

APPENDIX 1.1: APPROVED TRAFFIC STUDY SCOPING AGREEMENT

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SCOPE FOR TRAFFIC STUDY

Project Name:	Pepper 210 Commerce Center
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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:
 Available on the Department of Public Works Website:
<http://cms.sbcounty.gov/dpw/Transportation/Traffic.aspx>

Project Address/APN	20080 N. Highland Av. Rialto, CA 92377 (0264-431-18-0000)		
Project Description	1,867,660 sf High-Cube Fulfillment, 2,100 sf yard office		
City			
Project Horizon Year	2040	Project Buildout Year	2029
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name	Pepper Avenue		
Xtn E/W Street Name	Highland Avenue		
County Supervisorial District	5	Ambient Growth Rate per Year Valley 2%, Desert 1%	2%

	Traffic Engineer	Owner/Developer
Company	Urban Crossroads, Inc.	Carson BBC Logistics Center LLC
Name	Charlene So	Dan Darnell
Address	20341 SW Birch Street, #230	100 Bayview Circle, #3500
City, State, Zip Code	Newport Beach, CA 92660	Newport Beach, CA 92660
Phone #	949-861-0177	949-922-2509
Email address	cso@urbanxroads.com	ddarnell@carsoncompanies.com

Prepared By:

Print Name:

Owner/Engineer Date



SCOPE FOR TRAFFIC STUDY

Project Name:	Pepper 210 Commerce Center
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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)	Yes ☐ no ☒	
Existing Active Land Use	☒ Yes ☐ no	Trip credit taken for existing use
Previous Land Use	Yes ☐ no ☒	
Internal Trip Reduction	Yes ☐ no ☒	
Pass-by Trip Reduction	Yes ☐ 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.

Peak hour off-ramp queues to be evaluated for study area freeway ramps.

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' Vehicle Miles Traveled-Focused Transportation Impact Study Guide (May 2020) and can be obtained from <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmt-focused-tisg-a11y.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 San Bernardino County Transportation Authority CMP outlines allowable modifications to these procedures. The San Bernardino County Transportation Authority CMP can be viewed online at: <https://www.gosbcta.com/planning-sustainability/?term=249>



SCOPE FOR TRAFFIC STUDY

Project Name:	Pepper 210 Commerce Center
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5. Trip Generation

Trip Generation Rate(s) Source: ITE Trip Generation, WSP Study		I – Institute of Transportation Engineers S – San Diego Traffic Generators; C – County O – Other: WSP study								Edition:	11th
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
WSP	High-Cube Fulfillment Center	sf	1,867,660		4,010	168	63	96	218		
712	Small Office Building	sf	2,100		32	3	1	2	3		

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



SCOPE FOR TRAFFIC STUDY

Project Name: Pepper 210 Commerce Center

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	% City	N-S/E-W Street Name	City	Signalized	CMP
1	50	50	Driveway 1 & Highland Av.	Rialto	Yes/no	Yes/no
2	50	50	Driveway 2/Pepper Av. & Highland Av.	Rialto	Yes/no	Yes/no
3	0	100	Pepper Av. & SR-210 WB Ramps	Rialto, Caltrans	Yes/no	Yes/no
4	0	100	Pepper Av. & SR-210 EB Ramps	Rialto, Caltrans	Yes/no	Yes/no
5	50	50	State St. & Highland Av.	SB City, County	Yes/no	Yes/no
6					Yes/no	Yes/no
7					Yes/no	Yes/no
8					Yes/no	Yes/no
9					Yes/no	Yes/no
10					Yes/no	Yes/no

Cities/agencies to be consulted:

City of Rialto, City of San Bernardino, and Caltrans



SCOPE FOR TRAFFIC STUDY

Project Name:	Pepper 210 Commerce Center
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7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays. • Certain projects may need to collect traffic counts on Friday or Sunday
• 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.
• Raw traffic counts data must be included with traffic analysis study
• Traffic Counts must not be older than 2018

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.



SCOPE FOR TRAFFIC STUDY

Project Name:	Pepper 210 Commerce Center
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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: Maria.Miranda@dpw.sbcounty.gov or Jeremy.Johnson@dpw.sbcounty.gov

May 1, 2023

Mr. Osvaldo Roque
County of San Bernardino
825 East Third Street
San Bernardino, CA 92415

PEPPER 210 COMMERCE CENTER TRAFFIC ANALYSIS SCOPING AGREEMENT

Mr. Osvaldo Roque,

The firm of Urban Crossroads, Inc. is pleased to submit this scoping letter regarding the traffic analysis for Pepper 210 Commerce Center development (**Project**), which is located at 20080 N. Highland Avenue in the County of San Bernardino, within the City of Rialto sphere of influence. This letter describes the proposed Project trip generation, trip distribution, and analysis methodology, which have been used to establish the draft proposed Project study area and analysis locations.

PROJECT DESCRIPTION

Exhibit 1 depicts the location of the proposed Project in relation to the existing roadway network. A preliminary site plan for the proposed Project is shown on Exhibit 2. The proposed Project is to consist of the development of 1,867,660 square feet of High-Cube Fulfillment Center Warehouse use with an opening year of 2029. The Project also includes a total of 626 trailer parking spaces that will be ancillary use and utilized by the future tenant of the building and not an independent off-site operator. It should be noted, 620,000 square feet of the total High-Cube Fulfillment Center square footage is associated with pick mod mezzanine space and the building footprint is 1,232,660 square feet. There is a proposed 2,100 square foot yard office associated with the trailer yard.

TRIP GENERATION

EXISTING TRIP GENERATION

The existing site is currently occupied by Vulcan Materials aggregate processing plant, asphalt plant, and concrete batch plant, which was operational at the time traffic counts were collected in August 2022. As such, a credit has been taken for the existing use.

Traffic counts were collected at the driveways for 20080 N. Highland Avenue in Rialto, CA on September 21 through September 23, 2021 (Tuesday through Thursday). A summary of the count data collected is provided in Attachment A. Table 1 below summarizes the average existing trip generation based on the count data collected over three consecutive days. In an effort to conduct a conservative analysis, the raw count data was then adjusted based on the 5-year aggregate export tonnage. The adjusted total trips are shown in Table 1.

The existing site currently generates 738 two-way trips per day, with 85 trips during the AM peak hour and 17 trips during the PM peak hour. The morning peak hour between 7-9 AM occurred at 8-9 AM and the evening peak hour between 4-6 PM occurred during 4-5 PM on two days and 4:45-5:45 PM on the third day.

EXHIBIT 1: LOCATION MAP

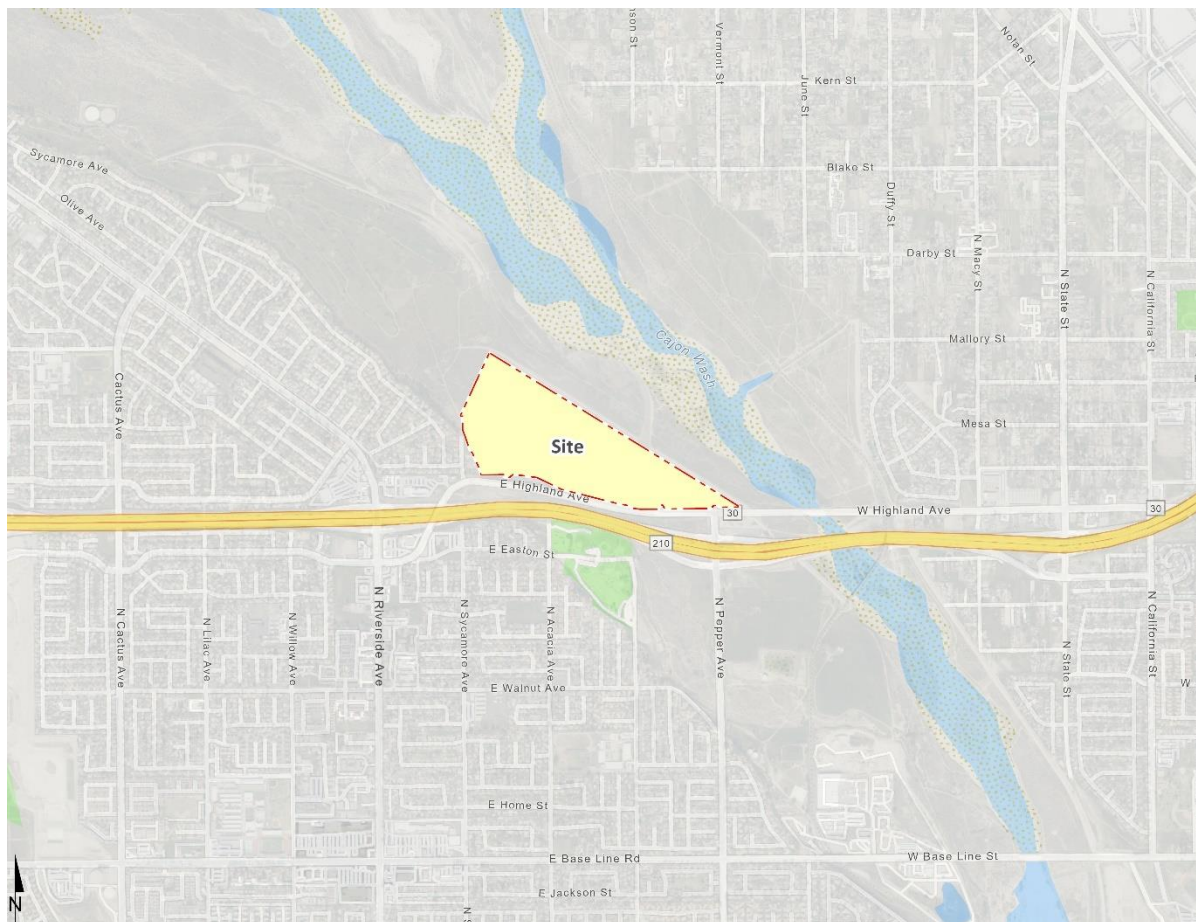


EXHIBIT 2: PRELIMINARY SITE PLAN

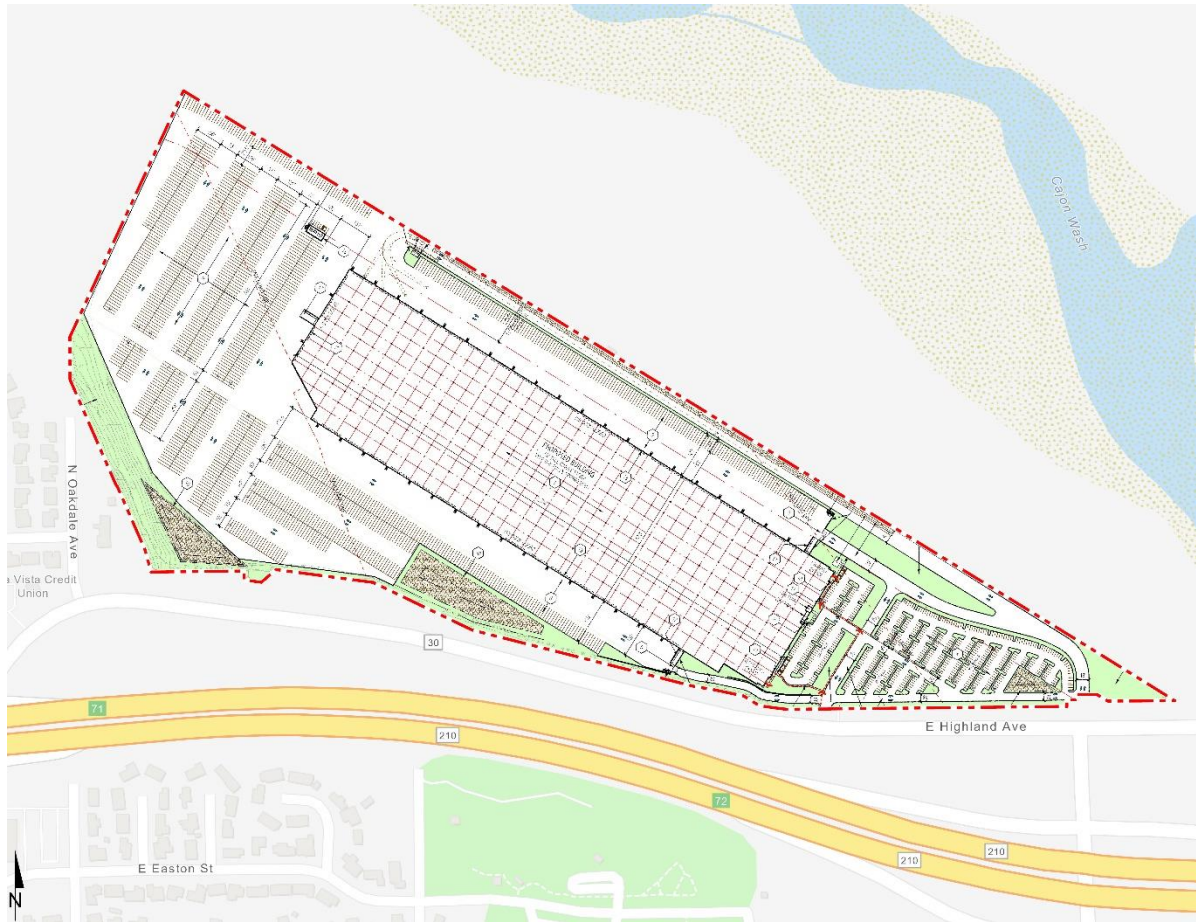


TABLE 1: EXISTING USE TRIP GENERATION

	20080 N. Highland Avenue						
Land Use	AM Peak Hour			PM Peak Hour			
	In	Out	Total	In	Out	Total	Daily
Average of Days:							
Actual Vehicles							
Passenger Cars	5	10	15	3	11	14	182
2-Axle Trucks	7	8	15	0	1	1	88
3-Axle Trucks	13	12	25	1	0	1	192
4+-Axle Trucks	15	18	33	0	1	1	298
Total Truck Trips:	35	38	73	1	2	3	578
Total Trips (Actual Vehicles) ¹	40	48	88	4	13	17	760
Total Adjusted Trips (Actual Vehicles)²	39	47	85	4	13	17	738
PCE							
Passenger Cars	5	10	16	3	11	14	182
2-Axle Trucks (PCE = 1.5)	11	13	23	0	1	1	132
3-Axle Trucks (PCE = 2.0)	25	25	50	2	0	2	386
4+-Axle Trucks (PCE = 2.0)	46	54	100	1	3	4	894
Total Truck Trips:	82	91	173	3	4	7	1,412
Total Trips (PCE) ¹	87	102	189	6	15	21	1,594
Total Adjusted Trips (PCE)²	85	99	183	6	14	20	1,549

* Note: Average of data collected on September 21 - 23, 2021.

¹ Total Trips = Passenger Cars + Truck Trips. Trip generation represents the sum of all driveways.

² Total trips have been adjusted based on the historical tonnage increase from the year 2022 to 2021.

PROPOSED PROJECT

The proposed Project is to consist of the development of 1,867,660 square feet of High-Cube Fulfillment Center Warehouse use (includes 620,000 square feet of pick mod space) with an opening year of 2029. The Project also includes a total of 626 trailer parking spaces that will be ancillary use and utilized by the future tenant of the building and not an independent operator. Therefore, the trailer parking spaces are not anticipated to generate additional trips since they will be utilized by the Project itself. There is a proposed 2,100 square foot yard office associated with the trailer yard.

Trip generation rates for the Project are shown in Table 2. These estimates are based on the trip-generation statistics published in the High Cube Warehouse Trip Generation Study (WSP, January 2019). The land use utilized for the trip generation estimates is described below.

- High-Cube Fulfillment Center Warehouse has been used to derive site specific trip generation estimates for the proposed Project. The Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) has trip generation rates for high-cube fulfillment center use for both non-sort and sort facilities (ITE land use code 155). While there is sufficient data to support use of the trip generation rates for non-sort facilities, the sort facility rate appears to be unreliable because they are based on limited data (i.e., one to two surveyed sites). The proposed Project is speculative and whether a non-sort or sort facility end-user would occupy the buildings is not known at this time. Lastly, the ITE Trip Generation Handbook recommends the use of local data sources where available. As such, the best available source for high-cube fulfillment center use would be the trip-generation statistics published in the High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019) which was commissioned by the Western Riverside Council of Governments (WRCOG) in support of the Transportation Uniform Mitigation Fee (TUMF) update in the County of Riverside. The WSP trip generation rates were published in January 2019 and are based on data collected at 11 local high-cube fulfillment center sites located throughout Southern California (specifically Riverside County and San Bernardino County). However, the WSP study does not include a split for inbound and outbound vehicles, as such, the inbound and outbound splits per the ITE Trip Generation Manual for Land Use Code 154 have been utilized.

Trip generation rates are summarized in Table 2 for actual vehicles and PCE.

TABLE 2: PROPOSED PROJECT TRIP GENERATION RATES

Land Use ¹	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Actual Vehicle Trip Generation Rates									
High-Cube Fulfillment Center Warehouse ³	TSF	--	0.089	0.033	0.122	0.050	0.115	0.165	2.129
Passenger Cars (AM-84.4%, PM-87.3%, Daily-82.2%)			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks (AM-6.6%, PM-6.7%, Daily-7.6%)			0.004	0.004	0.008	0.005	0.006	0.011	0.162
5+-Axle Trucks (AM-9.0%, PM-6.0%, Daily-10.2%)			0.005	0.006	0.011	0.005	0.005	0.010	0.217
Small Office Building	TSF	712	1.369	0.301	1.670	0.734	1.426	2.160	14.390
PCE Trip Generation Rates									
High-Cube Fulfillment Center Warehouse ³	TSF	--	0.089	0.033	0.122	0.050	0.115	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)			0.008	0.008	0.016	0.010	0.012	0.022	0.324
5+-Axle Trucks (PCE = 3.0)			0.016	0.017	0.033	0.014	0.016	0.030	0.651
Small Office Building	TSF	712	1.369	0.301	1.670	0.734	1.426	2.160	14.390

¹ Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

² TSF = thousand square feet

³ Vehicle Mix Source: High Cube Warehouse Trip Generation Study, WSP, January 29, 2019.

Inbound and outbound split source: ITE Trip Generation Manual, Eleventh Edition (2021) for ITE Land Use Code 154.

The proposed Project trip generation summary, in actual vehicles, is shown in Table 3. As shown in Table 3, the proposed Project is anticipated to generate 4,010 trip-ends per day, with 231 AM peak hour trips and 314 PM peak hour trips. Based on a comparison to the existing use facility, the proposed Project is anticipated to generate 3,272 additional trip-ends per day, with 145 additional AM peak hour trips and 298 additional PM peak hour trips, in actual vehicles.

TABLE 3: PROPOSED PROJECT TRIP GENERATION SUMMARY (ACTUAL VEHICLES)

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Actual Vehicles:								
High-Cube Fulfillment	1,867.660 TSF							
Passenger Cars:		148	44	192	75	194	269	3,268
2-4axle Trucks:		7	8	15	10	11	21	304
5+-axle Trucks:		10	10	20	9	10	19	406
Total Truck Trips (Actual Vehicles):		17	18	35	19	21	40	710
Warehouse Yard Office	2.100 TSF	3	1	4	2	3	5	32
Total Trips (Actual Vehicles) ²		168	63	231	96	218	314	4,010
Net Difference from Existing Use								
Passenger Cars:		146	35	181	74	187	260	3,123
Total Truck Trips (Actual Vehicles):		-17	-19	-36	18	19	37	148
Total Net Difference in Trips (Actual Vehicles) ²		129	16	145	91	206	298	3,272

¹ TSF = thousand square feet

² Total Trips = Passenger Cars + Truck Trips.

Passenger car equivalent (PCE) factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. The PCE factors are consistent with the recommended PCE factors in the County's Guidelines.

The proposed Project trip generation summary, in PCE, is shown in Table 4. As shown in Table 4, the proposed Project is anticipated to generate 5,122 PCE trip-ends per day, with 287 PCE AM peak hour trips and 371 PCE PM peak hour trips. Based on a comparison to the existing use facility, the proposed Project is anticipated to generate 3,573 additional trip-ends per day, with 103 additional PCE AM peak hour trips and 350 additional PCE PM peak hour trips, in PCE. For the purposes of the operations analysis, the net difference PCE trip generation will be utilized.

TABLE 4: PROPOSED PROJECT TRIP GENERATION SUMMARY (PCE)

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Passenger Car Equivalent (PCE):								
High-Cube Fulfillment	1,867.660 TSF							
Passenger Cars:		148	44	192	75	194	269	3,268
2-4axle Trucks:		15	15	30	19	22	41	606
5+-axle Trucks:		30	31	61	26	30	56	1,216
Total Truck Trips (PCE):		45	46	91	45	52	97	1,822
Warehouse Yard Office	2.100 TSF	3	1	4	2	3	5	32
Total Trips (PCE) ²		196	91	287	122	249	371	5,122
Net Difference from Existing Use								
Passenger Cars:		146	35	180	74	187	260	3,123
Total Truck Trips (PCE):		-35	-42	-77	42	48	90	450
Total Net Difference in Trips (PCE) ²		111	-8	103	116	235	350	3,573

¹ TSF = thousand square feet

² Total Trips = Passenger Cars + Truck Trips.

TRIP DISTRIBUTION

The Project trip distribution represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution represents the directional orientation of traffic to and from the Project site. The proposed Project trip distributions are shown on Exhibit 3 for passenger cars and Exhibit 4 for trucks.

EXHIBIT 3: PROJECT (TRUCK) TRIP DISTRIBUTION

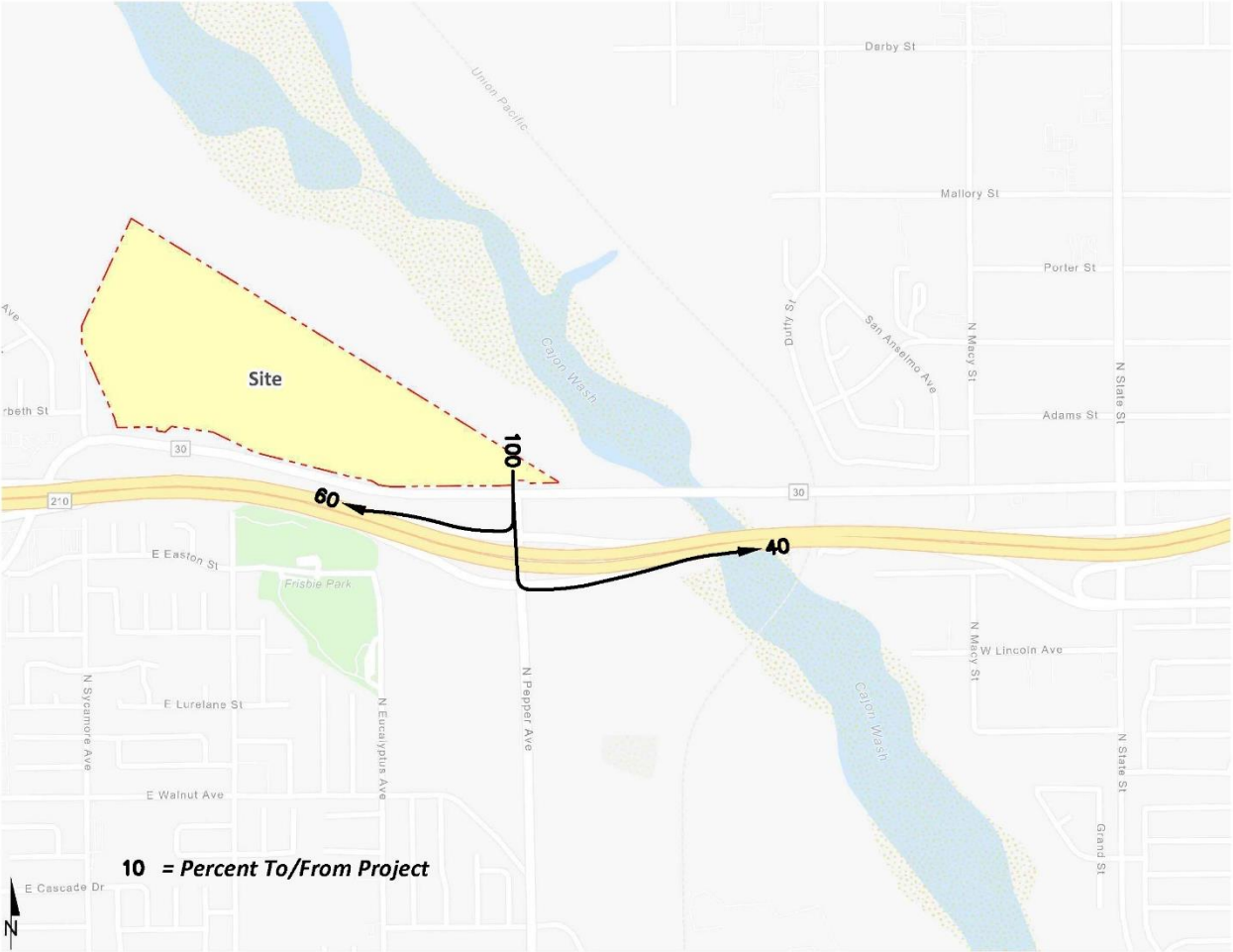
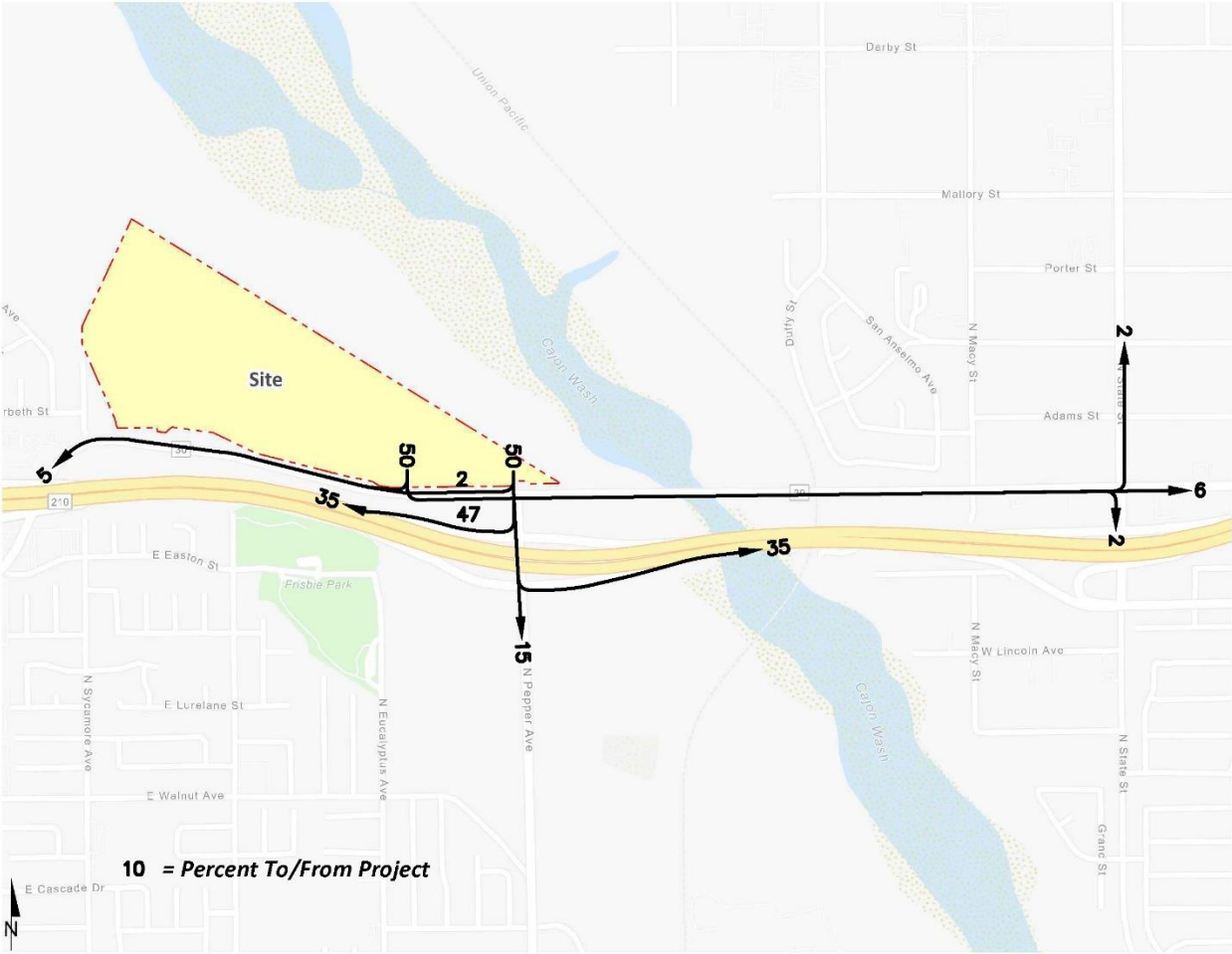


