity (c), pc/h	12000	2100
Volume-to-Capacity Ratio (v/c)	0.47	0.78

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	16.7
Distance to Upstream Ramp (LUP), ft	-	Speed Index (D)	0.446
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	891
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	76.8
Flow in Lanes 1 and 2 (v12), pc/h	3021	Ramp Junction Speed (S), mi/h	63.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	17.8
Level of Service (LOS)	B		

HCS7 Freeway Merge Report

Project Information			
Analyst	LC	Date	04/10/19
Agency	Urban Crossroads, Inc.	Analysis Year	HY (2040) WP + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Cedar		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	820
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	6317	1270
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.935
Flow Rate (vi),pc/h	7138	1476
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.90	0.70

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	33.5
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.544
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2142
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	54.8
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.033	Outer Lanes Freeway Speed (SO), mi/h	64.1
Flow in Lanes 1 and 2 (v12), pc/h	2855	Ramp Junction Speed (S), mi/h	59.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	4331	Average Density (D), pc/mi/ln	36.4
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information			
Analyst	CP	Date	5/13/19
Agency	Urban Crossroads, Inc.	Analysis Year	Horizon Year (2040) With Project + IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Cactus/Slover Warehouse - WB On-Ramp at Riverside		

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	70.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1160
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4981	1622
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	3.00	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.971	0.935
Flow Rate (vi),pc/h	5576	1886
Capacity (c), pc/h	9600	2100
Volume-to-Capacity Ratio (v/c)	0.78	0.90

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Density in Ramp Influence Area (DR), pc/mi/ln	29.5
Distance to Upstream Ramp (LUP), ft	-	Speed Index (M)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1673
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influenece Area Speed (SR), mi/h	57.2
Prop. Freeway Vehicles in Lane 1 and 2 (PM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	65.8
Flow in Lanes 1 and 2 (v12), pc/h	2230	Ramp Junction Speed (S), mi/h	60.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	4116	Average Density (D), pc/mi/ln	30.7
Level of Service (LOS)	D		

This Page Intentionally Left Blank