EXHIBIT 4: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



ANALYSIS SCENARIOS

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

- Existing (2022) Conditions
- Opening Year Cumulative (2029) Without Project
- Opening Year Cumulative (2029) With Project
- Horizon Year (2040) Without Project
- Horizon Year (2040) With Project

All study area intersections will be evaluated using the Highway Capacity Manual (HCM) 6th Edition analysis methodology.

STUDY AREA

The study area that is proposed to be evaluated is shown on Exhibit 5, which includes intersections where the proposed Project is anticipated to contribute 50 or more peak hour trips, per the County of San Bernardino traffic study guidelines.

LEVEL OF SERVICE (LOS) CRITERIA

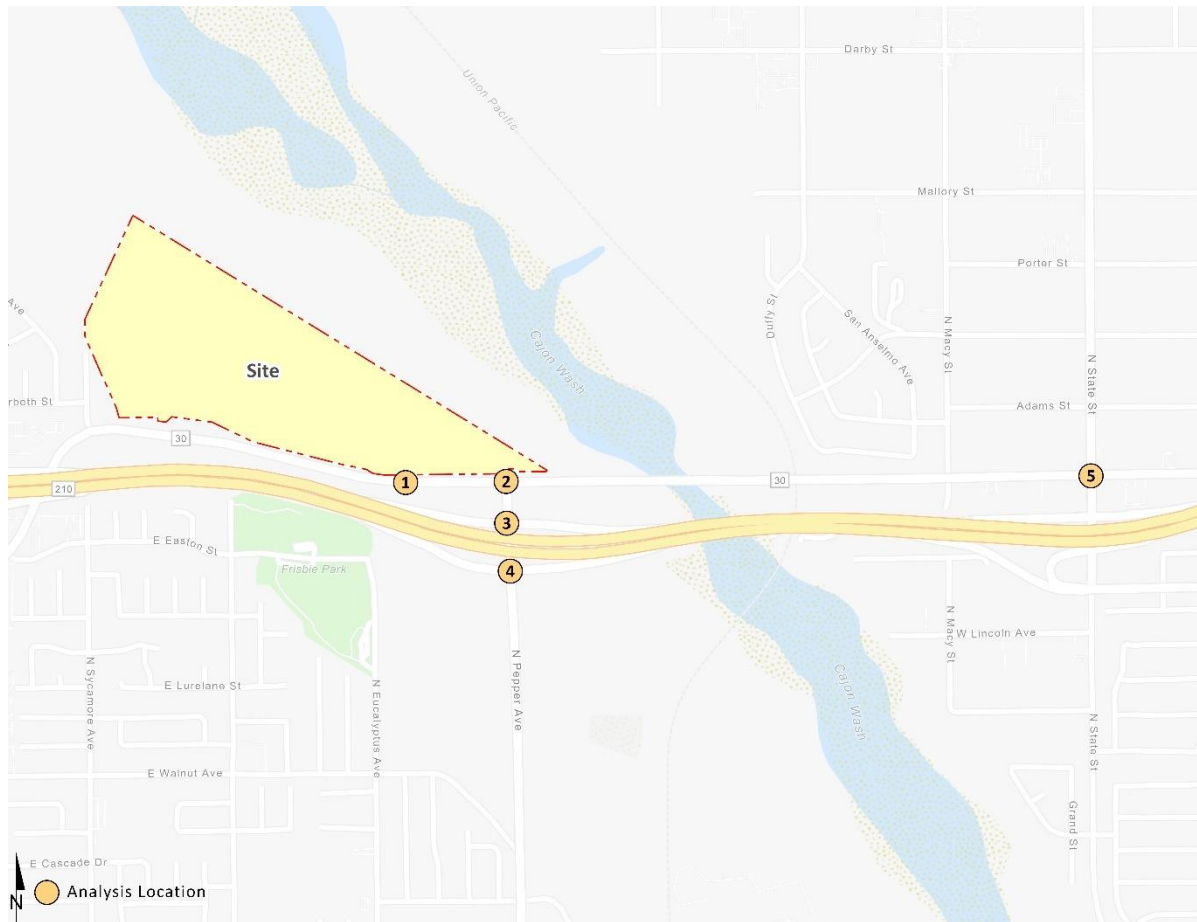
Per the County of San Bernardino traffic study guidelines, the following LOS will be utilized for study area intersections located within the County: Require development to achieve a peak hour Level of Service (LOS) D or better at intersections where LOS E may be permitted. Therefore, any intersection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

THRESHOLDS OF SIGNIFICANCE

Consistent with the County of San Bernardino traffic study guidelines and the acceptable LOS for the Desert, Valley, and Mountain regions as described in the General Plan, the County will consider the following signalized intersection criteria when identifying operational deficiencies in a traffic study to demonstrate consistency with the General Plan:

- Any signalized study intersection in the Valley or Mountain regions that is operating at an acceptable LOS D or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F shall identify improvements to improve operations to LOS D or better.
- Any signalized study intersection in the Desert region that is operating at an LOS C or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS D, E, or F shall identify improvements to improve operations to LOS C.
- Any signalized study intersection in the Valley or Mountain regions that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

EXHIBIT 5: STUDY AREA



- Any signalized study intersection in the Desert region that is operating at LOS D, E, or F without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

Consistent with the County of San Bernardino traffic study guidelines and the acceptable LOS for the Desert, Valley, and Mountain regions as described in the General Plan, the County will consider the following unsignalized intersection criteria when identifying operational deficiencies in a traffic study to demonstrate consistency with the General Plan:

- The addition of project related traffic causes the intersection to move from a LOS D or better to a LOS E or worse in the Valley and Mountain regions or from an LOS C or better to an LOS D or worse in the Desert region.

OR

- The project contributes additional traffic to an intersection that is already projected to operate at an LOS E or F in the Valley and Mountain regions or at an LOS D, E, or F in the Desert region (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)).

If the conditions above are satisfied, improvements should be identified that achieve the following:

- In the Valley and Mountain regions, improvements should be identified that would achieve LOS D or better for case a) above or to pre-project LOS and delay for case b) above.
- In the Desert region, improvements should be identified that would achieve LOS C or better for case a) above or to pre-project LOS and delay for case b) above.

TRAFFIC COUNTS

Existing traffic counts were collected in August 2022 during the peak hour conditions, when local schools were in session and operating on a typical bell schedule, for intersections #2-#4. The traffic counts include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

To represent the effect large trucks, buses, and recreational vehicles have on traffic flow, all trucks were converted into PCE. For this analysis, the following PCE factors have been used to estimate each turning movement: 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks, consistent with the County's traffic study guidelines.

For intersection #5, new traffic counts will be collected during the weekday peak hours (7AM-9AM, 4PM-6PM) during a typical Tuesday, Wednesday, or Thursday, when local schools are in session and operation on a typical bell schedule.

CUMULATIVE PROJECTS

It is requested that the County of San Bernardino provide current cumulative projects within the study area for inclusion in the Traffic Analysis.

SPECIAL ISSUES

The following special issues will also be addressed:

- 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 the Project driveways.

If you have any questions or comments, I can be reached at cso@urbanxroads.com.

Respectfully submitted,

URBAN CROSSROADS, INC.



Charlene So, PE
Principal

ATTACHMENT A

EXISTING TRAFFIC COUNTS

Table A-1

Summary of Driveway Counts: 9550 Hermosa Avenue, Rancho Cucamonga, CA

Land Use	Westerly Driveway							Easterly Driveway							Total						
	AM Peak Hour			PM Peak Hour			Daily	AM Peak Hour			PM Peak Hour			Daily	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total		In	Out	Total	In	Out	Total		In	Out	Total	In	Out	Total	
Tuesday, September 21, 2021																					
Passenger Cars:	1	5	6	2	12	14	148	2	3	5	0	0	0	33	3	8	11	2	12	14	181
2-axle Trucks:	1	3	4	0	0	0	45	7	6	13	0	0	0	42	8	9	17	0	0	0	87
3-axle Trucks:	4	3	7	0	0	0	72	9	7	16	0	0	0	97	13	10	23	0	0	0	169
4+-axle Trucks:	12	14	26	0	1	1	266	4	4	8	0	0	0	33	16	18	34	0	1	1	299
Total Truck Trips:	17	20	37	0	1	1	383	20	17	37	0	0	0	172	37	37	74	0	1	1	555
Total Trips (Actual Vehicles)¹	18	25	43	2	13	15	531	22	20	42	0	0	0	205	40	45	85	2	13	15	736
Wednesday, September 22, 2021																					
Passenger Cars:	4	13	17	2	11	13	161	1	1	2	0	2	2	19	5	14	19	2	13	15	180
2-axle Trucks:	4	6	10	0	1	1	56	3	2	5	0	0	0	34	7	8	15	0	1	1	90
3-axle Trucks:	9	6	15	1	0	1	123	4	4	8	0	0	0	80	13	10	23	1	0	1	203
4+-axle Trucks:	13	16	29	1	1	2	278	1	1	2		1	0	33	14	17	31	1	2	2	311
Total Truck Trips:	26	28	54	2	2	4	457	8	7	15	0	1	0	147	34	35	69	2	3	4	604
Total Trips (Actual Vehicles)¹	30	41	71	4	13	17	618	9	8	17	0	3	2	166	39	49	88	4	16	19	784
Thursday, September 23, 2021																					
Passenger Cars:	6	7	13	2	6	8	158	2	2	4	3	1	4	27	8	9	17	5	7	12	185
2-axle Trucks:	3	2	5	0	1	1	42	3	6	9	0	0	0	44	6	8	14	0	1	1	86
3-axle Trucks:	8	11	19	0	0	0	100	4	6	10	0	0	0	105	12	17	29	0	0	0	205
4+-axle Trucks:	14	15	29	0	0	0	276	2	2	4	0	0	0	8	16	17	33	0	0	0	284
Total Truck Trips:	25	28	53	0	1	1	418	9	14	23	0	0	0	157	34	42	76	0	1	1	575
Total Trips (Actual Vehicles)¹	31	35	66	2	7	9	576	11	16	27	3	1	4	184	42	51	93	5	8	13	760

¹ Total Trips = Passenger Cars + Truck Trips.



City: San Bernardino
 Location: Vulcan - West Driveway
 Date: 9/21/2021
 Count Type: Classified Driveway Count

		Entering				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	2	0	0	1	3	
3:00	0	0	0	1	1	
3:15	0	0	0	2	2	
3:30	2	0	0	2	4	
3:45	1	0	3	1	5	
4:00	0	0	1	6	7	
4:15	0	0	0	0	0	
4:30	0	0	0	5	5	
4:45	5	0	1	2	8	
5:00	4	0	1	2	7	
5:15	2	0	1	2	5	
5:30	3	0	1	3	7	
5:45	1	0	0	1	2	
6:00	1	0	1	6	8	
6:15	1	0	1	6	8	
6:30	0	0	0	3	3	
6:45	3	0	0	2	5	
7:00	3	0	1	3	7	
7:15	3	1	2	6	12	
7:30	3	2	2	2	9	
7:45	2	0	1	3	6	
8:00	0	0	1	4	5	
8:15	0	0	0	3	3	
8:30	0	0	1	3	4	
8:45	1	1	2	2	6	
9:00	0	0	1	3	4	
9:15	1	0	0	6	7	
9:30	0	3	0	1	4	
9:45	1	2	4	4	11	
10:00	0	0	0	0	0	
10:15	1	2	0	4	7	
10:30	0	0	0	4	4	
10:45	1	0	2	4	7	
11:00	0	0	1	1	2	
11:15	1	1	3	2	7	
11:30	1	0	0	2	3	
11:45	0	1	0	2	3	

		Exiting				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	1	0	0	0	1	
0:45	0	0	0	0	0	
1:00	0	0	0	0	0	
1:15	0	0	0	0	0	
1:30	2	0	0	0	2	
1:45	0	0	0	0	0	
2:00	0	0	0	0	0	
2:15	0	0	0	0	0	
2:30	0	0	0	0	0	
2:45	0	0	0	0	0	
3:00	0	0	0	1	1	
3:15	0	0	0	2	2	
3:30	0	0	0	1	1	
3:45	0	0	1	2	3	
4:00	0	0	0	2	2	
4:15	0	0	1	6	7	
4:30	0	0	0	1	1	
4:45	0	0	0	3	3	
5:00	2	0	0	2	4	
5:15	0	0	2	4	6	
5:30	0	0	1	3	4	
5:45	0	0	0	0	0	
6:00	0	0	1	5	6	
6:15	0	0	1	2	3	
6:30	0	0	1	5	6	
6:45	0	0	0	4	4	
7:00	2	0	0	1	3	
7:15	3	0	0	6	9	
7:30	1	0	1	2	4	
7:45	2	0	1	3	6	
8:00	0	0	1	3	4	
8:15	0	2	0	4	6	
8:30	2	0	1	3	6	
8:45	3	1	1	4	9	
9:00	2	0	0	1	3	
9:15	0	0	0	3	3	
9:30	0	1	2	6	9	
9:45	1	2	2	2	7	
10:00	0	0	0	0	0	
10:15	1	3	2	3	9	
10:30	0	0	1	3	4	
10:45	1	0	0	5	6	
11:00	0	0	2	3	5	
11:15	1	0	2	1	4	
11:30	1	1	3	2	7	
11:45	1	0	0	3	4	



City: San Bernardino
 Location: Vulcan - West Driveway
 Date: 9/21/2021
 Count Type: Classified Driveway Count

	Entering				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	1	1	5	7
12:15	0	0	1	1	2
12:30	2	1	1	1	5
12:45	3	0	0	4	7
13:00	0	0	1	4	5
13:15	0	0	1	0	1
13:30	7	0	0	3	10
13:45	2	1	0	1	4
14:00	0	2	1	2	5
14:15	1	0	1	5	7
14:30	0	0	0	2	2
14:45	0	4	0	0	4
15:00	0	2	1	0	3
15:15	1	0	0	0	1
15:30	1	0	0	1	2
15:45	0	0	0	1	1
16:00	0	0	0	0	0
16:15	0	0	0	0	0
16:30	2	0	0	0	2
16:45	0	0	0	0	0
17:00	2	1	0	0	3
17:15	0	0	0	0	0
17:30	1	0	0	0	1
17:45	2	0	0	0	2
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	1	0	0	0	1
18:45	0	1	0	0	1
19:00	1	0	0	0	1
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	1	0	0	0	1
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	1	0	0	0	1
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	1	0	0	0	1
23:45	5	0	0	0	5
TOTAL	77	26	39	134	276

	Exiting				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	1	0	3	4
12:15	0	1	0	4	5
12:30	0	1	2	2	5
12:45	0	0	0	0	0
13:00	1	0	0	4	5
13:15	0	0	1	3	4
13:30	1	0	0	1	2
13:45	3	0	1	2	6
14:00	0	0	0	3	3
14:15	0	0	0	0	0
14:30	6	0	2	3	11
14:45	3	1	0	2	6
15:00	0	2	0	2	4
15:15	0	0	0	0	0
15:30	4	0	0	0	4
15:45	2	1	0	0	3
16:00	5	0	0	1	6
16:15	3	0	0	0	3
16:30	3	0	0	0	3
16:45	1	0	0	0	1
17:00	3	0	0	0	3
17:15	2	0	0	1	3
17:30	1	0	0	0	1
17:45	0	0	0	0	0
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	1	2	0	0	3
18:45	0	0	0	0	0
19:00	0	0	0	0	0
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	1	0	0	0	1
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	1	0	0	0	1
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	3	0	0	0	3
23:00	1	0	0	0	1
23:15	0	0	0	0	0
23:30	0	0	0	0	0
23:45	0	0	0	0	0
TOTAL	71	19	33	132	255



City: San Bernardino
 Location: Vulcan - East Driveway
 Date: 9/21/2021
 Count Type: Classified Driveway Count

		Entering				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	1	0	0	0	0	1
2:15	2	0	0	0	1	3
2:30	0	0	0	0	0	0
2:45	0	0	1	0	0	1
3:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:30	0	0	0	0	0	0
4:45	0	0	0	0	0	0
5:00	0	0	0	0	0	0
5:15	1	0	2	0	0	3
5:30	0	0	0	0	0	0
5:45	0	0	0	0	0	0
6:00	0	0	1	0	0	1
6:15	0	0	1	0	0	1
6:30	0	1	1	0	0	2
6:45	1	1	1	0	0	3
7:00	0	1	0	0	0	1
7:15	1	1	2	3	0	7
7:30	1	3	0	0	0	4
7:45	0	0	0	0	0	0
8:00	1	1	3	0	0	5
8:15	0	3	0	2	0	5
8:30	0	3	2	1	0	6
8:45	1	0	4	1	0	6
9:00	0	0	0	0	0	0
9:15	0	0	2	0	0	2
9:30	0	0	1	0	0	1
9:45	0	0	2	0	0	2
10:00	0	1	2	0	0	3
10:15	0	1	1	1	0	3
10:30	0	0	2	1	0	3
10:45	2	0	0	1	0	3
11:00	0	0	5	1	0	6
11:15	1	1	0	0	0	2
11:30	0	0	3	0	0	3
11:45	0	0	1	0	0	1

		Exiting				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:30	0	0	0	0	0	0
4:45	0	0	0	0	0	0
5:00	0	0	0	0	0	0
5:15	0	0	1	0	0	1
5:30	0	0	0	0	0	0
5:45	0	0	0	0	0	0
6:00	0	0	0	0	0	0
6:15	0	0	2	0	0	2
6:30	0	1	1	0	0	2
6:45	0	2	1	0	0	3
7:00	0	2	0	0	0	2
7:15	1	1	0	0	0	2
7:30	0	1	0	0	0	1
7:45	1	3	0	0	0	4
8:00	1	0	0	2	0	3
8:15	0	2	2	1	0	5
8:30	0	2	2	0	0	4
8:45	2	2	3	1	0	8
9:00	0	1	1	1	0	3
9:15	0	0	5	1	0	6
9:30	1	0	2	1	0	4
9:45	0	1	4	0	0	5
10:00	0	0	0	0	0	0
10:15	0	0	2	0	0	2
10:30	0	0	2	2	0	4
10:45	2	0	2	1	0	5
11:00	0	0	1	1	0	2
11:15	2	3	4	0	0	9
11:30	1	1	0	1	0	3
11:45	0	0	2	0	0	2



City: San Bernardino
 Location: Vulcan - East Driveway
 Date: 9/21/2021
 Count Type: Classified Driveway Count

	Entering				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	0	3	0	3
12:15	0	0	2	1	3
12:30	0	0	1	0	1
12:45	0	0	1	0	1
13:00	0	0	0	1	1
13:15	0	0	1	0	1
13:30	0	0	0	0	0
13:45	0	0	1	0	1
14:00	0	0	0	0	0
14:15	0	0	0	0	0
14:30	0	0	0	0	0
14:45	0	0	0	0	0
15:00	1	0	1	1	3
15:15	0	0	0	0	0
15:30	0	0	0	0	0
15:45	0	0	0	0	0
16:00	0	0	0	0	0
16:15	0	0	0	0	0
16:30	0	0	0	0	0
16:45	0	0	0	0	0
17:00	0	0	0	0	0
17:15	0	0	0	0	0
17:30	0	0	0	0	0
17:45	0	0	0	0	0
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	0	0	0	0	0
18:45	1	0	0	0	1
19:00	0	0	0	0	0
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	0	0	0	0	0
23:45	0	0	0	0	0
TOTAL	14	17	47	15	93

	Exiting				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	1	0	1	0	2
12:15	0	0	2	0	2
12:30	0	0	3	0	3
12:45	0	0	1	2	3
13:00	0	0	2	1	3
13:15	0	0	0	0	0
13:30	0	0	1	0	1
13:45	0	1	0	0	1
14:00	0	0	0	0	0
14:15	1	0	0	0	1
14:30	1	2	1	0	4
14:45	0	0	0	0	0
15:00	0	0	1	3	4
15:15	4	0	1	0	5
15:30	0	0	0	0	0
15:45	0	0	0	0	0
16:00	0	0	0	0	0
16:15	0	0	0	0	0
16:30	0	0	0	0	0
16:45	0	0	0	0	0
17:00	0	0	0	0	0
17:15	0	0	0	0	0
17:30	0	0	0	0	0
17:45	0	0	0	0	0
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	0	0	0	0	0
18:45	0	0	0	0	0
19:00	1	0	0	0	1
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	0	0	0	0	0
23:45	0	0	0	0	0
TOTAL	19	25	50	18	112



City: San Bernardino
 Location: Vulcan - West Driveway
 Date: 9/22/2021
 Count Type: Classified Driveway Count

		Entering				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	2	0	0	0	2
0:15	0	0	0	0	0	0
0:30	1	0	0	0	0	1
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	2	0	0	0	0	2
3:00	0	0	0	2	2	2
3:15	0	0	0	2	2	2
3:30	2	1	0	1	4	4
3:45	2	0	0	1	3	3
4:00	1	0	0	3	4	4
4:15	0	0	0	4	4	4
4:30	2	0	1	0	3	3
4:45	6	0	1	1	8	8
5:00	0	1	3	3	7	7
5:15	1	0	0	4	5	5
5:30	4	0	3	3	10	10
5:45	3	0	0	2	5	5
6:00	2	0	1	1	4	4
6:15	0	0	1	6	7	7
6:30	0	0	1	2	3	3
6:45	3	0	0	5	8	8
7:00	0	0	2	4	6	6
7:15	3	1	0	3	7	7
7:30	1	1	2	2	6	6
7:45	2	1	2	4	9	9
8:00	1	0	3	2	6	6
8:15	2	1	1	4	8	8
8:30	0	3	1	7	11	11
8:45	1	0	4	0	5	5
9:00	3	0	0	4	7	7
9:15	0	1	1	5	7	7
9:30	5	0	4	2	11	11
9:45	1	1	0	2	4	4
10:00	0	2	0	5	7	7
10:15	1	0	4	3	8	8
10:30	0	0	2	5	7	7
10:45	3	0	0	0	3	3
11:00	0	1	4	3	8	8
11:15	0	0	3	5	8	8
11:30	0	0	1	3	4	4
11:45	1	1	2	2	6	6

		Exiting				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	1	0	0	0	1
0:30	2	0	0	0	0	2
0:45	1	0	0	0	0	1
1:00	2	0	0	0	0	2
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:15	0	0	0	1	1	1
3:30	0	0	0	4	4	4
3:45	0	0	0	0	0	0
4:00	0	0	0	4	4	4
4:15	0	0	0	2	2	2
4:30	0	0	0	3	3	3
4:45	2	0	0	1	3	3
5:00	1	0	1	1	3	3
5:15	0	0	0	2	2	2
5:30	0	0	0	5	5	5
5:45	1	0	0	2	3	3
6:00	1	0	2	3	6	6
6:15	0	0	3	2	5	5
6:30	0	1	0	4	5	5
6:45	0	0	1	3	4	4
7:00	0	0	0	3	3	3
7:15	0	0	1	7	8	8
7:30	1	2	1	4	8	8
7:45	0	0	1	2	3	3
8:00	1	1	2	3	7	7
8:15	3	1	2	4	10	10
8:30	3	4	2	3	12	12
8:45	6	0	0	6	12	12
9:00	0	0	3	2	5	5
9:15	0	0	0	4	4	4
9:30	0	1	1	6	8	8
9:45	1	0	2	1	4	4
10:00	1	1	1	2	5	5
10:15	0	0	1	6	7	7
10:30	2	0	4	2	8	8
10:45	0	0	4	3	7	7
11:00	3	0	1	0	4	4
11:15	0	1	2	4	7	7
11:30	1	0	5	3	9	9
11:45	0	0	2	2	4	4



City: San Bernardino
 Location: Vulcan - West Driveway
 Date: 9/22/2021
 Count Type: Classified Driveway Count

	Entering				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	1	1	2	5	9
12:15	0	0	3	1	4
12:30	1	1	1	3	6
12:45	0	2	2	2	6
13:00	1	0	1	8	10
13:15	1	1	0	2	4
13:30	3	0	2	3	8
13:45	4	1	1	0	6
14:00	2	0	0	4	6
14:15	0	0	2	0	2
14:30	0	1	1	2	4
14:45	0	0	0	0	0
15:00	0	0	0	0	0
15:15	0	0	1	1	2
15:30	0	0	0	0	0
15:45	2	0	1	0	3
16:00	0	0	1	0	1
16:15	0	0	0	0	0
16:30	1	0	0	0	1
16:45	1	0	0	1	2
17:00	1	0	0	0	1
17:15	1	0	0	0	1
17:30	0	0	0	0	0
17:45	0	0	0	0	0
18:00	0	0	0	0	0
18:15	1	0	0	0	1
18:30	2	0	0	0	2
18:45	0	0	0	0	0
19:00	2	0	0	0	2
19:15	0	1	0	0	1
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	1	0	0	0	1
21:30	0	1	0	0	1
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	1	0	0	0	1
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	4	1	0	0	5
23:45	3	0	0	0	3
TOTAL	86	27	65	137	315

	Exiting				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	3	2	5	10
12:15	0	0	3	3	6
12:30	0	1	2	3	6
12:45	1	1	0	1	3
13:00	1	0	1	6	8
13:15	2	0	1	5	8
13:30	1	3	1	1	6
13:45	2	1	0	4	7
14:00	3	1	1	1	6
14:15	1	0	1	2	4
14:30	0	0	1	2	3
14:45	0	0	0	1	1
15:00	0	0	1	1	2
15:15	2	0	0	1	3
15:30	1	0	1	0	2
15:45	2	1	0	0	3
16:00	5	1	0	0	6
16:15	4	0	0	0	4
16:30	1	0	0	1	2
16:45	1	0	0	0	1
17:00	6	0	1	0	7
17:15	3	0	0	0	3
17:30	0	0	0	0	0
17:45	0	0	0	0	0
18:00	1	0	0	0	1
18:15	1	0	0	0	1
18:30	0	1	0	0	1
18:45	0	1	0	0	1
19:00	0	1	0	0	1
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	1	0	0	0	1
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	1	0	0	0	1
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	1	0	0	0	1
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	1	1	0	0	2
23:45	1	0	0	0	1
TOTAL	75	29	58	141	303



City: San Bernardino
 Location: Vulcan - East Driveway
 Date: 9/22/2021
 Count Type: Classified Driveway Count

		Entering				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:30	0	0	0	0	0	0
4:45	0	0	2	0	2	2
5:00	0	0	2	0	2	2
5:15	0	0	0	0	0	0
5:30	0	0	3	1	4	4
5:45	0	0	0	1	1	1
6:00	0	0	0	0	0	0
6:15	0	0	0	0	0	0
6:30	0	1	2	0	3	3
6:45	0	2	2	1	5	5
7:00	1	1	2	1	5	5
7:15	0	1	2	2	5	5
7:30	0	0	0	1	1	1
7:45	0	0	0	0	0	0
8:00	0	0	1	0	1	1
8:15	0	2	1	0	3	3
8:30	0	1	1	1	3	3
8:45	1	0	1	0	2	2
9:00	1	1	0	0	2	2
9:15	0	0	1	0	1	1
9:30	1	0	1	0	2	2
9:45	0	0	0	0	0	0
10:00	0	0	0	0	0	0
10:15	0	1	0	0	1	1
10:30	0	0	1	0	1	1
10:45	0	1	0	0	1	1
11:00	0	0	0	0	0	0
11:15	0	0	0	1	1	1
11:30	0	2	2	1	5	5
11:45	0	0	3	0	3	3

		Exiting				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:30	0	0	1	0	1	1
4:45	0	0	0	0	0	0
5:00	0	0	2	0	2	2
5:15	0	0	4	0	4	4
5:30	0	0	4	0	4	4
5:45	0	0	4	0	4	4
6:00	0	0	0	0	0	0
6:15	0	0	1	2	3	3
6:30	0	0	0	0	0	0
6:45	0	1	0	0	1	1
7:00	0	2	0	1	3	3
7:15	1	2	2	0	5	5
7:30	1	2	1	1	5	5
7:45	0	0	0	0	0	0
8:00	0	0	2	1	3	3
8:15	0	1	1	0	2	2
8:30	0	1	0	0	1	1
8:45	1	0	1	0	2	2
9:00	2	2	1	0	5	5
9:15	0	1	0	1	2	2
9:30	0	0	1	0	1	1
9:45	0	0	2	0	2	2
10:00	0	0	1	2	3	3
10:15	0	0	0	0	0	0
10:30	0	1	0	0	1	1
10:45	1	0	1	0	2	2
11:00	0	0	0	0	0	0
11:15	0	1	1	0	2	2
11:30	0	0	0	1	1	1
11:45	0	1	1	1	3	3



City: San Bernardino
 Location: Vulcan - East Driveway
 Date: 9/22/2021
 Count Type: Classified Driveway Count

	Entering				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	1	0	1	0	2
12:15	0	1	1	1	3
12:30	0	1	1	0	2
12:45	0	0	3	1	4
13:00	0	0	1	2	3
13:15	0	0	0	0	0
13:30	0	0	1	1	2
13:45	0	0	0	0	0
14:00	0	0	1	1	2
14:15	0	0	0	0	0
14:30	0	0	0	0	0
14:45	0	0	1	0	1
15:00	0	0	0	0	0
15:15	0	0	0	0	0
15:30	0	0	0	0	0
15:45	0	0	0	0	0
16:00	0	0	0	1	1
16:15	0	0	0	0	0
16:30	0	0	0	0	0
16:45	0	0	0	0	0
17:00	0	0	0	0	0
17:15	0	0	0	0	0
17:30	0	0	0	0	0
17:45	0	0	0	0	0
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	0	0	0	0	0
18:45	0	0	0	0	0
19:00	0	0	0	0	0
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	0	0	0	0	0
23:45	0	0	0	0	0
TOTAL	5	15	37	17	74

	Exiting				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	1	0	2	0	3
12:15	0	1	1	0	2
12:30	1	0	1	0	2
12:45	0	2	1	1	4
13:00	1	0	2	2	5
13:15	0	0	0	0	0
13:30	0	0	1	1	2
13:45	0	0	3	0	3
14:00	0	1	1	0	2
14:15	0	0	0	0	0
14:30	0	0	0	0	0
14:45	2	0	0	2	4
15:00	0	0	0	0	0
15:15	0	0	0	0	0
15:30	0	0	0	0	0
15:45	1	0	0	0	1
16:00	0	0	0	0	0
16:15	2	0	0	0	2
16:30	0	0	0	0	0
16:45	0	0	0	0	0
17:00	0	0	0	0	0
17:15	0	0	0	0	0
17:30	0	0	0	0	0
17:45	0	0	0	0	0
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	0	0	0	0	0
18:45	0	0	0	0	0
19:00	0	0	0	0	0
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	0	0	0	0	0
23:45	0	0	0	0	0
TOTAL	14	19	43	16	92



City: San Bernardino
 Location: Vulcan - West Driveway
 Date: 9/23/2021
 Count Type: Classified Driveway Count

		Entering				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	1	0	0	0	0	1
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	2	1	0	3	6	
3:15	0	0	0	3	3	
3:30	5	0	0	1	6	
3:45	1	0	1	1	3	
4:00	0	0	0	3	3	
4:15	0	0	0	4	4	
4:30	0	0	1	1	2	
4:45	2	0	0	0	2	
5:00	3	0	2	2	7	
5:15	3	0	0	1	4	
5:30	1	0	2	1	4	
5:45	3	0	1	3	7	
6:00	0	0	1	3	4	
6:15	0	0	3	4	7	
6:30	2	0	2	4	8	
6:45	3	0	0	2	5	
7:00	1	1	3	5	10	
7:15	1	0	3	1	5	
7:30	3	1	5	5	14	
7:45	1	1	1	3	6	
8:00	0	0	1	1	2	
8:15	2	1	1	3	7	
8:30	0	2	3	5	10	
8:45	1	0	3	5	9	
9:00	3	0	3	2	8	
9:15	1	1	1	2	5	
9:30	0	0	1	5	6	
9:45	0	0	0	3	3	
10:00	1	0	3	4	8	
10:15	0	0	3	8	11	
10:30	2	0	1	3	6	
10:45	1	0	2	7	10	
11:00	1	0	2	3	6	
11:15	1	0	2	5	8	
11:30	0	2	0	3	5	
11:45	0	0	1	5	6	

		Exiting				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	2	0	0	0	0	2
0:15	1	0	0	0	0	1
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	1	0	0	0	0	1
1:15	1	0	0	0	0	1
1:30	1	0	0	0	0	1
1:45	2	1	0	0	0	3
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:15	0	1	0	0	0	1
3:30	0	0	0	6	6	
3:45	1	0	0	0	1	
4:00	1	0	0	1	2	
4:15	0	0	0	2	2	
4:30	0	0	0	7	7	
4:45	1	0	0	0	1	
5:00	0	0	0	1	1	
5:15	1	0	1	3	5	
5:30	0	0	0	3	3	
5:45	0	0	0	0	0	
6:00	0	0	1	4	5	
6:15	0	0	1	4	5	
6:30	0	0	2	3	5	
6:45	1	0	2	2	5	
7:00	0	0	0	3	3	
7:15	1	1	0	6	8	
7:30	1	0	3	2	6	
7:45	1	0	1	1	3	
8:00	0	0	3	5	8	
8:15	0	1	1	3	5	
8:30	6	0	3	5	14	
8:45	1	1	4	2	8	
9:00	2	1	1	3	7	
9:15	1	1	1	9	12	
9:30	0	0	1	5	6	
9:45	0	0	1	3	4	
10:00	1	0	2	1	4	
10:15	0	0	2	3	5	
10:30	1	0	1	4	6	
10:45	0	1	2	3	6	
11:00	1	0	2	4	7	
11:15	1	0	2	5	8	
11:30	0	0	1	4	5	
11:45	1	0	1	4	6	



City: San Bernardino
 Location: Vulcan - West Driveway
 Date: 9/23/2021
 Count Type: Classified Driveway Count

	Entering				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	1	2	4	7
12:15	0	1	0	1	2
12:30	2	0	0	2	4
12:45	1	0	1	3	5
13:00	2	0	0	3	5
13:15	2	0	0	3	5
13:30	5	2	1	1	9
13:45	2	2	1	1	6
14:00	1	2	0	1	4
14:15	0	0	0	4	4
14:30	1	2	0	0	3
14:45	1	1	0	0	2
15:00	0	0	0	0	0
15:15	0	0	0	0	0
15:30	0	0	0	0	0
15:45	0	0	0	0	0
16:00	0	0	0	0	0
16:15	0	0	0	0	0
16:30	0	1	0	0	1
16:45	0	0	0	0	0
17:00	1	0	0	0	1
17:15	0	0	0	0	0
17:30	1	0	0	0	1
17:45	0	0	0	0	0
18:00	1	0	0	0	1
18:15	1	0	0	0	1
18:30	1	0	0	0	1
18:45	2	1	0	0	3
19:00	1	0	0	0	1
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	1	0	0	0	1
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	1	0	0	0	1
23:45	5	0	0	0	5
TOTAL	77	23	57	137	294

	Exiting				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	1	0	5	6
12:15	1	0	1	3	5
12:30	1	1	1	3	6
12:45	1	0	0	4	5
13:00	1	0	1	1	3
13:15	2	0	0	2	4
13:30	1	2	0	4	7
13:45	2	0	0	0	2
14:00	3	1	0	0	4
14:15	1	1	0	3	5
14:30	0	0	0	1	1
14:45	3	0	0	2	5
15:00	0	0	0	0	0
15:15	5	0	0	0	5
15:30	0	0	0	0	0
15:45	0	0	1	0	1
16:00	4	0	0	0	4
16:15	1	0	0	0	1
16:30	1	0	0	0	1
16:45	3	1	0	0	4
17:00	1	0	0	0	1
17:15	1	0	0	0	1
17:30	1	0	0	0	1
17:45	1	0	0	0	1
18:00	1	0	0	0	1
18:15	0	1	0	0	1
18:30	5	0	0	0	5
18:45	0	0	0	0	0
19:00	0	0	0	0	0
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	2	0	0	0	2
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	1	0	0	0	1
21:30	0	1	0	0	1
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	2	0	0	0	2
23:00	1	0	0	0	1
23:15	2	0	0	0	2
23:30	2	0	0	0	2
23:45	0	2	0	0	2
TOTAL	81	19	43	139	282



City: San Bernardino
 Location: Vulcan - East Driveway
 Date: 9/23/2021
 Count Type: Classified Driveway Count

		Entering				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:30	0	0	0	1	0	1
4:45	0	0	0	0	0	0
5:00	2	0	3	0	5	
5:15	0	0	3	1	4	
5:30	0	0	0	0	0	
5:45	0	0	1	0	1	
6:00	0	0	1	0	1	
6:15	1	0	0	0	1	
6:30	0	1	2	0	3	
6:45	0	1	4	0	5	
7:00	1	0	0	0	1	
7:15	0	1	2	0	3	
7:30	0	2	1	0	3	
7:45	0	1	1	0	2	
8:00	0	3	1	1	5	
8:15	1	0	1	0	2	
8:30	0	0	0	1	1	
8:45	1	0	2	0	3	
9:00	1	0	1	0	2	
9:15	0	2	0	0	2	
9:30	0	0	1	0	1	
9:45	0	0	0	0	0	
10:00	0	1	1	0	2	
10:15	0	0	1	1	2	
10:30	1	1	1	0	3	
10:45	1	0	3	0	4	
11:00	0	0	2	0	2	
11:15	0	0	2	0	2	
11:30	0	0	0	0	0	
11:45	0	0	0	0	0	

		Exiting				
		Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
0:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:30	0	0	1	0	1	
4:45	0	0	1	0	1	
5:00	0	0	1	0	1	
5:15	0	0	2	0	2	
5:30	0	0	1	0	1	
5:45	0	0	3	0	3	
6:00	0	0	2	0	2	
6:15	0	0	2	1	3	
6:30	0	0	1	0	1	
6:45	0	0	0	0	0	
7:00	0	1	4	0	5	
7:15	0	1	3	0	4	
7:30	0	1	2	0	3	
7:45	0	0	0	0	0	
8:00	0	3	3	0	6	
8:15	2	2	1	0	5	
8:30	0	1	1	0	2	
8:45	0	0	1	2	3	
9:00	0	0	3	0	3	
9:15	0	2	1	0	3	
9:30	0	4	0	0	4	
9:45	0	0	1	0	1	
10:00	0	0	1	0	1	
10:15	0	1	1	0	2	
10:30	0	0	0	1	1	
10:45	2	0	3	0	5	
11:00	1	1	3	0	5	
11:15	0	0	1	0	1	
11:30	1	0	2	0	3	
11:45	0	0	0	0	0	



City: San Bernardino
 Location: Vulcan - East Driveway
 Date: 9/23/2021
 Count Type: Classified Driveway Count

	Entering				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	0	2	0	2
12:15	0	2	1	0	3
12:30	1	0	1	0	2
12:45	0	1	1	0	2
13:00	0	0	0	0	0
13:15	0	0	1	0	1
13:30	0	2	1	0	3
13:45	0	0	0	0	0
14:00	0	0	2	0	2
14:15	1	1	0	0	2
14:30	0	0	3	0	3
14:45	0	0	0	0	0
15:00	0	0	0	0	0
15:15	0	0	0	0	0
15:30	0	0	0	0	0
15:45	0	0	0	0	0
16:00	0	0	0	0	0
16:15	0	0	0	0	0
16:30	0	0	0	0	0
16:45	0	0	0	0	0
17:00	1	0	0	0	1
17:15	0	0	0	0	0
17:30	2	0	0	0	2
17:45	0	0	0	0	0
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	0	0	0	0	0
18:45	0	0	0	0	0
19:00	0	0	0	0	0
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	0	0	0	0	0
23:45	0	0	0	0	0
TOTAL	14	19	47	4	84

	Exiting				
	Pass Veh	Large 2 Axle	3 Axle	4+ Axle	Total
12:00	0	0	0	0	0
12:15	0	0	2	0	2
12:30	0	0	1	0	1
12:45	0	2	1	0	3
13:00	0	1	1	0	2
13:15	0	1	3	0	4
13:30	0	0	0	0	0
13:45	0	1	0	0	1
14:00	0	1	0	0	1
14:15	0	1	2	0	3
14:30	1	0	0	0	1
14:45	0	1	2	0	3
15:00	0	0	1	0	1
15:15	1	0	0	0	1
15:30	0	0	0	0	0
15:45	0	0	0	0	0
16:00	2	0	0	0	2
16:15	0	0	0	0	0
16:30	0	0	0	0	0
16:45	0	0	0	0	0
17:00	0	0	0	0	0
17:15	0	0	0	0	0
17:30	1	0	0	0	1
17:45	2	0	0	0	2
18:00	0	0	0	0	0
18:15	0	0	0	0	0
18:30	0	0	0	0	0
18:45	0	0	0	0	0
19:00	0	0	0	0	0
19:15	0	0	0	0	0
19:30	0	0	0	0	0
19:45	0	0	0	0	0
20:00	0	0	0	0	0
20:15	0	0	0	0	0
20:30	0	0	0	0	0
20:45	0	0	0	0	0
21:00	0	0	0	0	0
21:15	0	0	0	0	0
21:30	0	0	0	0	0
21:45	0	0	0	0	0
22:00	0	0	0	0	0
22:15	0	0	0	0	0
22:30	0	0	0	0	0
22:45	0	0	0	0	0
23:00	0	0	0	0	0
23:15	0	0	0	0	0
23:30	0	0	0	0	0
23:45	0	0	0	0	0
TOTAL	13	25	58	4	100

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APPENDIX 1.2: SITE ADJACENT QUEUES

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Intersection: 1: Highland Av. & Driveway 1

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	28	31
Average Queue (ft)	1	12
95th Queue (ft)	10	36
Link Distance (ft)		713
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Pepper Av. & Highland Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	22	131	192	394	564	362	234	373	116	23	57	31
Average Queue (ft)	4	60	99	312	152	88	193	116	57	1	17	2
95th Queue (ft)	20	103	173	436	512	354	268	340	95	11	48	14
Link Distance (ft)		1242	1242		2650	2650		365	365		596	596
Upstream Blk Time (%)								3				
Queuing Penalty (veh)								0				
Storage Bay Dist (ft)	335			315			200			100		
Storage Blk Time (%)				21	0		17					
Queuing Penalty (veh)				25	0		11					

Network Summary

Network wide Queuing Penalty: 36

Intersection: 1: Highland Av. & Driveway 1

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	7	91
Average Queue (ft)	0	41
95th Queue (ft)	4	72
Link Distance (ft)		713
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Pepper Av. & Highland Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	22	235	262	383	178	105	234	354	328	39	159	31
Average Queue (ft)	1	117	146	253	41	41	157	68	143	8	67	2
95th Queue (ft)	11	189	232	372	131	85	239	216	262	30	131	15
Link Distance (ft)		1242	1242		2650	2650		365	365		596	596
Upstream Blk Time (%)								1	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	335			315			200			100		
Storage Blk Time (%)				4			8	0			6	
Queuing Penalty (veh)				6			7	0			1	

Network Summary

Network wide Queuing Penalty: 13

APPENDIX 3.1: TRAFFIC COUNTS

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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
5/11/23
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

San Bernardino
University-State
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC4026
1
SIGNAL

CLASS 1:
PASSENGER
VEHICLES

NOTES:

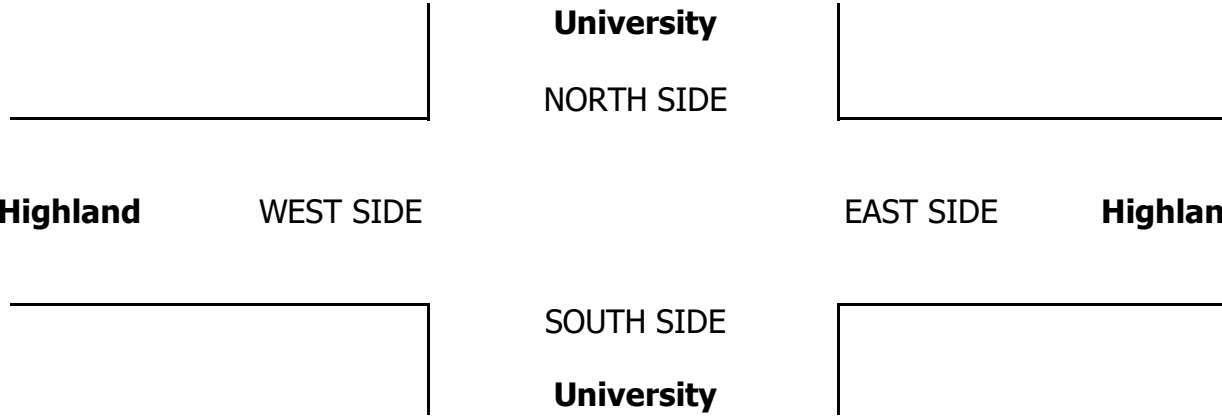
AM
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	University-State			University-State			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	3	1	1	2	1	1	2	1	2	2	0	

AM	7:00 AM	22	24	19	6	62	11	4	23	32	50	16	7	276
	7:15 AM	37	50	22	7	79	15	6	15	39	60	29	4	363
	7:30 AM	119	64	17	10	71	32	10	28	29	63	54	6	503
	7:45 AM	82	63	26	11	59	15	16	24	27	60	42	6	431
	8:00 AM	23	57	25	4	34	10	17	35	34	49	30	3	321
	8:15 AM	22	63	34	7	59	9	15	24	39	47	28	10	357
	8:30 AM	25	48	28	16	49	8	16	23	29	40	28	9	319
	8:45 AM	22	44	36	8	49	14	14	31	27	43	25	6	319
	VOLUMES	352	413	207	69	462	114	98	203	256	412	252	51	2,889
	APPROACH %	36%	42%	21%	11%	72%	18%	18%	36%	46%	58%	35%	7%	
	APP/DEPART	972	/	562	645	/	1,130	557	/	479	715	/	718	0
	BEGIN PEAK HR	7:15 AM												
PM	VOLUMES	261	234	90	32	243	72	49	102	129	232	155	19	1,618
	APPROACH %	45%	40%	15%	9%	70%	21%	18%	36%	46%	57%	38%	5%	
	PEAK HR FACTOR	0.731			0.768			0.814			0.825			0.804
	APP/DEPART	585	/	302	347	/	604	280	/	224	406	/	488	0
	4:00 PM	27	67	41	21	68	24	26	49	27	59	48	16	473
	4:15 PM	38	73	44	21	68	19	30	46	19	64	47	21	490
	4:30 PM	22	52	45	20	76	15	14	52	31	74	73	10	484
	4:45 PM	26	72	32	16	49	18	19	52	29	66	58	16	453
	5:00 PM	42	83	51	12	72	16	17	53	35	60	71	20	532
	5:15 PM	48	86	44	14	80	26	20	36	25	57	67	15	518
	5:30 PM	41	73	46	19	63	33	20	40	22	68	69	14	508
	5:45 PM	46	79	51	14	51	17	26	36	29	66	59	18	492
	VOLUMES	290	585	354	137	527	168	172	364	217	514	492	130	3,950
	APPROACH %	24%	48%	29%	16%	63%	20%	23%	48%	29%	45%	43%	11%	
	APP/DEPART	1,229	/	887	832	/	1,259	753	/	854	1,136	/	950	0
	BEGIN PEAK HR	5:00 PM												
	VOLUMES	176	321	192	59	266	92	83	165	111	251	266	67	2,050
	APPROACH %	26%	47%	28%	14%	64%	22%	23%	46%	31%	43%	46%	11%	
	PEAK HR FACTOR	0.969			0.869			0.855			0.967			0.963
	APP/DEPART	690	/	471	417	/	629	359	/	416	584	/	534	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

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
12	7	12	2
5	10	23	1
4	20	12	4
18	7	8	2
7	7	19	1
19	5	25	3
16	4	12	5
15	5	14	3
96	65	125	21

34	44	62	8
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0	0	0	0	0
0	1	1	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	0	0	0	0
1	0	0	0	1
1	1	1	0	3

22	10	15	8
22	9	13	8
25	8	15	3
25	7	13	9
29	7	16	7
29	9	9	7
26	14	14	8
28	7	16	7
206	71	111	57

112	37	55	29
-----	----	----	----

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
5/11/23
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

San Bernardino
University-State
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC4026
1
SIGNAL

CLASS 2:
2-AXLE
WORK
VEHICLES/
TRUCKS

NOTES:

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OTHER

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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	University-State			University-State			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	3	1	1	2	1	1	2	1	2	2	0	

AM	7:00 AM	2	2	1	0	3	0	1	1	1	7	3	0	21
	7:15 AM	2	0	1	1	2	0	0	2	1	2	3	1	15
	7:30 AM	2	2	2	0	3	1	0	1	3	5	1	0	20
	7:45 AM	5	6	1	0	1	1	1	2	4	6	5	0	32
	8:00 AM	0	1	4	1	3	0	0	6	0	6	2	0	23
	8:15 AM	0	4	2	1	4	0	0	0	1	4	2	0	18
	8:30 AM	3	3	0	0	1	0	0	2	1	6	2	0	18
	8:45 AM	1	5	2	0	4	0	1	0	1	7	0	1	22
	VOLUMES	15	23	13	3	21	2	3	14	12	43	18	2	169
	APPROACH %	29%	45%	25%	12%	81%	8%	10%	48%	41%	68%	29%	3%	
PM	APP/DEPART	51	/	28	26	/	76	29	/	30	63	/	35	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	9	9	8	2	9	2	1	11	8	19	11	1	90
	APPROACH %	35%	35%	31%	15%	69%	15%	5%	55%	40%	61%	35%	3%	
	PEAK HR FACTOR	0.542			0.813			0.714			0.705			0.703
	APP/DEPART	26	/	11	13	/	36	20	/	21	31	/	22	0
	4:00 PM	0	6	1	0	3	0	1	2	1	3	1	0	18
	4:15 PM	1	6	1	1	3	0	0	2	1	3	3	1	22
	4:30 PM	1	5	3	0	3	0	1	1	2	1	4	0	21
	4:45 PM	2	5	1	0	6	0	0	4	1	2	1	0	22
	5:00 PM	3	4	2	0	2	0	0	0	0	3	3	1	18
	5:15 PM	0	3	5	1	2	1	1	0	0	2	1	2	18
	5:30 PM	4	2	0	1	1	0	0	0	0	2	3	1	14
	5:45 PM	2	3	1	1	1	2	0	1	1	3	3	1	19
	VOLUMES	13	34	14	4	21	3	3	10	6	19	19	6	152
	APPROACH %	21%	56%	23%	14%	75%	11%	16%	53%	32%	43%	43%	14%	
	APP/DEPART	61	/	43	28	/	46	19	/	28	44	/	35	0
	BEGIN PEAK HR	5:00 PM												
	VOLUMES	9	12	8	3	6	3	1	1	1	10	10	5	69
	APPROACH %	31%	41%	28%	25%	50%	25%	33%	33%	33%	40%	40%	20%	
	PEAK HR FACTOR	0.806			0.750			0.375			0.893			0.908
	APP/DEPART	29	/	18	12	/	17	3	/	12	25	/	22	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

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
1	0	1	0
0	0	0	1
2	0	3	0
1	1	2	0
1	0	0	0
1	0	1	0
0	0	1	0
2	0	0	0
8	1	8	1

4	1	5	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

1	0	1	0
1	0	1	0
3	0	1	0
1	0	1	0
2	0	0	1
4	0	0	0
0	0	0	0
0	1	1	1
12	1	5	2

6	1	1	2
---	---	---	---

University

NORTH SIDE

Highland

WEST SIDE

EAST SIDE

Highland

SOUTH SIDE

University

3.1-2

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
5/11/23
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

San Bernardino
University-State
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC4026
1
SIGNAL

CLASS 3:
3-AXLE
TRUCKS

NOTES:

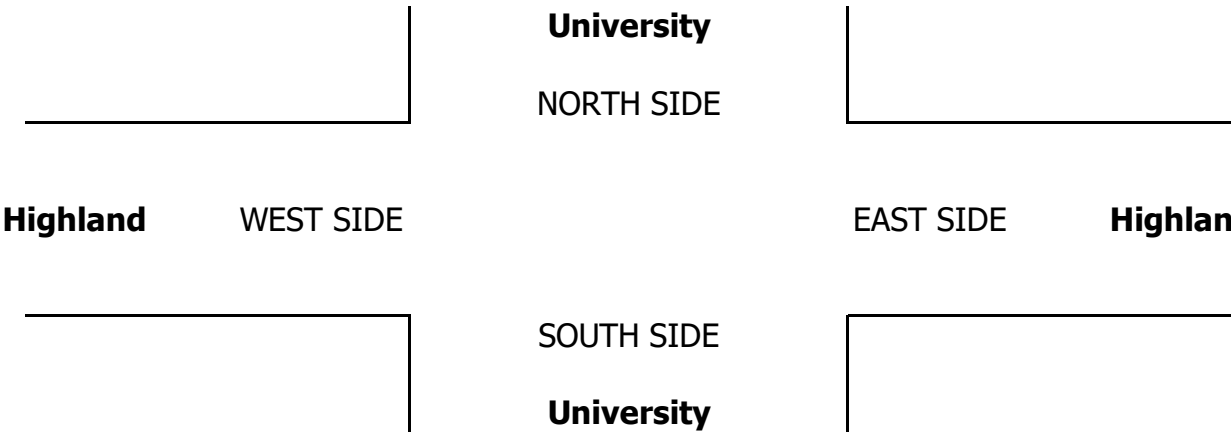
AM
PM
MD
OTHER
OTHER

▲
N
◀ W
S
▼

E ▶

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	University-State			University-State			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	3	1	1	2	1	1	2	1	2	2	0	

AM	7:00 AM	0	0	1	0	6	0	0	0	1	1	0	1	10
	7:15 AM	0	0	0	0	1	1	0	1	0	2	0	0	5
	7:30 AM	1	1	0	0	0	1	0	0	0	0	0	0	3
	7:45 AM	2	1	0	0	1	0	0	0	0	0	0	0	4
	8:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	2
	8:15 AM	0	0	0	0	1	1	0	0	0	2	0	0	4
	8:30 AM	0	1	0	0	0	0	0	0	1	0	0	0	2
	8:45 AM	0	3	0	0	2	0	0	0	0	2	0	0	7
	VOLUMES	3	7	1	1	11	3	0	1	2	7	0	1	37
	APPROACH %	27%	64%	9%	7%	73%	20%	0%	33%	67%	88%	0%	13%	
PM	APP/DEPART	11	/	8	15	/	20	3	/	3	8	/	6	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	3	3	0	1	2	2	0	1	0	2	0	0	14
	APPROACH %	50%	50%	0%	20%	40%	40%	0%	100%	0%	100%	0%	0%	
	PEAK HR FACTOR	0.500			0.625			0.250			0.250			0.700
	APP/DEPART	6	/	3	5	/	4	1	/	2	2	/	5	0
	4:00 PM	0	0	0	0	1	0	1	1	0	0	0	0	3
	4:15 PM	0	2	1	0	0	0	0	0	0	0	0	0	3
	4:30 PM	3	3	0	0	1	0	0	0	0	0	1	1	9
	4:45 PM	0	2	0	0	0	0	1	0	2	0	0	0	5
	5:00 PM	0	1	0	0	3	0	0	0	0	1	0	0	5
	5:15 PM	1	1	0	0	0	0	0	0	0	0	0	0	2
	5:30 PM	2	0	1	0	0	0	0	0	2	0	0	0	5
	5:45 PM	0	3	0	0	2	0	0	0	0	1	0	0	6
	VOLUMES	6	12	2	0	7	0	2	1	4	2	1	1	38
	APPROACH %	30%	60%	10%	0%	100%	0%	29%	14%	57%	50%	25%	25%	
	APP/DEPART	20	/	15	7	/	13	7	/	3	4	/	7	0
	BEGIN PEAK HR	5:00 PM												
	VOLUMES	3	5	1	0	5	0	0	0	2	2	0	0	18
	APPROACH %	33%	56%	11%	0%	100%	0%	0%	0%	100%	100%	0%	0%	
	PEAK HR FACTOR	0.750			0.417			0.250			0.500			0.750
	APP/DEPART	9	/	5	5	/	9	2	/	1	2	/	3	0



U-TURNS				
NB	SB	EB	WB	TTL
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	0	0
0	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	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
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	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
1	0	1	0
0	0	0	0
1	0	1	1

1	0	1	0
---	---	---	---

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 5/11/23 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	San Bernardino University-State Highland	PROJECT #: LOCATION #: CONTROL:	SC4026 1 SIGNAL
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N S ▼	◀ W E ▶
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	NORTHBOUND University-State			SOUTHBOUND University-State			EASTBOUND Highland			WESTBOUND Highland			
LANES:	NL 1	NT 3	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 1	WL 2	WT 2	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

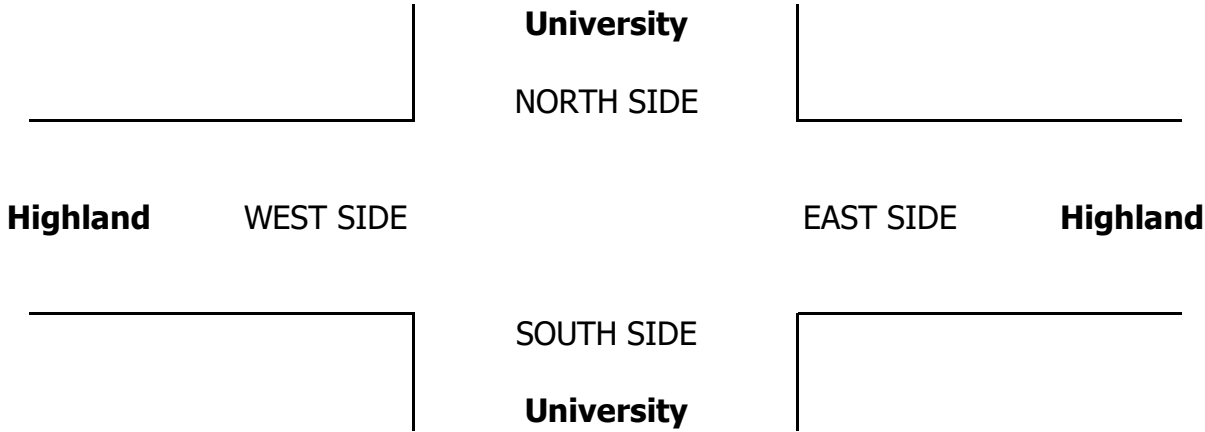
RTOR			
NRR 0	SRR 0	ERR 0	WRR 0

AM	7:00 AM	0	0	0	0	5	0	0	0	1	1	0	0	7
	7:15 AM	1	1	0	0	5	3	0	0	2	1	0	0	13
	7:30 AM	2	0	0	1	3	0	0	0	1	0	0	0	7
	7:45 AM	3	0	0	0	3	0	0	0	1	1	0	1	9
	8:00 AM	0	0	1	0	3	0	0	0	0	1	0	0	5
	8:15 AM	0	1	0	0	2	0	0	0	2	0	0	0	5
	8:30 AM	1	2	1	0	1	0	0	1	2	0	1	0	9
	8:45 AM	1	2	3	0	2	0	0	0	0	0	1	0	9
	VOLUMES	8	6	5	1	24	3	0	1	9	4	2	1	64
	APPROACH %	42%	32%	26%	4%	86%	11%	0%	10%	90%	57%	29%	14%	
PM	APP/DEPART	19	/	7	28	/	37	10	/	7	7	/	13	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	6	1	1	1	14	3	0	0	4	3	0	1	34
	APPROACH %	75%	13%	13%	6%	78%	17%	0%	0%	100%	75%	0%	25%	
	PEAK HR FACTOR	0.667			0.563			0.500			0.500			0.654
	APP/DEPART	8	/	2	18	/	21	4	/	2	4	/	9	0
	4:00 PM	0	1	2	0	2	0	0	0	0	1	2	0	8
	4:15 PM	1	0	0	0	3	0	0	1	0	0	2	0	7
	4:30 PM	1	0	1	0	1	0	0	1	0	0	1	0	5
	4:45 PM	0	2	0	0	0	0	0	0	2	0	1	0	5
	5:00 PM	2	4	1	0	2	0	0	1	0	2	0	0	12
	5:15 PM	0	3	2	0	2	0	0	0	0	0	0	0	7
	5:30 PM	4	4	0	0	1	0	0	0	0	0	0	0	9
	5:45 PM	2	4	0	0	0	0	0	0	0	0	0	0	6
	VOLUMES	10	18	6	0	11	0	0	3	2	3	6	0	59
	APPROACH %	29%	53%	18%	0%	100%	0%	0%	60%	40%	33%	67%	0%	
	APP/DEPART	34	/	18	11	/	16	5	/	9	9	/	16	0
	BEGIN PEAK HR	5:00 PM												
	VOLUMES	8	15	3	0	5	0	0	1	0	2	0	0	34
	APPROACH %	31%	58%	12%	0%	100%	0%	0%	100%	0%	100%	0%	0%	
	PEAK HR FACTOR	0.813			0.625			0.250			0.250			0.708
	APP/DEPART	26	/	15	5	/	7	1	/	4	2	/	8	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	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	2	0
0	0	0	0
2	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
3	0	2	0

2	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
5/11/23
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

San Bernardino
University-State
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC4026
1
SIGNAL

CLASS 5:
RV

NOTES:

AM
PM
MD
OTHER
OTHER

◀ W

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S

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E ▶

NORTHBOUND
University-State

SOUTHBOUND
University-State

EASTBOUND
Highland

WESTBOUND
Highland

LANES:

NL
1

NT
3

NR
1

SL
1

ST
2

SR
1

EL
1

ET
2

ER
1

WL
2

WT
2

WR
0

TOTAL

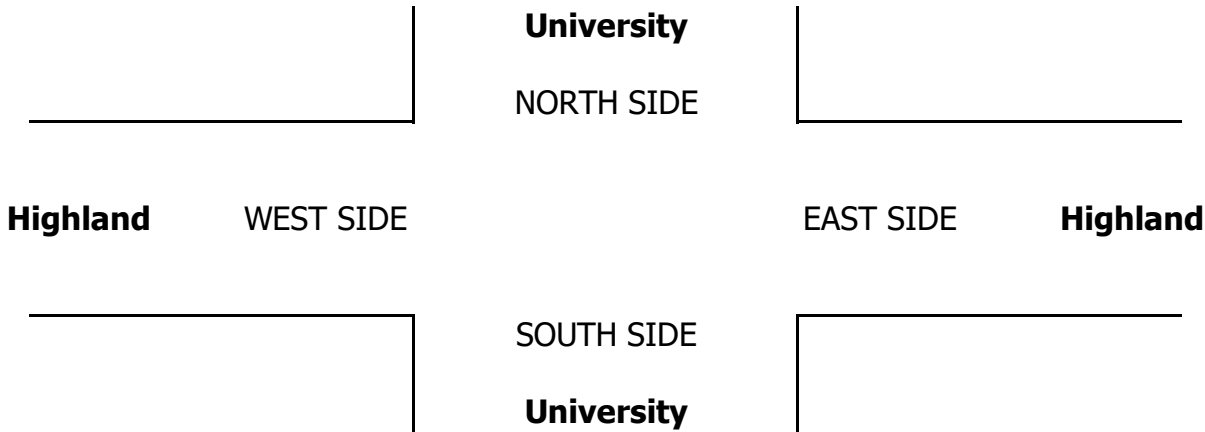
U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

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	0
0	0	0	0
0	0	0	0

AM	7:00 AM	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
	7:30 AM	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
	8:00 AM	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
	8:30 AM	0	0	0	1	0	0	0	0	0	0	0	1
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	1	0	0	0	0	0	0	0	1
	APPROACH %	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
PM	APP/DEPART	0	/	0	1	/	0	0	/	1	0	/	0
	BEGIN PEAK HR	7:15 AM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	4:00 PM	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
	4:30 PM	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
	5:00 PM	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
	5:30 PM	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
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	5:00 PM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0



0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 5/11/23 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	San Bernardino University-State Highland	PROJECT #: LOCATION #: CONTROL:	SC4026 1 SIGNAL
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CLASS 6:	NOTES:	AM PM MD OTHER OTHER		▲ N S ▼	
BUSES			◀ W		E ▶

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	University-State			University-State			Highland			Highland			
LANES:	NL 1	NT 3	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 1	WL 2	WT 2	WR 0	TOTAL

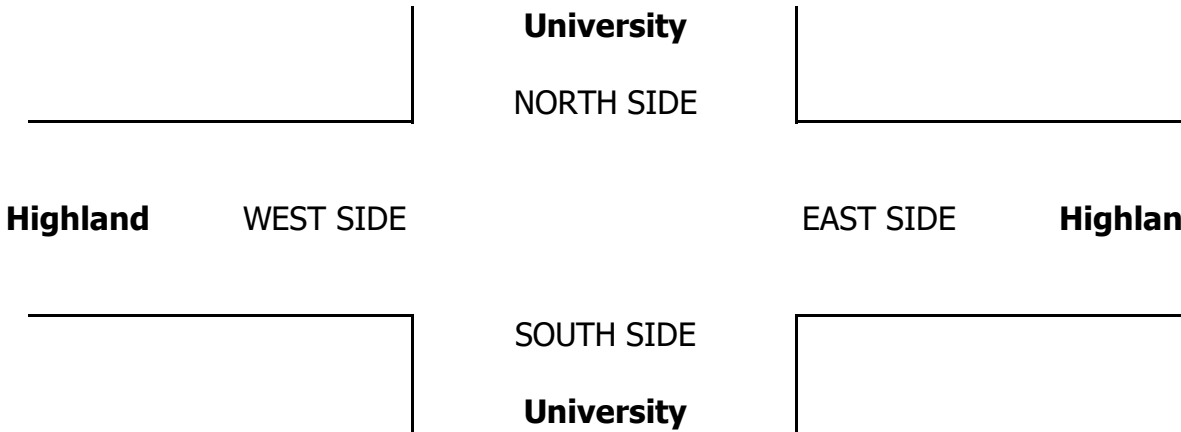
U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

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	0
0	0	0	0
0	0	0	0

AM	7:00 AM	0	0	0	0	0	0	2	1	0	0	2	5	
	7:15 AM	1	0	0	0	0	0	0	0	0	1	0	2	
	7:30 AM	0	1	0	0	2	1	0	1	0	0	0	5	
	7:45 AM	0	1	0	0	1	0	0	0	0	1	1	4	
	8:00 AM	0	1	0	0	0	0	1	0	0	0	0	2	
	8:15 AM	0	0	0	0	1	0	0	0	0	0	0	1	
	8:30 AM	0	2	0	0	3	0	1	0	0	0	0	6	
	8:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	
	VOLUMES	1	5	0	0	7	1	1	4	1	0	4	3	27
	APPROACH %	17%	83%	0%	0%	88%	13%	17%	67%	17%	0%	57%	43%	
APP/DEPART	6	/	9	8	/	8	6	/	4	7	/	6	0	
BEGIN PEAK HR	7:15 AM													
VOLUMES	1	3	0	0	3	1	0	2	0	0	2	1	13	
APPROACH %	25%	75%	0%	0%	75%	25%	0%	100%	0%	0%	67%	33%		
PEAK HR FACTOR	1.000			0.333			0.500			0.375			0.650	
APP/DEPART	4	/	4	4	/	3	2	/	2	3	/	4	0	
PM	4:00 PM	0	0	0	1	1	0	0	0	0	0	0	2	
	4:15 PM	0	0	0	0	0	0	1	0	0	1	1	3	
	4:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	
	4:45 PM	0	0	0	0	3	0	0	0	0	1	0	4	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	1	0	0	0	0	1	0	0	0	0	2	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	1	0	0	0	0	1	0	2	
	VOLUMES	0	2	0	1	6	0	0	2	0	0	3	1	15
	APPROACH %	0%	100%	0%	14%	86%	0%	0%	100%	0%	0%	75%	25%	
	APP/DEPART	2	/	3	7	/	6	2	/	3	4	/	3	0
	BEGIN PEAK HR	5:00 PM												
	VOLUMES	0	1	0	0	1	0	0	1	0	0	1	0	4
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR	0.250			0.250			0.250			0.250			0.500	
APP/DEPART	1	/	1	1	/	1	1	/	1	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

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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0



0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: Thu, Aug 11, 22	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper Highland	PROJECT #: LOCATION #: CONTROL:	SC3558 4 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	1	1	0.3	0.3	0.3	1	1.5	0.5	1	1.5	0.5	

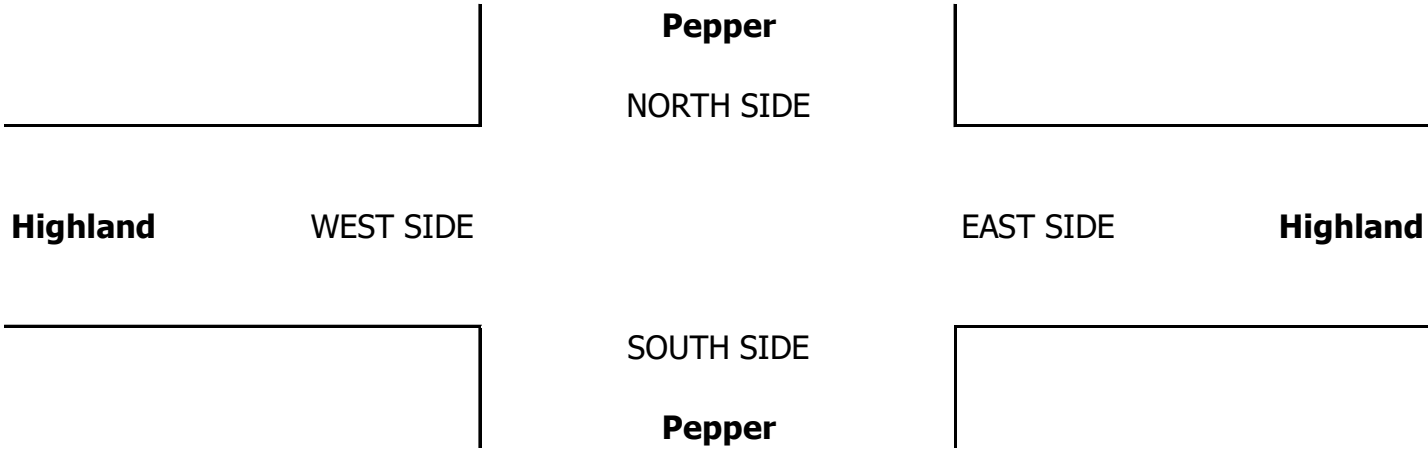
U-TURNS				
NB 0	SB 0	EB 0	WB 0	TTL
0	0	0	0	0
1	0	0	0	1
6	0	0	0	6
3	0	0	0	3
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
11	0	0	0	11

RTOR			
NRR 0	SRR 0	ERR 0	WRR 0
25	0	5	0
15	1	11	0
21	0	2	0
29	0	11	0
29	0	10	0
35	0	7	0
24	0	10	0
16	0	8	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
194	1	64	0

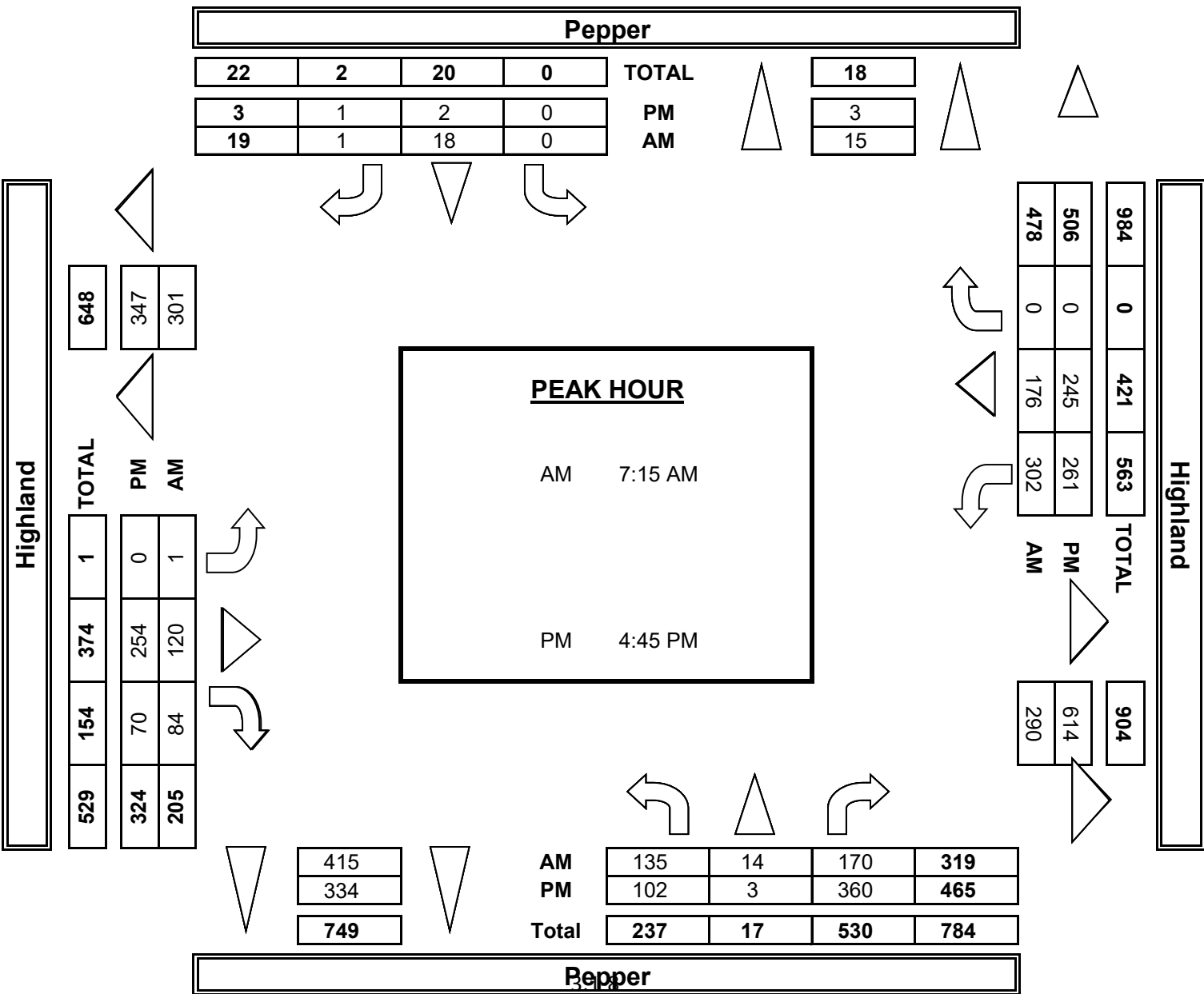
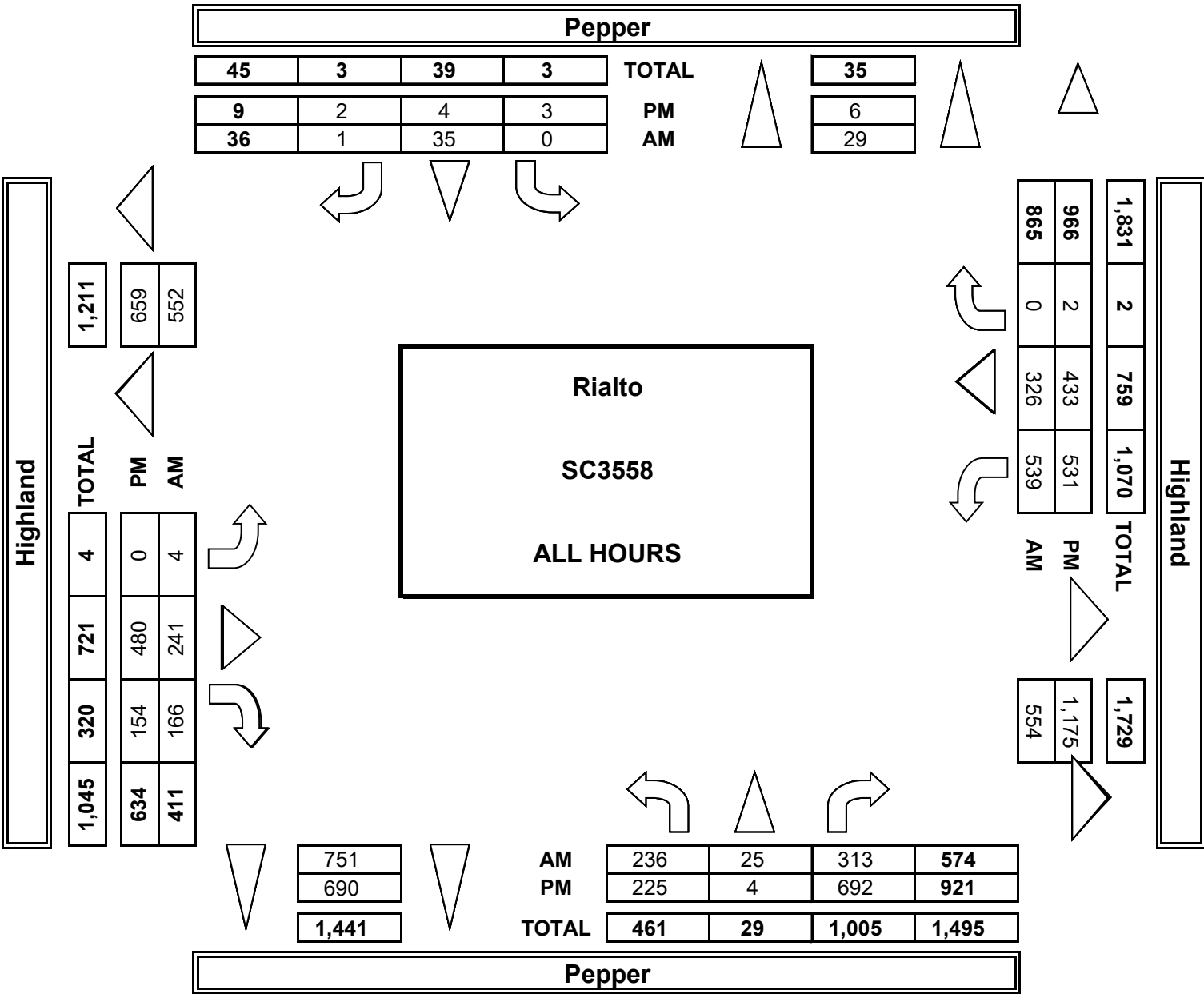
7:00 AM	24	5	33	0	1	0	1	18	19	83	29	0	213
7:15 AM	29	1	32	0	5	1	1	13	21	100	41	0	244
7:30 AM	34	5	32	0	5	0	0	22	16	86	51	0	251
7:45 AM	44	4	45	0	4	0	0	37	25	66	55	0	280
8:00 AM	28	4	61	0	4	0	0	48	22	50	29	0	246
8:15 AM	35	3	47	0	6	0	1	38	22	45	45	0	242
8:30 AM	16	2	34	0	4	0	1	30	22	49	37	0	195
8:45 AM	26	1	29	0	6	0	0	35	19	60	39	0	215
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	236	25	313	0	35	1	4	241	166	539	326	0	1,886
APPROACH %	41%	4%	55%	0%	97%	3%	1%	59%	40%	62%	38%	0%	
APP/DEPART	574	/	29	36	/	751	411	/	554	865	/	552	0
BEGIN PEAK HR	7:15 AM												1,021
VOLUMES	135	14	170	0	18	1	1	120	84	302	176	0	
APPROACH %	42%	4%	53%	0%	95%	5%	0%	59%	41%	63%	37%	0%	
PEAK HR FACTOR	0.858			0.792			0.732			0.848			
APP/DEPART	319	/	15	19	/	415	205	/	290	478	/	301	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	31	0	76	0	0	0	0	60	20	57	46	0	290
4:15 PM	31	1	87	1	0	1	0	49	17	65	48	0	300
4:30 PM	28	0	87	1	2	0	0	60	24	77	46	1	326
4:45 PM	31	3	90	0	2	0	0	62	15	57	65	0	325
5:00 PM	24	0	98	0	0	0	0	67	19	64	51	0	323
5:15 PM	27	0	79	0	0	1	0	55	24	66	59	0	311
5:30 PM	20	0	93	0	0	0	0	70	12	74	70	0	339
5:45 PM	33	0	82	1	0	0	0	57	23	71	48	1	316
VOLUMES	225	4	692	3	4	2	0	480	154	531	433	2	2,530
APPROACH %	24%	0%	75%	33%	44%	22%	0%	76%	24%	55%	45%	0%	
APP/DEPART	921	/	6	9	/	690	634	/	1,175	966	/	659	0
BEGIN PEAK HR	4:45 PM												1,298
VOLUMES	102	3	360	0	2	1	0	254	70	261	245	0	
APPROACH %	22%	1%	77%	0%	67%	33%	0%	78%	22%	52%	48%	0%	
PEAK HR FACTOR	0.938			0.375			0.942			0.878			
APP/DEPART	465	/	3	3	/	334	324	/	614	506	/	347	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	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
1	0	0	0	1

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
45	0	6	0
52	1	12	0
54	0	6	0
30	0	7	0
57	0	7	0
27	1	11	0
46	0	3	0
41	0	8	0
352	2	60	0

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
8/11/22
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Rialto
Pepper
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC3558
4
SIGNAL

CLASS 1:
PASSENGER
VEHICLES

NOTES:

AM
PM
MD
OTHER
OTHER

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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	1	1	0.3	0.3	0.3	1	1.5	0.5	1	1.5	0.5	

AM	7:00 AM	16	3	30	0	0	0	0	16	12	78	26	0	181
	7:15 AM	22	0	30	0	0	0	1	11	17	93	38	0	212
	7:30 AM	27	1	28	0	0	0	0	19	6	77	50	0	208
	7:45 AM	31	0	44	0	1	0	0	36	21	61	48	0	242
	8:00 AM	23	0	58	0	0	0	0	47	14	44	29	0	215
	8:15 AM	28	0	46	0	1	0	0	37	16	41	44	0	213
	8:30 AM	9	1	32	0	0	0	0	29	15	45	35	0	166
	8:45 AM	15	0	24	0	0	0	0	31	12	54	38	0	174
	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	171	5	292	0	2	0	1	226	113	493	308	0	1,611
	APPROACH %	37%	1%	62%	0%	100%	0%	0%	66%	33%	62%	38%	0%	
	APP/DEPART	468	/	6	2	/	618	340	/	518	801	/	469	0
PM	BEGIN PEAK HR	7:15 AM												
	VOLUMES	93	1	160	0	1	0	1	113	58	275	165	0	877
	APPROACH %	35%	0%	61%	0%	100%	0%	1%	66%	34%	63%	38%	0%	
	PEAK HR FACTOR	0.815			0.250			0.705			0.840			0.906
	APP/DEPART	264	/	2	1	/	344	172	/	273	440	/	258	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	29	0	71	0	0	0	0	56	19	55	43	0	273
	4:15 PM	27	1	78	1	0	1	0	47	16	61	48	0	280
	4:30 PM	26	0	82	1	2	0	0	60	24	75	46	1	317
	4:45 PM	30	3	82	0	2	0	0	61	15	54	63	0	310
	5:00 PM	23	0	94	0	0	0	0	63	17	62	50	0	309
	5:15 PM	25	0	78	0	0	1	0	54	23	65	59	0	305
	5:30 PM	18	0	87	0	0	0	0	68	9	73	69	0	324
	5:45 PM	33	0	76	1	0	0	0	54	20	68	47	1	300
	VOLUMES	211	4	648	3	4	2	0	463	143	513	425	2	2,418
	APPROACH %	24%	0%	75%	33%	44%	22%	0%	76%	24%	55%	45%	0%	
	APP/DEPART	863	/	6	9	/	661	606	/	1,114	940	/	637	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	95	3	341	0	2	1	0	246	64	254	241	0	1,248
	APPROACH %	22%	1%	78%	0%	67%	33%	0%	79%	21%	51%	49%	0%	
	PEAK HR FACTOR	0.940			0.375			0.969			0.871			0.963
	APP/DEPART	440	/	3	3	/	321	310	/	587	495	/	337	0

Pepper

NORTH SIDE

Highland

WEST SIDE

EAST SIDE

Highland

SOUTH SIDE

Pepper

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
1	0	0	0	1
5	0	0	0	5
3	0	0	0	3
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	0
0	0	0	0	0
10	0	0	0	10

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
24	0	4	0
15	0	8	0
18	0	0	0
28	0	10	0
27	0	7	0
35	0	6	0
23	0	8	0
13	0	7	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
183	0	50	0

88	0	25	0
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0	0	0	0	0
0	0	0	0	0
0	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
1	0	0	0	1

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
44	0	5	0
48	1	11	0
52	0	6	0
27	0	7	0
56	0	7	0
27	1	10	0
43	0	3	0
39	0	8	0
336	2	57	0

153	1	27	0
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3.1-9

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper Highland	PROJECT #: LOCATION #: CONTROL:	SC3558 4 SIGNAL
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ ▼
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			Highland			Highland			
LANES:	NL 1	NT 1	NR 1	SL 0.3	ST 0.3	SR 0.3	EL 1	ET 1.5	ER 0.5	WL 1	WT 1.5	WR 0.5	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

RTOR			
NRR 0	SRR 0	ERR 0	WRR 0

AM	7:00 AM	5	1	1	0	0	0	0	0	1	3	1	0	12
	7:15 AM	2	1	2	0	2	1	0	2	1	5	1	0	17
	7:30 AM	3	1	3	0	0	0	0	2	3	3	1	0	16
	7:45 AM	2	1	0	0	1	0	0	1	2	3	2	0	12
	8:00 AM	0	2	0	0	3	0	0	1	1	1	0	0	8
	8:15 AM	2	1	1	0	2	0	0	0	1	1	1	0	9
	8:30 AM	0	1	0	0	2	0	0	0	1	2	2	0	8
	8:45 AM	0	0	3	0	0	0	0	3	2	2	0	0	10
	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	14	8	10	0	10	1	0	9	12	20	8	0	92
PM	APPROACH %	44%	25%	31%	0%	91%	9%	0%	43%	57%	71%	29%	0%	
	APP/DEPART	32	/	8	11	/	42	21	/	19	28	/	23	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	7	5	5	0	6	1	0	6	7	12	4	0	53
	APPROACH %	41%	29%	29%	0%	86%	14%	0%	46%	54%	75%	25%	0%	
	PEAK HR FACTOR	0.607			0.583			0.650			0.667			0.779
	APP/DEPART	17	/	5	7	/	25	13	/	11	16	/	12	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	1	0	5	0	0	0	0	3	0	1	2	0	12
	4:15 PM	2	0	6	0	0	0	0	0	1	3	0	0	12
	4:30 PM	1	0	4	0	0	0	0	0	0	2	0	0	7
	4:45 PM	0	0	4	0	0	0	0	1	0	3	0	0	8
	5:00 PM	0	0	3	0	0	0	0	3	2	1	0	0	9
	5:15 PM	1	0	0	0	0	0	0	0	1	1	0	0	3
	5:30 PM	0	0	4	0	0	0	0	2	2	0	1	0	9
	5:45 PM	0	0	4	0	0	0	0	2	2	2	0	0	10
	VOLUMES	5	0	30	0	0	0	0	11	8	13	3	0	70
	APPROACH %	14%	0%	86%	0%	0%	0%	0%	58%	42%	81%	19%	0%	
	APP/DEPART	35	/	0	0	/	21	19	/	41	16	/	8	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	1	0	11	0	0	0	0	6	5	5	1	0	29
	APPROACH %	8%	0%	92%	0%	0%	0%	0%	55%	45%	83%	17%	0%	
	PEAK HR FACTOR	0.750			0.000			0.550			0.500			0.806
	APP/DEPART	12	/	0	0	/	10	11	/	17	6	/	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
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

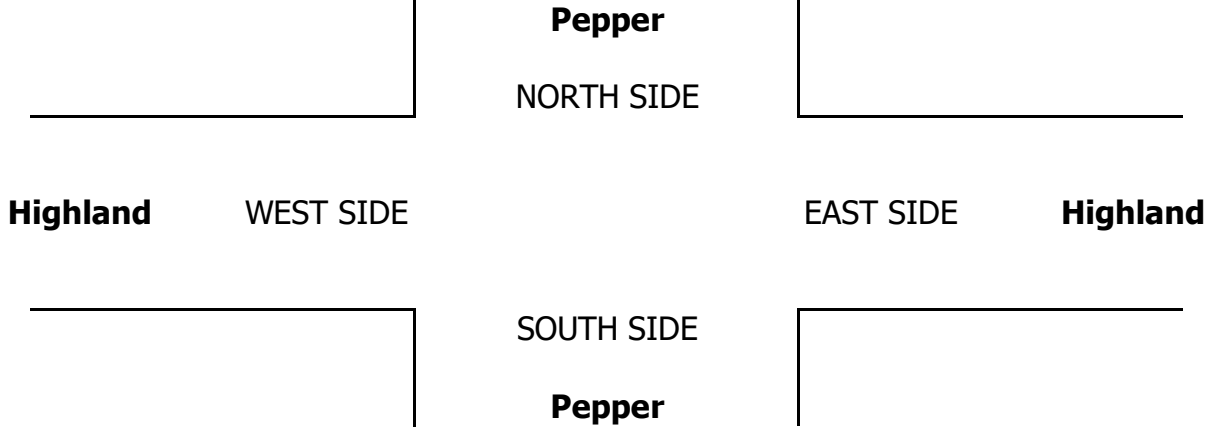
0	0	0	0
0	1	1	0
3	0	1	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	1	0
3	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
6	1	5	0

3	1	3	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	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
2	0	1	0
1	0	0	0
1	0	0	0
1	0	0	0
0	0	0	0
0	0	1	0
2	0	0	0
1	0	0	0
9	0	2	0

4	0	1	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
8/11/22
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Rialto
Pepper
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC3558
4
SIGNAL

CLASS 3:
3-AXLE
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	1	1	0.3	0.3	0.3	1	1.5	0.5	1	1.5	0.5	

AM	7:00 AM	2	1	0	0	1	0	0	0	1	0	1	0	6
	7:15 AM	3	0	0	0	2	0	0	0	1	0	2	0	8
	7:30 AM	1	2	0	0	3	0	0	1	2	3	0	0	12
	7:45 AM	5	1	1	0	0	0	0	1	0	1	1	0	9
	8:00 AM	0	1	2	0	0	0	0	2	3	0	0	0	8
	8:15 AM	1	1	0	0	0	0	0	1	2	0	0	0	5
	8:30 AM	0	0	1	0	0	0	1	0	2	0	0	0	4
	8:45 AM	3	1	0	0	1	0	0	1	0	3	0	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	15	7	4	0	7	0	1	2	8	13	4	0	61
	APPROACH %	58%	27%	15%	0%	100%	0%	9%	18%	73%	76%	24%	0%	
	APP/DEPART	26	/	8	7	/	28	11	/	6	17	/	19	0
PM	BEGIN PEAK HR	7:15 AM												
	VOLUMES	9	4	3	0	5	0	0	1	6	6	3	0	37
	APPROACH %	56%	25%	19%	0%	100%	0%	0%	14%	86%	67%	33%	0%	
	PEAK HR FACTOR	0.571			0.417			0.583			0.750			0.771
	APP/DEPART	16	/	4	5	/	17	7	/	4	9	/	12	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	1	0	0	0	0	0	0	0	1	0	1	0	3
	4:15 PM	1	0	1	0	0	0	0	1	0	0	0	0	3
	4:30 PM	1	0	1	0	0	0	0	0	0	0	0	0	2
	4:45 PM	0	0	2	0	0	0	0	0	0	1	1	0	3
	5:00 PM	1	0	0	0	0	0	0	1	0	0	0	0	2
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	2	0	1	0	0	0	0	0	1	0	0	0	4
	5:45 PM	0	0	1	0	0	0	0	1	1	1	0	0	4
	VOLUMES	6	0	6	0	0	0	0	3	3	1	2	0	21
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	50%	50%	33%	67%	0%	
	APP/DEPART	12	/	0	0	/	4	6	/	9	3	/	8	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	3	0	3	0	0	0	0	1	1	0	1	0	9
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	50%	50%	0%	100%	0%	
	PEAK HR FACTOR	0.500			0.000			0.500			0.250			0.563
	APP/DEPART	6	/	0	0	/	1	2	/	4	1	/	4	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

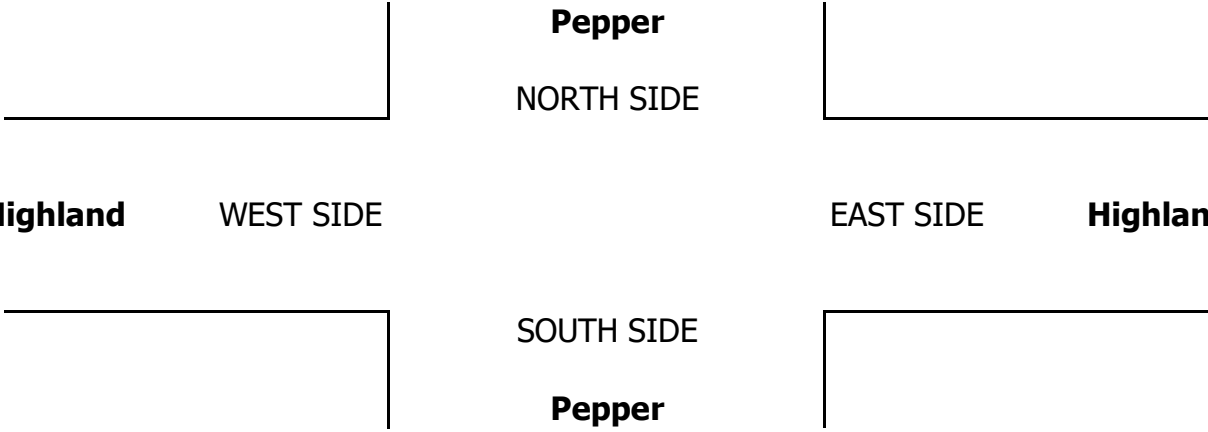
RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	0	1	0
0	0	0	0
1	0	0	0
0	0	1	0
1	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
3	0	2	0

2	0	2	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	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	0	0
1	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
1	0	0	0
5	0	1	0

2	0	0	0
---	---	---	---



INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper Highland	PROJECT #: LOCATION #: CONTROL:	SC3558 4 SIGNAL
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ E
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			Highland			Highland			
LANES:	NL 1	NT 1	NR 1	SL 0.3	ST 0.3	SR 0.3	EL 1	ET 1.5	ER 0.5	WL 1	WT 1.5	WR 0.5	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

RTOR			
NRR 0	SRR 0	ERR 0	WRR 0

AM	7:00 AM	1	0	2	0	0	0	1	1	5	2	1	0	13
	7:15 AM	2	0	0	0	1	0	0	0	2	2	0	0	7
	7:30 AM	2	1	0	0	2	0	0	0	5	3	0	0	13
	7:45 AM	6	2	0	0	2	0	0	0	1	2	3	0	16
	8:00 AM	5	1	1	0	1	0	0	0	5	2	0	0	15
	8:15 AM	4	1	0	0	3	0	1	0	4	1	0	0	14
	8:30 AM	7	0	1	0	2	0	0	1	6	0	0	0	17
	8:45 AM	8	0	2	0	5	0	0	0	5	1	1	0	22
	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	35	5	6	0	16	0	2	2	33	13	5	0	117
	APPROACH %	76%	11%	13%	0%	100%	0%	5%	5%	89%	72%	28%	0%	
PM	APP/DEPART	46	/	7	16	/	62	37	/	8	18	/	40	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	15	4	1	0	6	0	0	0	13	9	3	0	51
	APPROACH %	75%	20%	5%	0%	100%	0%	0%	0%	100%	75%	25%	0%	
	PEAK HR FACTOR	0.625			0.750			0.650			0.600			0.797
	APP/DEPART	20	/	4	6	/	28	13	/	1	12	/	18	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	0	0	0	0	0	0	0	0	0	1	0	0	1
	4:15 PM	1	0	2	0	0	0	0	1	0	1	0	0	5
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	1	0	2	0	0	0	0	0	0	0	0	0	3
	5:00 PM	0	0	1	0	0	0	0	0	0	1	1	0	3
	5:15 PM	1	0	1	0	0	0	0	0	0	0	0	0	2
	5:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	2
	5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	1
	VOLUMES	3	0	8	0	0	0	0	1	0	4	1	0	17
	APPROACH %	27%	0%	73%	0%	0%	0%	0%	100%	0%	80%	20%	0%	
	APP/DEPART	11	/	0	0	/	4	1	/	9	5	/	4	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	2	0	5	0	0	0	0	0	0	2	1	0	10
	APPROACH %	29%	0%	71%	0%	0%	0%	0%	0%	0%	67%	33%	0%	
	PEAK HR FACTOR	0.583			0.000			0.000			0.375			0.833
	APP/DEPART	7	/	0	0	/	2	0	/	5	3	/	3	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

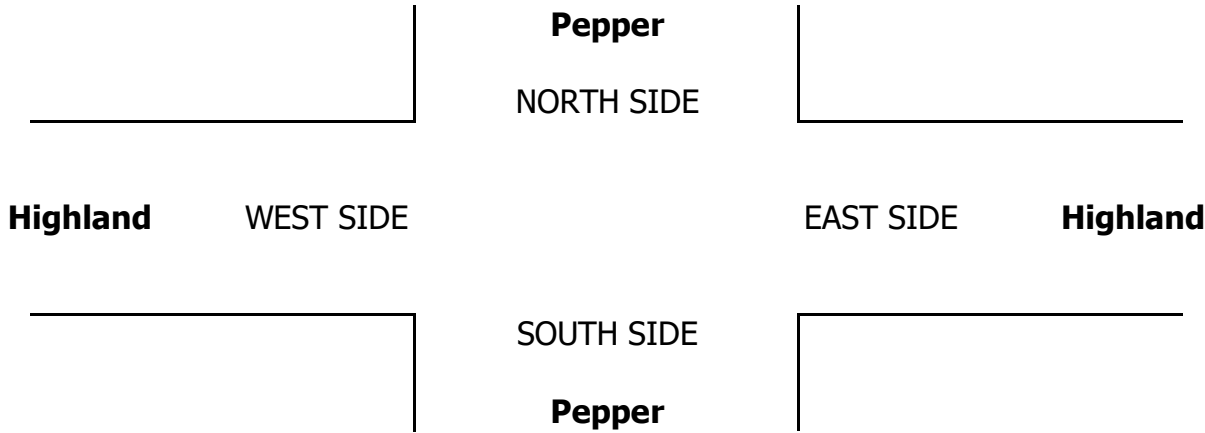
1	0	1	0
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0	0	1	0
0	0	0	0
1	0	2	0
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0	0	1	0
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
2	0	7	0

1	0	4	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	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
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	0	0

1	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper Highland	PROJECT #: LOCATION #: CONTROL:	SC3558 4 SIGNAL
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CLASS 5:	NOTES:	AM		▲	
RV		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

RTOR			
NRR	SRR	ERR	WRR

AM	7:00 AM	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
	7:30 AM	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
	8:00 AM	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
	8:30 AM	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
	9:00 AM	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
	9:30 AM	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
	VOLUMES	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
PM	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	7:15 AM											
	VOLUMES	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		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	03:00 PM	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
	3:30 PM	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
	4:00 PM	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
	4:30 PM	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
	5:00 PM	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
	5:30 PM	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
	VOLUMES	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
	BEGIN PEAK HR	4:45 PM											
	VOLUMES	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		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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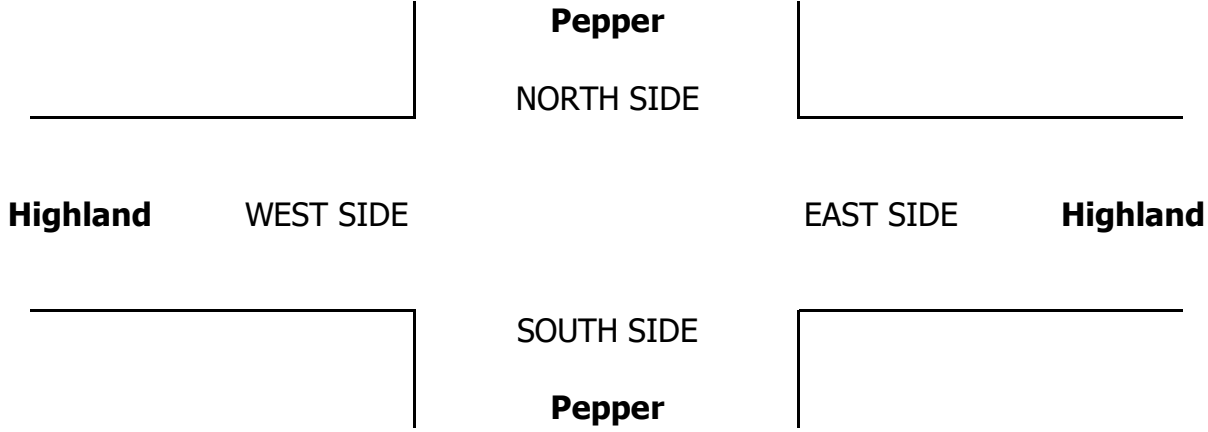
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0	0	0	0

0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
8/11/22
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Rialto
Pepper
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC3558
4
SIGNAL

CLASS 6:

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◀ W
S
▼

E ▶

BUSES

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			Highland			Highland			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	1	1	0.3	0.3	0.3	1	1.5	0.5	1	1.5	0.5	

AM	7:00 AM	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	0	0
	7:30 AM	0	0	1	0	0	0	0	0	0	0	0	1
	7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	1	0	0	0	0	1
	8:30 AM	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
	9:00 AM	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
	9:30 AM	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
	VOLUMES	0	0	1	0	0	0	2	0	0	1	0	4
	APPROACH %	0%	0%	100%	0%	0%	0%	0%	100%	0%	0%	100%	0%
APP/DEPART	1	/	0	0	/	0	2	/	3	1	/	1	
BEGIN PEAK HR	7:15 AM												
VOLUMES	0	0	1	0	0	0	0	0	0	0	1	0	2
APPROACH %	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%	0%	
PEAK HR FACTOR	0.250			0.000			0.000			0.250			0.500
APP/DEPART	1	/	0	0	/	0	0	/	1	1	/	1	0
PM	03:00 PM	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
	3:30 PM	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
	4:00 PM	0	0	0	0	0	0	1	0	0	0	0	1
	4:15 PM	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
	4:45 PM	0	0	0	0	0	0	0	0	0	1	0	1
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	1	0	0	0	0	1
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1
	VOLUMES	0	0	0	0	0	0	2	0	0	2	0	4
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%
APP/DEPART	0	/	0	0	/	0	2	/	2	2	/	2	
BEGIN PEAK HR	4:45 PM												
VOLUMES	0	0	0	0	0	0	1	0	0	1	0	2	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR	0.000			0.000			0.250			0.250			0.500
APP/DEPART	0	/	0	0	/	0	1	/	1	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

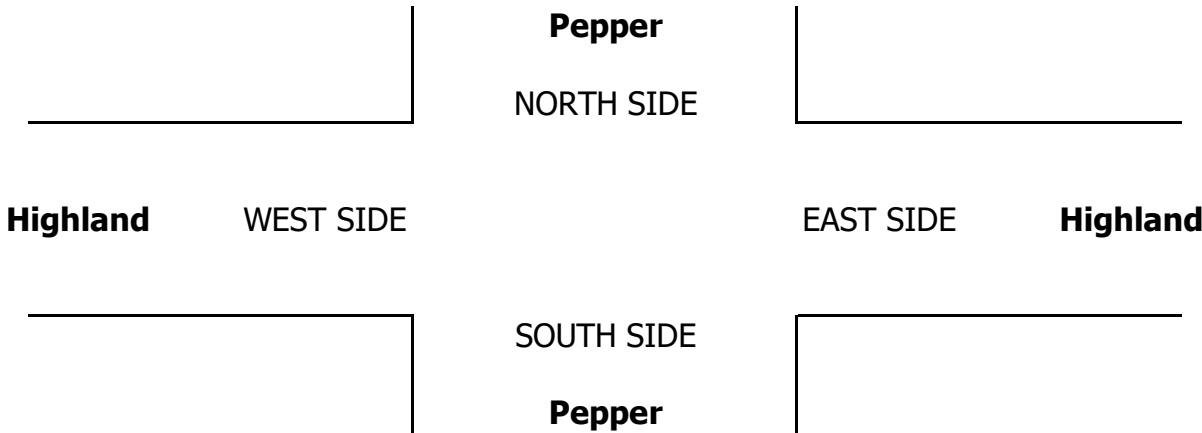
RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
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0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: Thu, Aug 11, 22	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 WB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 5 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 WB Ramps			I-210 WB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	X	X	1.5	0.5	X	X	X	1	0.5	0.5	
7:00 AM	94	36	0	0	71	41	0	0	0	77	0	14	333
7:15 AM	121	61	0	0	74	46	0	0	0	105	1	16	424
7:30 AM	103	60	0	0	70	54	0	0	0	134	1	19	441
7:45 AM	126	85	0	0	54	40	0	0	0	93	0	17	415
8:00 AM	92	75	0	0	32	35	0	0	0	60	0	12	306
8:15 AM	73	60	0	0	46	31	0	0	0	58	0	14	282
8:30 AM	70	40	0	0	43	38	0	0	0	60	1	10	262
8:45 AM	69	46	0	0	41	32	0	0	0	58	0	11	257
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	748	463	0	0	431	317	0	0	0	645	3	113	2,720
APPROACH %	62%	38%	0%	0%	58%	42%	0%	0%	0%	85%	0%	15%	
APP/DEPART	1,211	/	576	748	/	1,076	0	/	0	761	/	1,068	0
BEGIN PEAK HR	7:00 AM												
VOLUMES	444	242	0	0	269	181	0	0	0	409	2	66	1,613
APPROACH %	65%	35%	0%	0%	60%	40%	0%	0%	0%	86%	0%	14%	
PEAK HR FACTOR	0.813			0.907			0.000			0.774			0.914
APP/DEPART	686	/	308	450	/	678	0	/	0	477	/	627	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	100	92	0	0	40	33	0	0	0	68	1	17	351
4:15 PM	88	116	0	0	52	33	0	0	0	76	1	11	377
4:30 PM	61	95	0	0	54	50	0	0	0	70	1	18	349
4:45 PM	95	104	0	0	49	28	0	0	0	85	1	17	379
5:00 PM	97	104	0	0	44	32	0	0	0	71	3	11	362
5:15 PM	83	94	0	0	63	34	0	0	0	59	1	20	354
5:30 PM	80	107	0	0	41	46	0	0	0	79	1	14	368
5:45 PM	87	87	0	0	52	35	0	0	0	75	1	12	349
VOLUMES	691	799	0	0	395	291	0	0	0	583	10	120	2,889
APPROACH %	46%	54%	0%	0%	58%	42%	0%	0%	0%	82%	1%	17%	
APP/DEPART	1,490	/	919	686	/	978	0	/	0	713	/	992	0
BEGIN PEAK HR	4:15 PM												
VOLUMES	341	419	0	0	199	143	0	0	0	302	6	57	1,467
APPROACH %	45%	55%	0%	0%	58%	42%	0%	0%	0%	83%	2%	16%	
PEAK HR FACTOR	0.931			0.822			0.000			0.886			0.968
APP/DEPART	760	/	476	342	/	501	0	/	0	365	/	490	0

[illegible]

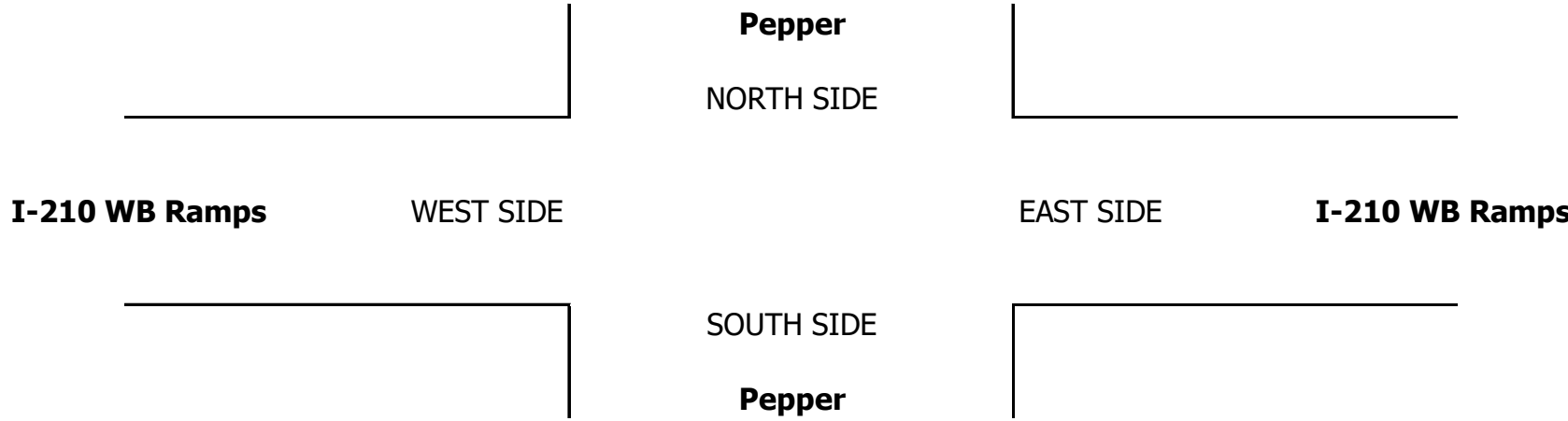
RTOR			
NRR 0	SRR 0	ERR 0	WRR 0
0	11	0	10
0	8	0	7
0	12	0	9
0	10	0	10
0	13	0	5
0	13	0	9
0	14	0	5
0	12	0	3
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	93	0	58

0	41	0	36
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[illegible]

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	15	0	7
0	15	0	7
0	24	0	11
0	16	0	5
0	12	0	5
0	13	0	10
0	14	0	8
0	17	0	7
0	126	0	60

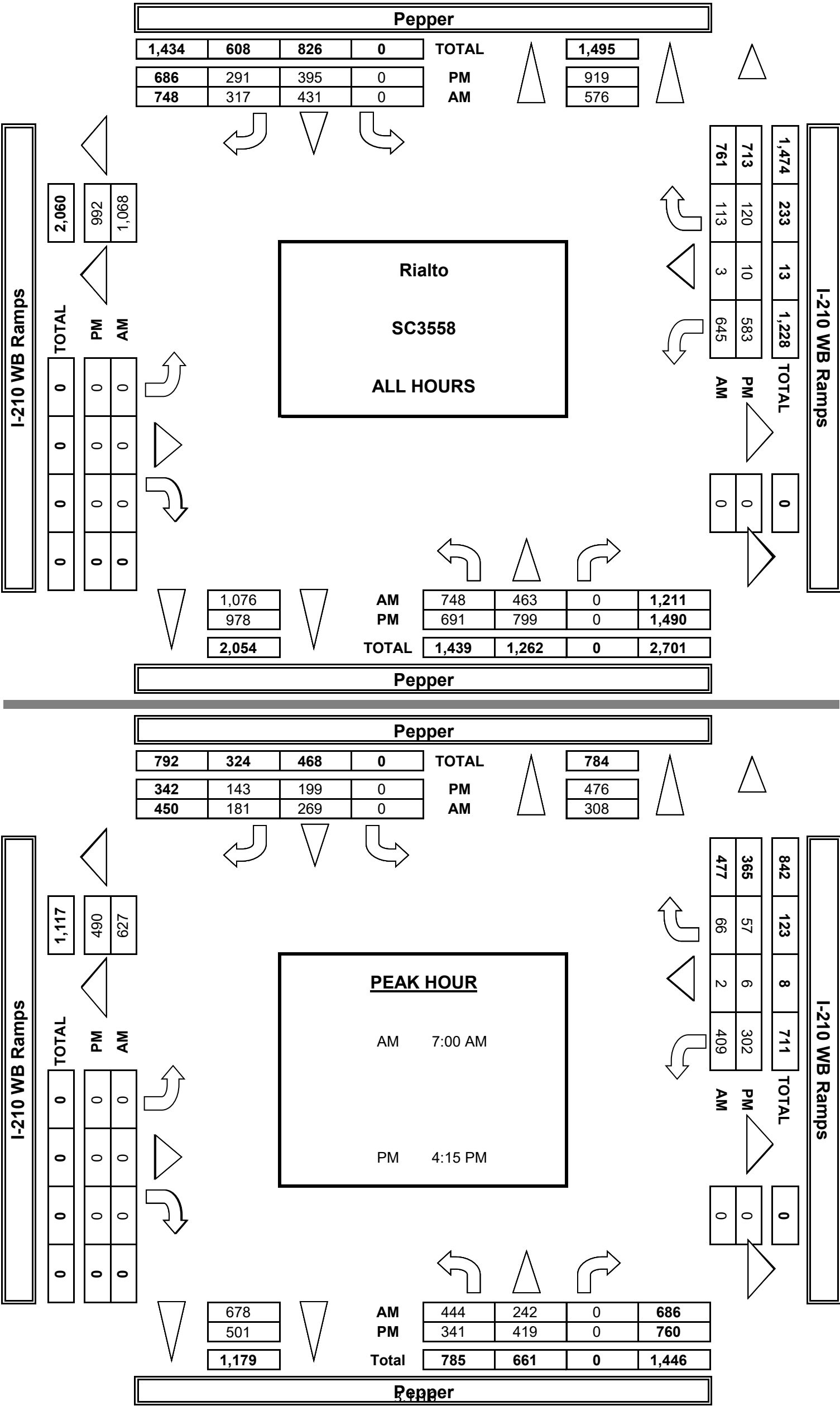
0	67	0	28
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AM		7:00 AM
		7:15 AM
		7:30 AM
		7:45 AM
		8:00 AM
		8:15 AM
		8:30 AM
		8:45 AM
		9:00 AM
		9:15 AM
		9:30 AM
	9:45 AM	
		TOTAL
PM		3:00 PM
		3:15 PM
		3:30 PM
		3:45 PM
		4:00 PM
		4:15 PM
		4:30 PM
		4:45 PM
		5:00 PM
		5:15 PM
		5:30 PM
	5:45 PM	
		TOTAL

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 WB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 5 SIGNAL
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CLASS 1: PASSENGER VEHICLES	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	E ▶
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	NORTHBOUND Pepper			SOUTHBOUND Pepper			EASTBOUND I-210 WB Ramps			WESTBOUND I-210 WB Ramps			
LANES:	NL 1	NT 2	NR X	SL X	ST 1.5	SR 0.5	EL X	ET X	ER X	WL 1	WT 0.5	WR 0.5	TOTAL

AM	7:00 AM	82	30	0	0	61	34	0	0	0	72	0	7	286
	7:15 AM	108	51	0	0	68	37	0	0	0	103	1	13	381
	7:30 AM	97	53	0	0	61	41	0	0	0	130	1	15	398
	7:45 AM	116	75	0	0	47	34	0	0	0	87	0	11	370
	8:00 AM	81	65	0	0	24	26	0	0	0	54	0	10	260
	8:15 AM	66	51	0	0	37	25	0	0	0	56	0	10	245
	8:30 AM	64	32	0	0	37	31	0	0	0	56	1	8	229
	8:45 AM	58	33	0	0	31	22	0	0	0	49	0	7	200
	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	672	390	0	0	366	250	0	0	0	607	3	81	2,369
	APPROACH %	63%	37%	0%	0%	59%	41%	0%	0%	0%	88%	0%	12%	
	APP/DEPART	1,062	/	471	616	/	973	0	/	0	691	/	925	0
PM	BEGIN PEAK HR	7:00 AM												
	VOLUMES	403	209	0	0	237	146	0	0	0	392	2	46	1,435
	APPROACH %	66%	34%	0%	0%	62%	38%	0%	0%	0%	89%	0%	10%	
	PEAK HR FACTOR	0.801			0.912			0.000			0.753			0.901
	APP/DEPART	612	/	255	383	/	629	0	/	0	440	/	551	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	92	90	0	0	38	32	0	0	0	64	1	16	333
	4:15 PM	84	104	0	0	49	31	0	0	0	70	0	10	348
	4:30 PM	57	88	0	0	54	48	0	0	0	63	1	17	328
	4:45 PM	88	92	0	0	47	27	0	0	0	81	1	17	353
	5:00 PM	93	99	0	0	42	31	0	0	0	69	3	11	348
	5:15 PM	80	90	0	0	60	33	0	0	0	59	1	18	341
	5:30 PM	75	101	0	0	38	46	0	0	0	77	1	13	351
	5:45 PM	84	83	0	0	50	31	0	0	0	74	1	12	335
	VOLUMES	653	747	0	0	378	279	0	0	0	557	9	114	2,737
	APPROACH %	47%	53%	0%	0%	58%	42%	0%	0%	0%	82%	1%	17%	
	APP/DEPART	1,400	/	861	657	/	935	0	/	0	680	/	941	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	322	383	0	0	192	137	0	0	0	283	5	55	1,377
	APPROACH %	46%	54%	0%	0%	58%	42%	0%	0%	0%	83%	1%	16%	
	PEAK HR FACTOR	0.918			0.806			0.000			0.866			0.975
	APP/DEPART	705	/	438	329	/	475	0	/	0	343	/	464	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

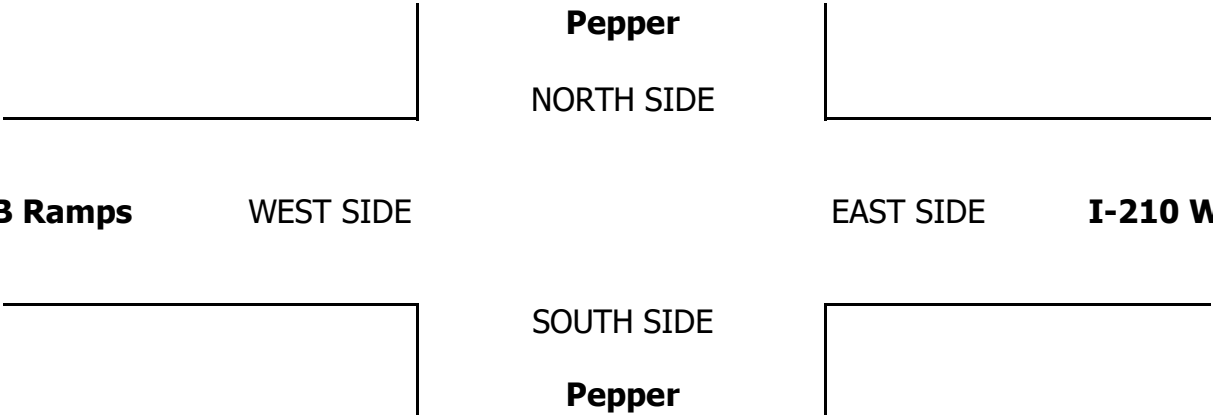
RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	8	0	5
0	8	0	6
0	8	0	8
0	10	0	7
0	12	0	4
0	12	0	7
0	11	0	3
0	11	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	80	0	40

0	34	0	26
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	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	6
0	15	0	7
0	23	0	10
0	16	0	5
0	12	0	5
0	12	0	9
0	14	0	8
0	16	0	7
0	123	0	57

0	66	0	27
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 WB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 5 SIGNAL
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ E ▼
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 WB Ramps			I-210 WB Ramps			
LANES:	NL 1	NT 2	NR X	SL X	ST 1.5	SR 0.5	EL X	ET X	ER X	WL 1	WT 0.5	WR 0.5	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

RTOR			
NRR 0	SRR 0	ERR 0	WRR 0

AM	7:00 AM	7	3	0	0	4	3	0	0	0	2	0	4	23
	7:15 AM	8	5	0	0	2	6	0	0	0	2	0	3	26
	7:30 AM	5	2	0	0	2	2	0	0	0	2	0	2	15
	7:45 AM	3	1	0	0	2	4	0	0	0	3	0	0	13
	8:00 AM	3	2	0	0	3	1	0	0	0	1	0	0	10
	8:15 AM	3	3	0	0	2	2	0	0	0	0	0	3	13
	8:30 AM	2	1	0	0	2	2	0	0	0	1	0	0	8
	8:45 AM	8	3	0	0	2	3	0	0	0	5	0	0	21
	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	39	20	0	0	19	23	0	0	0	16	0	12	129
PM	APPROACH %	66%	34%	0%	0%	45%	55%	0%	0%	0%	57%	0%	43%	
	APP/DEPART	59	/	32	42	/	35	0	/	0	28	/	62	0
	BEGIN PEAK HR	7:00 AM												
	VOLUMES	23	11	0	0	10	15	0	0	0	9	0	9	77
	APPROACH %	68%	32%	0%	0%	40%	60%	0%	0%	0%	50%	0%	50%	
	PEAK HR FACTOR	0.654			0.781			0.000			0.750			0.740
	APP/DEPART	34	/	20	25	/	19	0	/	0	18	/	38	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	2	0	0	1	0	0	0	0	4	0	0	11
	4:15 PM	2	7	0	0	3	1	0	0	0	3	1	1	18
	4:30 PM	4	5	0	0	0	2	0	0	0	6	0	1	18
	4:45 PM	3	7	0	0	2	1	0	0	0	2	0	0	15
	5:00 PM	3	3	0	0	2	0	0	0	0	2	0	0	10
	5:15 PM	2	3	0	0	2	1	0	0	0	0	0	1	9
	5:30 PM	0	3	0	0	2	0	0	0	0	2	0	0	7
	5:45 PM	2	2	0	0	2	2	0	0	0	0	0	0	8
	VOLUMES	20	32	0	0	14	7	0	0	0	19	1	3	96
	APPROACH %	38%	62%	0%	0%	67%	33%	0%	0%	0%	83%	4%	13%	
	APP/DEPART	52	/	35	21	/	33	0	/	0	23	/	28	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	12	22	0	0	7	4	0	0	0	13	1	2	61
	APPROACH %	35%	65%	0%	0%	64%	36%	0%	0%	0%	81%	6%	13%	
	PEAK HR FACTOR	0.850			0.688			0.000			0.571			0.847
	APP/DEPART	34	/	24	11	/	20	0	/	0	16	/	17	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0

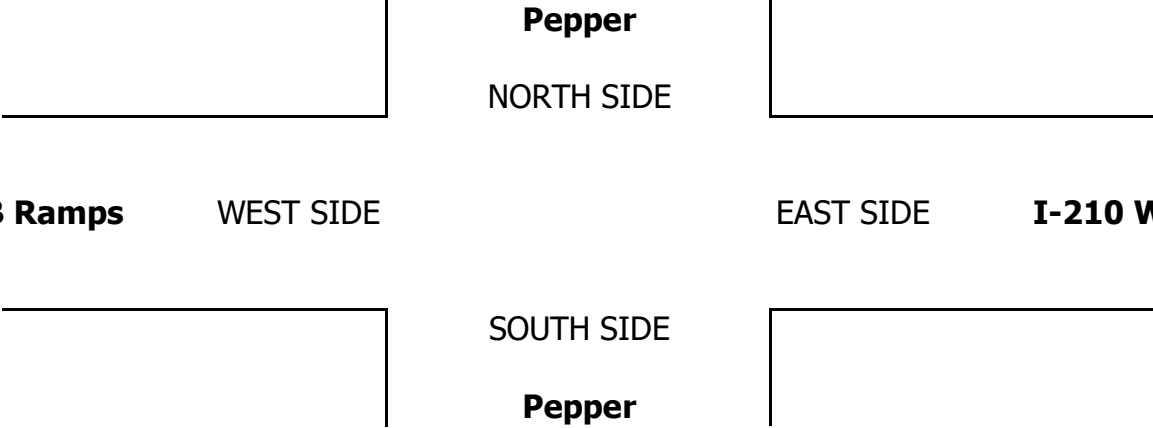
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	4	0	5
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0

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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	0	0	0
0	0	0	0
0	1	0	1
0	0	0	0
0	1	0	0
0	3	0	2

0	1	0	1
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
8/11/22
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Rialto
Pepper
I-210 WB Ramps

PROJECT #:
LOCATION #:
CONTROL:

SC3558
5
SIGNAL

CLASS 3:
3-AXLE
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

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N
◀ W
S
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E ▶

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 WB Ramps			I-210 WB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	X	X	1.5	0.5	X	X	X	1	0.5	0.5	

AM	7:00 AM	0	1	0	0	2	1	0	0	0	0	0	2	6
	7:15 AM	4	3	0	0	2	1	0	0	0	0	0	0	10
	7:30 AM	1	3	0	0	5	3	0	0	0	0	0	0	12
	7:45 AM	3	6	0	0	1	0	0	0	0	1	0	1	12
	8:00 AM	3	3	0	0	2	3	0	0	0	1	0	0	12
	8:15 AM	1	2	0	0	3	0	0	0	0	0	0	0	6
	8:30 AM	2	1	0	0	1	0	0	0	0	0	0	0	4
	8:45 AM	0	3	0	0	3	1	0	0	0	1	0	1	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	14	22	0	0	19	9	0	0	0	3	0	4	71
	APPROACH %	39%	61%	0%	0%	68%	32%	0%	0%	0%	43%	0%	57%	
PM	APP/DEPART	36	/	26	28	/	22	0	/	0	7	/	23	0
	BEGIN PEAK HR	7:00 AM												
	VOLUMES	8	13	0	0	10	5	0	0	0	1	0	3	40
	APPROACH %	38%	62%	0%	0%	67%	33%	0%	0%	0%	25%	0%	75%	
	PEAK HR FACTOR	0.583			0.469			0.000			0.500			0.833
	APP/DEPART	21	/	16	15	/	11	0	/	0	4	/	13	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	2	0	0	0	1	0	0	0	0	0	0	1	4
	4:15 PM	1	2	0	0	0	0	0	0	0	0	0	0	3
	4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
	4:45 PM	1	2	0	0	0	0	0	0	0	1	0	0	4
	5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
	5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	5:30 PM	2	2	0	0	0	0	0	0	0	0	0	1	5
	5:45 PM	0	1	0	0	0	2	0	0	0	0	0	0	3
	VOLUMES	6	10	0	0	2	2	0	0	0	1	0	2	23
	APPROACH %	38%	63%	0%	0%	50%	50%	0%	0%	0%	33%	0%	67%	
	APP/DEPART	16	/	12	4	/	3	0	/	0	3	/	8	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	2	7	0	0	0	0	0	0	0	1	0	0	10
	APPROACH %	22%	78%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	
	PEAK HR FACTOR	0.750			0.000			0.000			0.250			0.625
	APP/DEPART	9	/	7	0	/	1	0	/	0	1	/	2	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

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	0	0	0
0	1	0	0
0	0	0	1
0	1	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	2	0	4

0	1	0	3
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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	1

0	0	0	0
---	---	---	---

Pepper

NORTH SIDE

I-210 WB Ramps

WEST SIDE

EAST SIDE

I-210 WB Ramps

Pepper

SOUTH SIDE

3.1-19

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 WB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 5 SIGNAL
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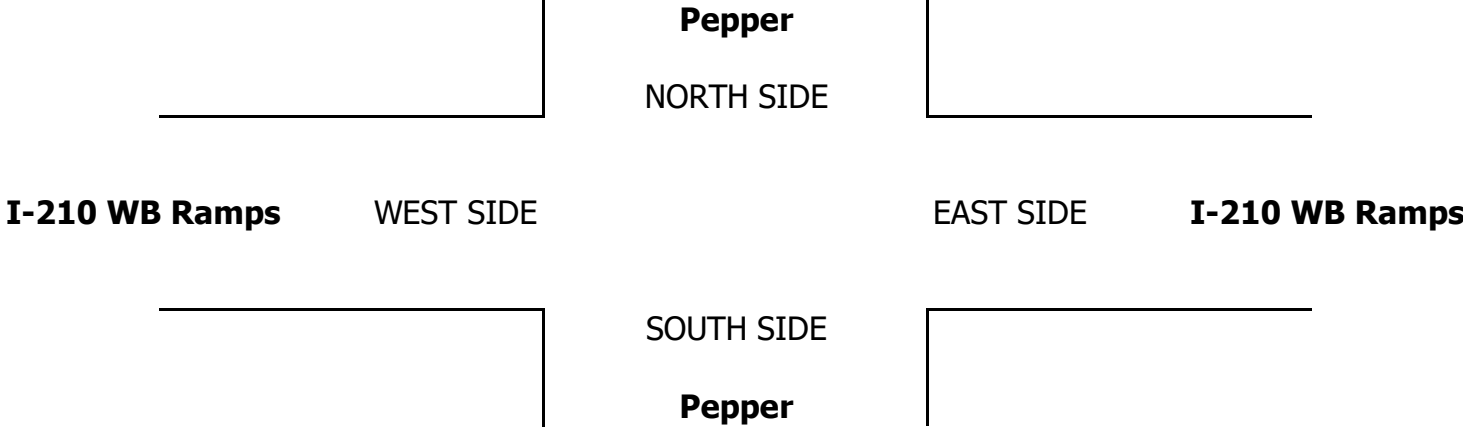
CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼ E ▶
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 WB Ramps			I-210 WB Ramps			
LANES:	NL 1	NT 2	NR X	SL X	ST 1.5	SR 0.5	EL X	ET X	ER X	WL 1	WT 0.5	WR 0.5	TOTAL

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

RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	1	0	0
0	0	0	0
0	1	0	0
0	0	0	2
0	0	0	1
0	0	0	0
0	2	0	2
0	1	0	2
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	5	0	7

AM	7:00 AM	5	2	0	0	4	3	0	0	0	2	0	1	17
	7:15 AM	1	2	0	0	2	2	0	0	0	0	0	0	7
	7:30 AM	0	1	0	0	2	8	0	0	0	2	0	2	15
	7:45 AM	4	3	0	0	4	2	0	0	0	2	0	5	20
	8:00 AM	5	5	0	0	3	5	0	0	0	4	0	2	24
	8:15 AM	3	4	0	0	4	4	0	0	0	2	0	1	18
	8:30 AM	2	6	0	0	3	5	0	0	0	3	0	2	21
	8:45 AM	3	7	0	0	5	6	0	0	0	3	0	3	27
	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	23	30	0	0	27	35	0	0	0	18	0	16	149
PM	APPROACH %	43%	57%	0%	0%	44%	56%	0%	0%	0%	53%	0%	47%	
	APP/DEPART	53	/	46	62	/	45	0	/	0	34	/	58	0
	BEGIN PEAK HR	7:00 AM												
	VOLUMES	10	8	0	0	12	15	0	0	0	6	0	8	59
	APPROACH %	56%	44%	0%	0%	44%	56%	0%	0%	0%	43%	0%	57%	
	PEAK HR FACTOR	0.643			0.675			0.000			0.500			0.738
	APP/DEPART	18	/	16	27	/	18	0	/	0	14	/	25	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	2	0	0	0	0	1	0	0	0	0	0	0	3
	4:15 PM	1	3	0	0	0	1	0	0	0	2	0	0	7
	4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1
	4:45 PM	3	3	0	0	0	0	0	0	0	1	0	0	7
	5:00 PM	1	1	0	0	0	1	0	0	0	0	0	0	3
	5:15 PM	1	1	0	0	0	0	0	0	0	0	0	1	3
	5:30 PM	3	1	0	0	1	0	0	0	0	0	0	0	5
	5:45 PM	1	1	0	0	0	0	0	0	0	1	0	0	3
	VOLUMES	12	10	0	0	1	3	0	0	0	5	0	1	32
	APPROACH %	55%	45%	0%	0%	25%	75%	0%	0%	0%	83%	0%	17%	
	APP/DEPART	22	/	11	4	/	6	0	/	0	6	/	15	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	5	7	0	0	0	2	0	0	0	4	0	0	18
	APPROACH %	42%	58%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	
	PEAK HR FACTOR	0.500			0.500			0.000			0.500			0.643
	APP/DEPART	12	/	7	2	/	4	0	/	0	4	/	7	0



0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0

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0	0	0	0
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 WB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 5 SIGNAL
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CLASS 5:	NOTES:	AM		▲	
RV		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 WB Ramps			I-210 WB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	X	X	1.5	0.5	X	X	X	1	0.5	0.5	

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

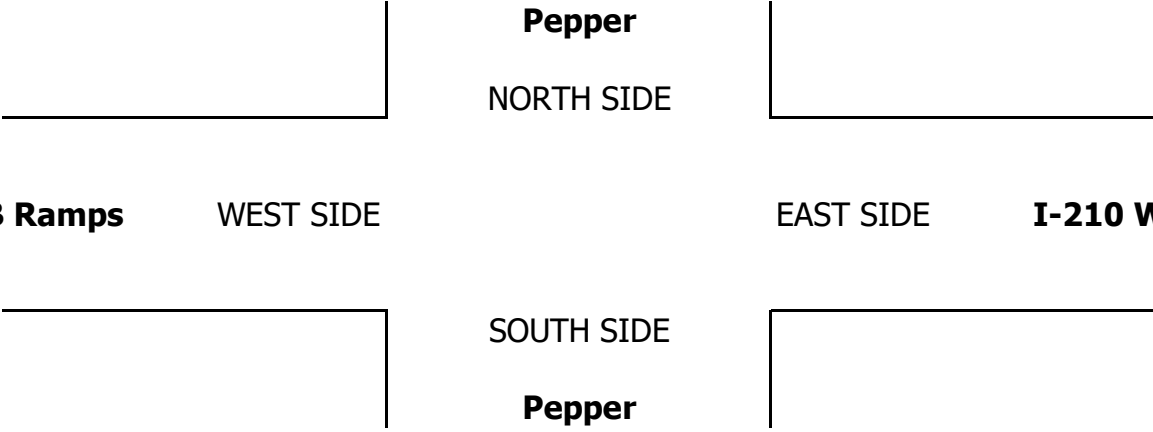
RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

AM	7:00 AM	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
	7:30 AM	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
	8:00 AM	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
	8:30 AM	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
	9:00 AM	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
	9:30 AM	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
	VOLUMES	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
PM	APP/DEPART	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
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	03:00 PM	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
	3:30 PM	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
	4:00 PM	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
	4:30 PM	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
	5:00 PM	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
	5:30 PM	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
	VOLUMES	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
	BEGIN PEAK HR	4:15 PM											
	VOLUMES	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		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 WB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 5 SIGNAL
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CLASS 6:	NOTES:	AM		▲	
BUSES		PM	◄ W	N	E ►
		MD		S	
		OTHER		▼	
		OTHER			

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 WB Ramps			I-210 WB Ramps			
LANES:	NL 1	NT 2	NR X	SL X	ST 1.5	SR 0.5	EL X	ET X	ER X	WL 1	WT 0.5	WR 0.5	TOTAL

AM	7:00 AM	0	0	0	0	0	0	0	0	1	0	0	1
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	1	0	0	0	0	0	0	0	0	0	1
	7:45 AM	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
	8:15 AM	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
	8:45 AM	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
	9:15 AM	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
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	1	0	0	0	0	0	0	1	0	0	2
PM	APPROACH %	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	
	APP/DEPART	1	/	1	0	/	1	0	/	1	/	0	0
	BEGIN PEAK HR	7:00 AM											
	VOLUMES	0	1	0	0	0	0	0	0	1	0	0	2
	APPROACH %	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	
	PEAK HR FACTOR	0.250			0.000			0.000			0.250		
	APP/DEPART	1	/	1	0	/	1	0	/	1	/	0	0
	03:00 PM	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
	3:30 PM	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
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	1	0	0	1
	4:30 PM	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
	5:00 PM	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
	5:30 PM	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
	VOLUMES	0	0	0	0	0	0	0	0	1	0	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	
	APP/DEPART	0	/	0	0	/	1	0	/	1	/	0	0
	BEGIN PEAK HR	4:15 PM											
	VOLUMES	0	0	0	0	0	0	0	0	1	0	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.250		
	APP/DEPART	0	/	0	0	/	1	0	/	1	/	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

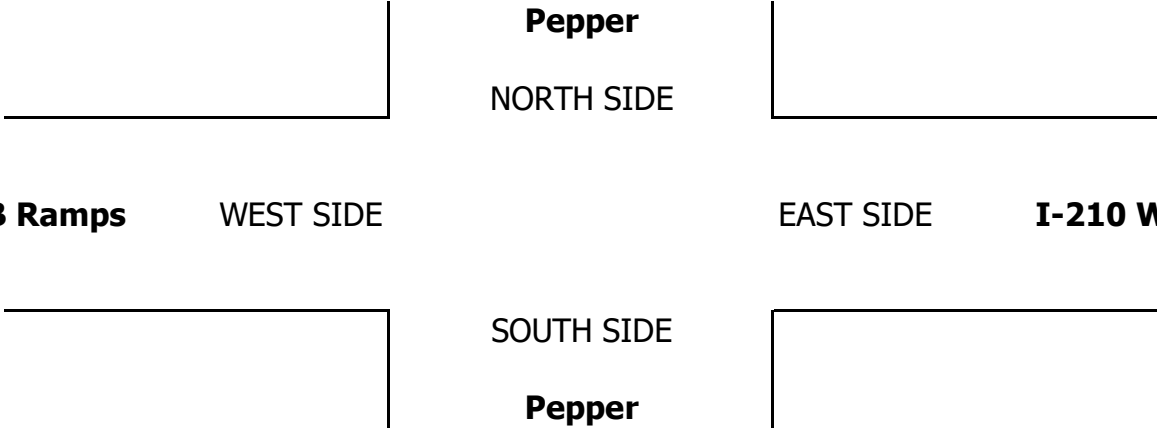
RTOR			
NRR	SRR	ERR	WRR
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0	0	0	0
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: Thu, Aug 11, 22	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 EB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 6 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 EB Ramps			I-210 EB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	X	1.5	0.5	1	2	X	1	0.5	0.5	X	X	X	

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

RTOR			
NRR 0	SRR 0	ERR 0	WRR 0

[illegible][illegible]

12	0	42	0
12	0	57	0
11	0	67	0
21	0	67	0
9	0	37	0
14	0	34	0
9	0	33	0
11	0	31	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
99	0	368	0

VOLUMES	0	1,017	558	112	961	0	196	2	651	0	0	0	3,497
APPROACH %	0%	65%	35%	10%	90%	0%	23%	0%	77%	0%	0%	0%	
APP/DEPART	1,575	/	1,213	1,073	/	1,612	849	/	672	0	/	0	0
BEGIN PEAK HR		7:00 AM											
VOLUMES	0	593	311	54	623	0	94	1	375	0	0	0	2,051
APPROACH %	0%	66%	34%	8%	92%	0%	20%	0%	80%	0%	0%	0%	
PEAK HR FACTOR		0.919			0.830			0.822			0.000		0.911
APP/DEPART	904	/	687	677	/	998	470	/	366	0	/	0	0

0	0	0	0	0
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56	0	233	0
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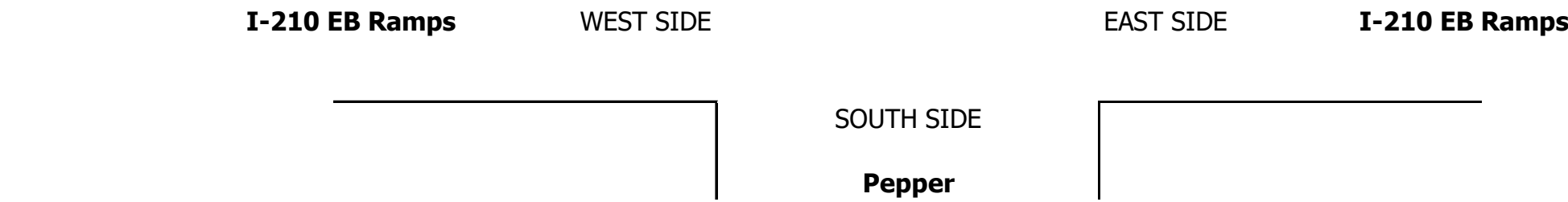
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	152	81	13	94	0	41	0	108	0	0	0	489
	4:15 PM	0	145	68	3	125	0	60	0	107	0	0	0	508
	4:30 PM	0	108	79	9	115	0	48	0	98	0	0	0	457
	4:45 PM	0	144	54	9	125	0	56	0	131	0	0	0	519
	5:00 PM	0	147	72	9	105	0	54	0	107	0	0	0	494
	5:15 PM	0	127	71	8	114	0	50	0	96	0	0	0	466
	5:30 PM	0	150	91	8	112	0	37	1	80	0	0	0	479
	5:45 PM	0	124	59	13	114	0	50	0	116	0	0	0	476
	VOLUMES	0	1,097	575	72	904	0	396	1	843	0	0	0	3,888
	APPROACH %	0%	66%	34%	7%	93%	0%	32%	0%	68%	0%	0%	0%	
APP/DEPART	1,672	/	1,493	976	/	1,747	1,240	/	648	0	/	0	0	
BEGIN PEAK HR	4:15 PM													
VOLUMES	0	544	273	30	470	0	218	0	443	0	0	0	1,978	
APPROACH %	0%	67%	33%	6%	94%	0%	33%	0%	67%	0%	0%	0%		
PEAK HR FACTOR	0.933		0.933		0.884		0.000							
APP/DEPART	817	/	762	500	/	913	661	/	303	0	/	0	0	

[illegible]

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
13	0	55	0
11	0	44	0
11	0	48	0
14	0	47	0
17	0	56	0
5	0	48	0
11	0	52	0
4	0	61	0
86	0	411	0

_____ **Pepper** _____
 _____ NORTH SIDE _____

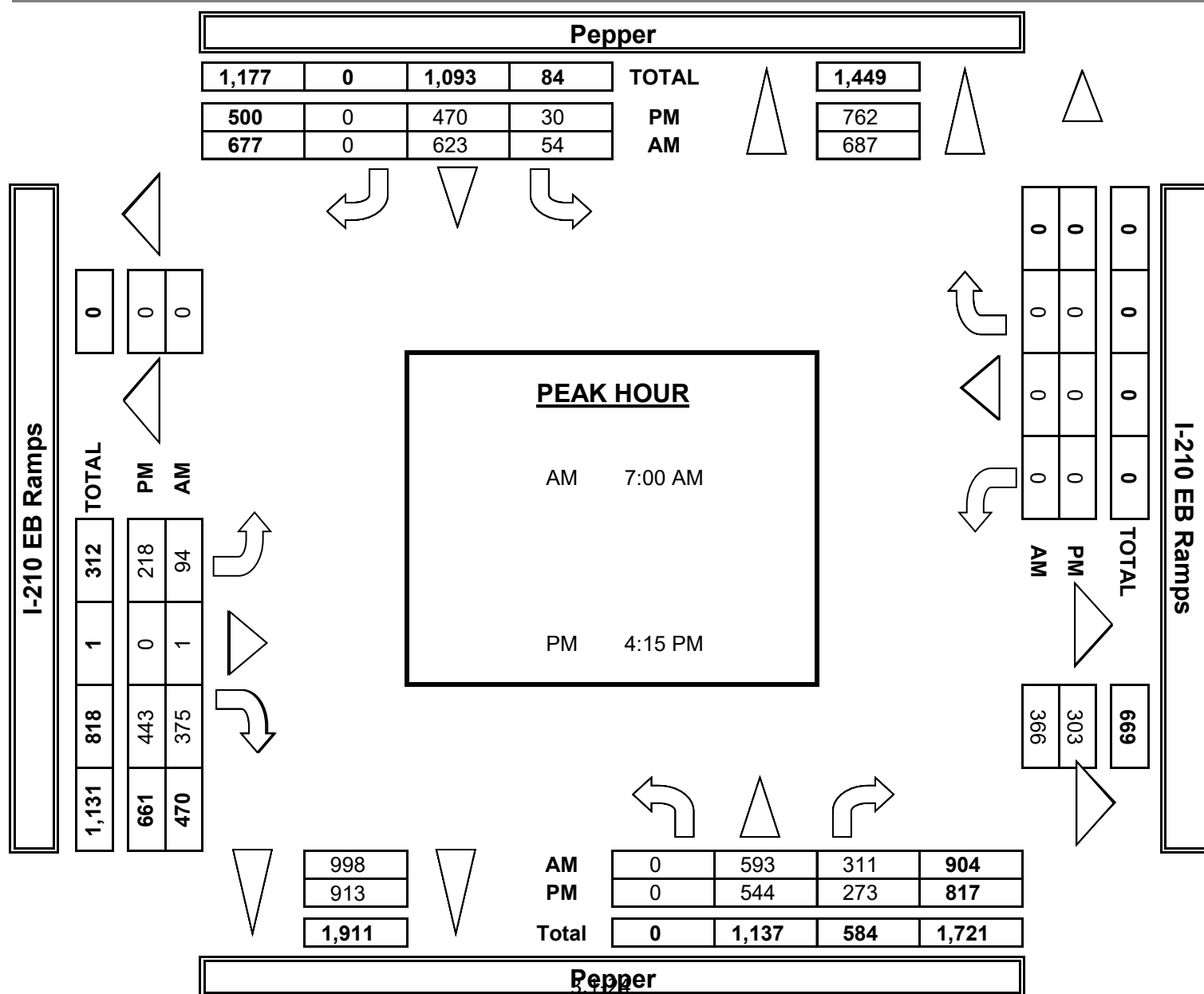
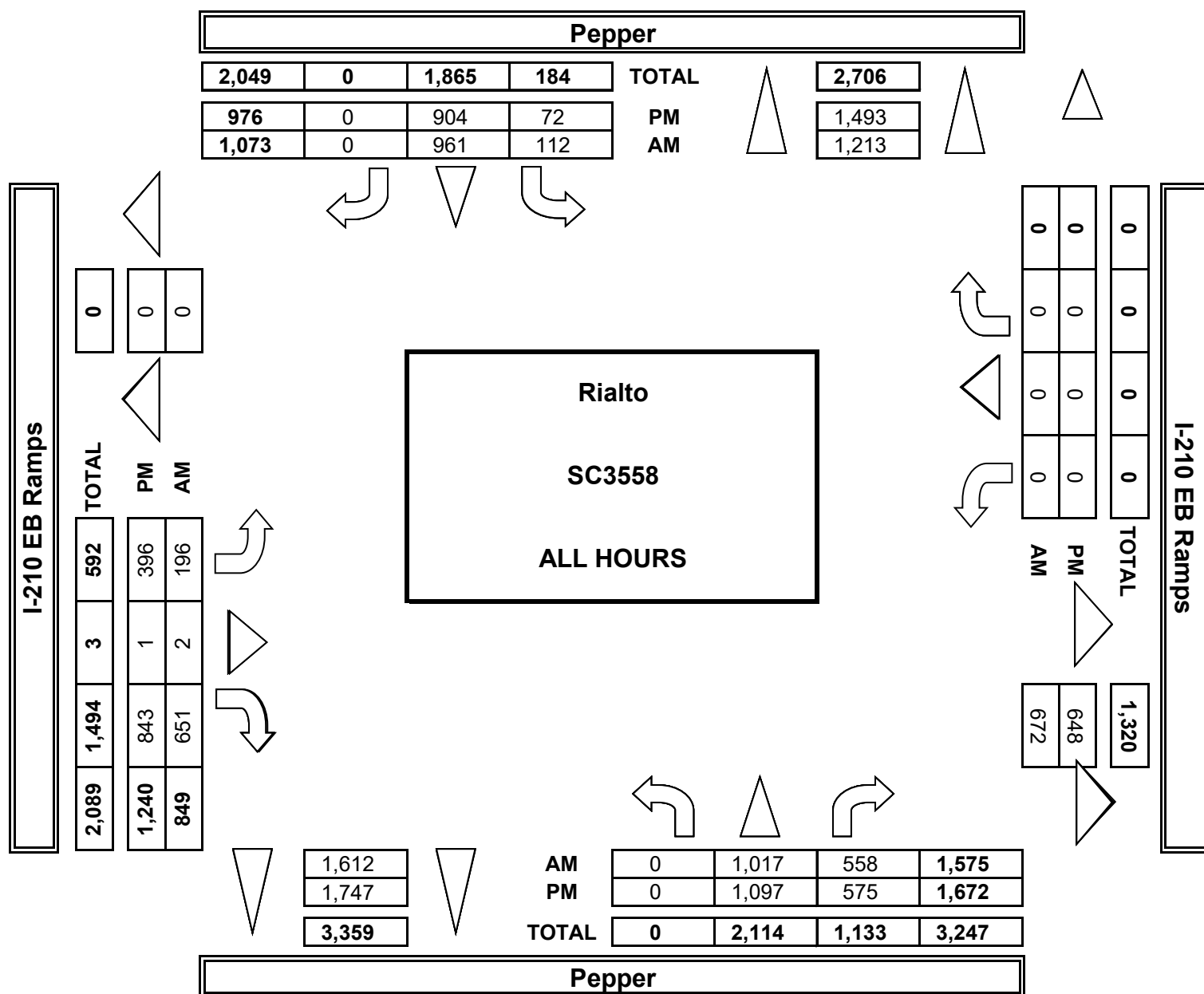
53	0	195	0
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AM		7:00 AM
		7:15 AM
		7:30 AM
		7:45 AM
		8:00 AM
		8:15 AM
		8:30 AM
		8:45 AM
		9:00 AM
		9:15 AM
	9:30 AM	
	9:45 AM	
		TOTAL
PM		3:00 PM
		3:15 PM
		3:30 PM
		3:45 PM
		4:00 PM
		4:15 PM
		4:30 PM
		4:45 PM
		5:00 PM
		5:15 PM
	5:30 PM	
	5:45 PM	
		TOTAL

[illegible][illegible][illegible]

TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

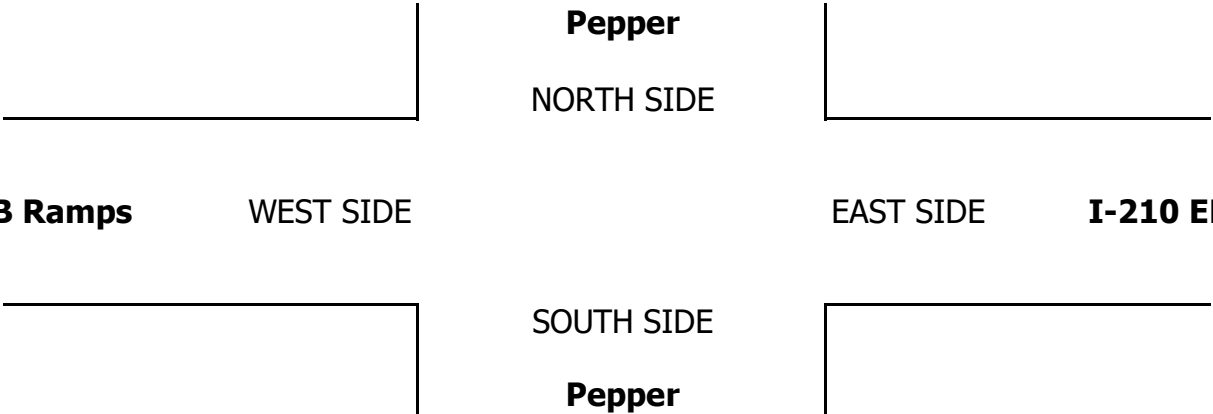
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 EB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 6 SIGNAL
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CLASS 1: PASSENGER VEHICLES	NOTES:	AM PM MD OTHER OTHER	◀ W	▲ N S ▼	E ▶
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	NORTHBOUND Pepper			SOUTHBOUND Pepper			EASTBOUND I-210 EB Ramps			WESTBOUND I-210 EB Ramps			
LANES:	NL X	NT 1.5	NR 0.5	SL 1	ST 2	SR X	EL 1	ET 0.5	ER 0.5	WL X	WT X	WR X	TOTAL

AM	7:00 AM	0	112	56	4	128	0	10	0	65	0	0	0	375
	7:15 AM	0	138	68	7	164	0	21	0	89	0	0	0	487
	7:30 AM	0	151	76	8	183	0	10	0	97	0	0	0	525
	7:45 AM	0	142	86	16	118	0	29	0	101	0	0	0	492
	8:00 AM	0	108	62	8	70	0	23	1	80	0	0	0	352
	8:15 AM	0	92	63	11	82	0	27	0	63	0	0	0	338
	8:30 AM	0	90	61	8	84	0	9	0	59	0	0	0	311
	8:45 AM	0	89	47	8	71	0	13	0	52	0	0	0	280
	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	922	519	70	900	0	142	1	606	0	0	0	3,160
	APPROACH %	0%	64%	36%	7%	93%	0%	19%	0%	81%	0%	0%	0%	
	APP/DEPART	1,441	/	1,064	970	/	1,506	749	/	590	0	/	0	0
PM	BEGIN PEAK HR	7:00 AM												
	VOLUMES	0	543	286	35	593	0	70	0	352	0	0	0	1,879
	APPROACH %	0%	66%	34%	6%	94%	0%	17%	0%	83%	0%	0%	0%	
	PEAK HR FACTOR		0.909			0.822			0.812			0.000		0.895
	APP/DEPART	829	/	613	628	/	945	422	/	321	0	/	0	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	0	143	73	13	88	0	40	0	100	0	0	0	457
	4:15 PM	0	137	63	3	116	0	52	0	104	0	0	0	475
	4:30 PM	0	100	77	8	109	0	45	0	92	0	0	0	431
	4:45 PM	0	130	54	7	121	0	51	0	121	0	0	0	484
	5:00 PM	0	142	69	9	101	0	50	0	101	0	0	0	472
	5:15 PM	0	122	68	8	111	0	48	0	93	0	0	0	450
	5:30 PM	0	143	88	7	108	0	33	1	75	0	0	0	455
	5:45 PM	0	122	59	12	112	0	45	0	112	0	0	0	462
	VOLUMES	0	1,039	551	67	866	0	364	1	798	0	0	0	3,686
	APPROACH %	0%	65%	35%	7%	93%	0%	31%	0%	69%	0%	0%	0%	
	APP/DEPART	1,590	/	1,403	933	/	1,664	1,163	/	619	0	/	0	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	0	509	263	27	447	0	198	0	418	0	0	0	1,862
	APPROACH %	0%	66%	34%	6%	94%	0%	32%	0%	68%	0%	0%	0%	
	PEAK HR FACTOR		0.915			0.926			0.895			0.000		0.962
	APP/DEPART	772	/	707	474	/	865	616	/	290	0	/	0	0



U-TURNS				
NB	SB	EB	WB	TTL

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	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

10	0	40	0
11	0	51	0
11	0	66	0
21	0	63	0
9	0	36	0
14	0	32	0
8	0	31	0
9	0	30	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
93	0	349	0

53	0	220	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
11	0	50	0
11	0	44	0
10	0	46	0
14	0	44	0
17	0	53	0
5	0	47	0
11	0	50	0
4	0	58	0
83	0	392	0

52	0	187	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 EB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 6 SIGNAL
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ E ▼
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 EB Ramps			I-210 EB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

RTOR			
NRR	SRR	ERR	WRR

AM	7:00 AM	0	8	2	1	5	0	2	0	2	0	0	0	20
	7:15 AM	0	8	2	1	3	0	5	0	3	0	0	0	22
	7:30 AM	0	6	5	2	2	0	1	0	2	0	0	0	18
	7:45 AM	0	4	1	1	4	0	0	1	2	0	0	0	13
	8:00 AM	0	4	1	1	3	0	1	0	2	0	0	0	12
	8:15 AM	0	6	1	2	0	0	0	0	3	0	0	0	12
	8:30 AM	0	3	1	0	3	0	0	0	2	0	0	0	9
	8:45 AM	0	10	2	0	7	0	1	0	2	0	0	0	22
	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	49	15	8	27	0	10	1	18	0	0	0	128
	APPROACH %	0%	77%	23%	23%	77%	0%	34%	3%	62%	0%	0%	0%	
PM	APP/DEPART	64	/	59	35	/	45	29	/	24	0	/	0	0
	BEGIN PEAK HR	7:00 AM												
	VOLUMES	0	26	10	5	14	0	8	1	9	0	0	0	73
	APPROACH %	0%	72%	28%	26%	74%	0%	44%	6%	50%	0%	0%	0%	
	PEAK HR FACTOR	0.818			0.792			0.563			0.000			0.830
	APP/DEPART	36	/	34	19	/	23	18	/	16	0	/	0	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	0	6	4	0	5	0	0	0	5	0	0	0	20
	4:15 PM	0	6	3	0	6	0	3	0	2	0	0	0	20
	4:30 PM	0	7	1	1	5	0	2	0	5	0	0	0	21
	4:45 PM	0	8	0	2	2	0	2	0	5	0	0	0	19
	5:00 PM	0	5	2	0	4	0	1	0	5	0	0	0	17
	5:15 PM	0	3	2	0	2	0	2	0	3	0	0	0	12
	5:30 PM	0	1	2	1	3	0	2	0	4	0	0	0	13
	5:45 PM	0	0	0	1	1	0	4	0	4	0	0	0	10
	VOLUMES	0	36	14	5	28	0	16	0	33	0	0	0	132
	APPROACH %	0%	72%	28%	15%	85%	0%	33%	0%	67%	0%	0%	0%	
	APP/DEPART	50	/	52	33	/	61	49	/	19	0	/	0	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	0	26	6	3	17	0	8	0	17	0	0	0	77
	APPROACH %	0%	81%	19%	15%	85%	0%	32%	0%	68%	0%	0%	0%	
	PEAK HR FACTOR	0.889			0.833			0.893			0.000			0.917
	APP/DEPART	32	/	34	20	/	34	25	/	9	0	/	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
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0	0	0	0	0

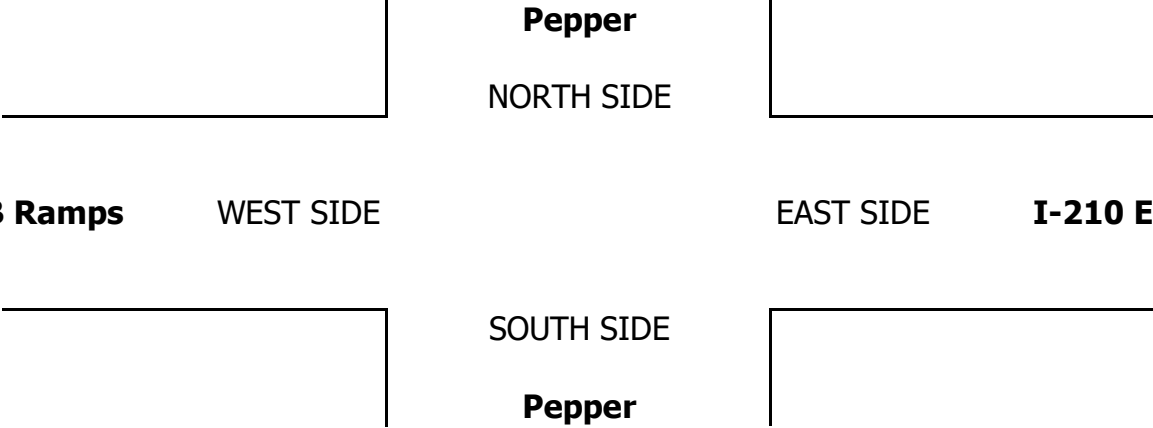
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0	0	1	0
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1	0	1	0
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
3	0	9	0

1	0	5	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
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0	0	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	4	0
0	0	0	0
1	0	2	0
0	0	1	0
0	0	2	0
0	0	1	0
0	0	1	0
0	0	3	0
2	0	14	0

1	0	5	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
8/11/22
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Rialto
Pepper
I-210 EB Ramps

PROJECT #:
LOCATION #:
CONTROL:

SC3558
6
SIGNAL

CLASS 3:
3-AXLE
TRUCKS

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◀ W
S
▼

E ▶

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 EB Ramps			I-210 EB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	X	1.5	0.5	1	2	X	1	0.5	0.5	X	X	X	

AM	7:00 AM	0	0	0	2	0	0	1	0	1	0	0	0	4
	7:15 AM	0	6	2	0	2	0	1	0	0	0	0	0	11
	7:30 AM	0	3	4	0	5	0	1	0	0	0	0	0	13
	7:45 AM	0	6	1	0	2	0	3	0	0	0	0	0	12
	8:00 AM	0	5	1	0	3	0	1	0	1	0	0	0	11
	8:15 AM	0	3	1	2	1	0	0	0	0	0	0	0	7
	8:30 AM	0	1	0	0	1	0	2	0	2	0	0	0	6
	8:45 AM	0	1	0	1	3	0	2	0	0	0	0	0	7
	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	25	9	5	17	0	11	0	4	0	0	0	71
	APPROACH %	0%	74%	26%	23%	77%	0%	73%	0%	27%	0%	0%	0%	
	APP/DEPART	34	/	36	22	/	21	15	/	14	0	/	0	0
PM	BEGIN PEAK HR	7:00 AM												
	VOLUMES	0	15	7	2	9	0	6	0	1	0	0	0	40
	APPROACH %	0%	68%	32%	18%	82%	0%	86%	0%	14%	0%	0%	0%	
	PEAK HR FACTOR	0.688			0.550			0.583			0.000			0.769
	APP/DEPART	22	/	21	11	/	10	7	/	9	0	/	0	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	0	1	1	0	1	0	1	0	2	0	0	0	6
	4:15 PM	0	1	1	0	0	0	2	0	0	0	0	0	4
	4:30 PM	0	1	1	0	0	0	1	0	0	0	0	0	3
	4:45 PM	0	2	0	0	1	0	1	0	2	0	0	0	6
	5:00 PM	0	0	1	0	0	0	1	0	1	0	0	0	3
	5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	5:30 PM	0	3	1	0	0	0	1	0	0	0	0	0	5
	5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
	VOLUMES	0	9	5	0	3	0	7	0	5	0	0	0	29
	APPROACH %	0%	64%	36%	0%	100%	0%	58%	0%	42%	0%	0%	0%	
	APP/DEPART	14	/	16	3	/	8	12	/	5	0	/	0	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	0	4	3	0	1	0	5	0	3	0	0	0	16
	APPROACH %	0%	57%	43%	0%	100%	0%	63%	0%	38%	0%	0%	0%	
	PEAK HR FACTOR	0.875			0.250			0.667			0.000			0.667
	APP/DEPART	7	/	9	1	/	4	8	/	3	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

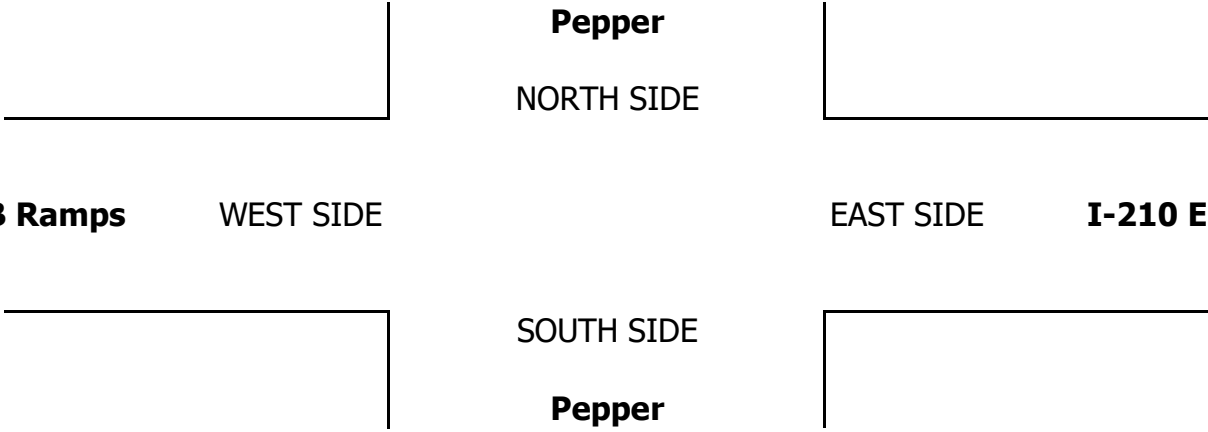
RTOR			
NRR	SRR	ERR	WRR
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0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	2	0

0	0	1	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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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	1	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	1	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 EB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 6 SIGNAL
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ ▼
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 EB Ramps			I-210 EB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

RTOR			
NRR	SRR	ERR	WRR

AM	7:00 AM	0	6	3	2	4	0	1	0	2	0	0	0	18
	7:15 AM	0	0	3	2	0	0	3	0	6	0	0	0	14
	7:30 AM	0	0	1	4	0	0	1	0	1	0	0	0	7
	7:45 AM	0	3	1	4	2	0	4	0	3	0	0	0	17
	8:00 AM	0	4	1	4	3	0	6	0	1	0	0	0	19
	8:15 AM	0	0	1	4	2	0	7	0	2	0	0	0	16
	8:30 AM	0	4	2	4	2	0	4	0	1	0	0	0	17
	8:45 AM	0	4	2	5	3	0	6	0	6	0	0	0	26
	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	21	14	29	16	0	32	0	22	0	0	0	134
	APPROACH %	0%	60%	40%	64%	36%	0%	59%	0%	41%	0%	0%	0%	
PM	APP/DEPART	35	/	53	45	/	38	54	/	43	0	/	0	0
	BEGIN PEAK HR	7:00 AM												
	VOLUMES	0	9	8	12	6	0	9	0	12	0	0	0	56
	APPROACH %	0%	53%	47%	67%	33%	0%	43%	0%	57%	0%	0%	0%	
	PEAK HR FACTOR	0.472			0.750			0.583			0.000			0.778
	APP/DEPART	17	/	18	18	/	18	21	/	20	0	/	0	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	0	2	2	0	0	0	0	0	1	0	0	0	5
	4:15 PM	0	1	1	0	2	0	3	0	1	0	0	0	8
	4:30 PM	0	0	0	0	1	0	0	0	1	0	0	0	2
	4:45 PM	0	4	0	0	1	0	2	0	3	0	0	0	10
	5:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	2
	5:15 PM	0	2	1	0	0	0	0	0	0	0	0	0	3
	5:30 PM	0	3	0	0	1	0	1	0	1	0	0	0	6
	5:45 PM	0	1	0	0	1	0	1	0	0	0	0	0	3
	VOLUMES	0	13	4	0	6	0	9	0	7	0	0	0	39
	APPROACH %	0%	76%	24%	0%	100%	0%	56%	0%	44%	0%	0%	0%	
	APP/DEPART	17	/	22	6	/	13	16	/	4	0	/	0	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	0	5	1	0	4	0	7	0	5	0	0	0	22
	APPROACH %	0%	83%	17%	0%	100%	0%	58%	0%	42%	0%	0%	0%	
	PEAK HR FACTOR	0.375			0.500			0.600			0.000			0.550
	APP/DEPART	6	/	12	4	/	9	12	/	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

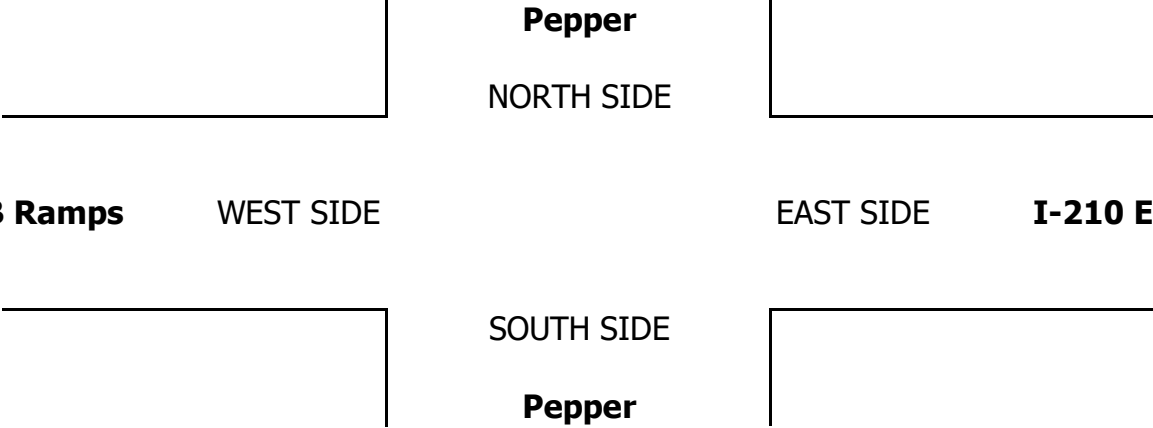
1	0	0	0
1	0	3	0
0	0	0	0
0	0	3	0
0	0	0	0
0	0	1	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
3	0	7	0

2	0	6	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	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	2	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
1	0	3	0

0	0	2	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 8/11/22 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Rialto Pepper I-210 EB Ramps	PROJECT #: LOCATION #: CONTROL:	SC3558 6 SIGNAL
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CLASS 5:	NOTES:	AM		▲	
RV		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 EB Ramps			I-210 EB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	X	1.5	0.5	1	2	X	1	0.5	0.5	X	X	X	

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

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	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

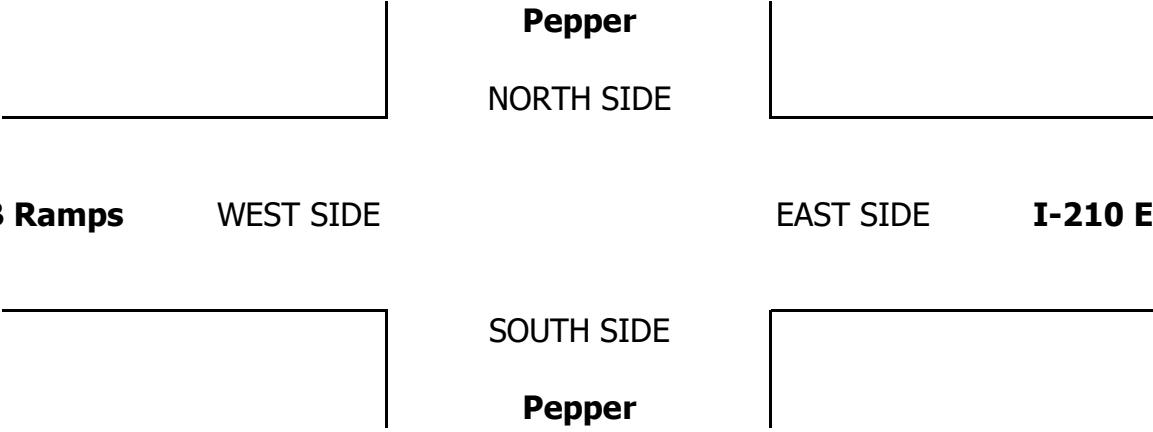
0	0	0	0
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AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	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
	9:30 AM	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
	VOLUMES	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
PM	APP/DEPART	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
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	03:00 PM	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
	3:30 PM	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
	4:00 PM	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
	4:30 PM	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
	5:00 PM	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
	5:30 PM	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
	VOLUMES	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
	BEGIN PEAK HR	4:15 PM											
	VOLUMES	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		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
8/11/22
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Rialto
Pepper
I-210 EB Ramps

PROJECT #:
LOCATION #:
CONTROL:

SC3558
6
SIGNAL

CLASS 6:

NOTES:

AM
PM
MD
OTHER
OTHER

▲
N
◀ W
S
▼

E ▶

BUSES

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Pepper			Pepper			I-210 EB Ramps			I-210 EB Ramps			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	X	1.5	0.5	1	2	X	1	0.5	0.5	X	X	X	

AM	7:00 AM	0	0	0	0	1	0	0	0	1	0	0	0	2
	7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	1
	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	1	0	0	0	0	0	0	0	0	0	1
	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	1	0	1	0	1	1	0	0	0	0	4
	APPROACH %	0%	0%	100%	0%	100%	0%	50%	0%	50%	0%	0%	0%	
PM	APP/DEPART	1	/	1	1	/	2	2	/	1	0	/	0	0
	BEGIN PEAK HR	7:00 AM												
	VOLUMES	0	0	0	0	1	0	1	0	1	0	0	0	3
	APPROACH %	0%	0%	0%	0%	100%	0%	50%	0%	50%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.250			0.500			0.000			0.375
	APP/DEPART	0	/	1	1	/	2	2	/	0	0	/	0	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	0	0	1	0	0	0	0	0	0	0	0	0	1
	4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	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	1	0	1	0	0	0	0	0	0	0	2
	APPROACH %	0%	0%	100%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	1	/	0	1	/	1	0	/	1	0	/	0	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	0	0	0	0	1	0	0	0	0	0	0	0	1
	APPROACH %	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.250			0.000			0.000			0.250
	APP/DEPART	0	/	0	1	/	1	0	/	0	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

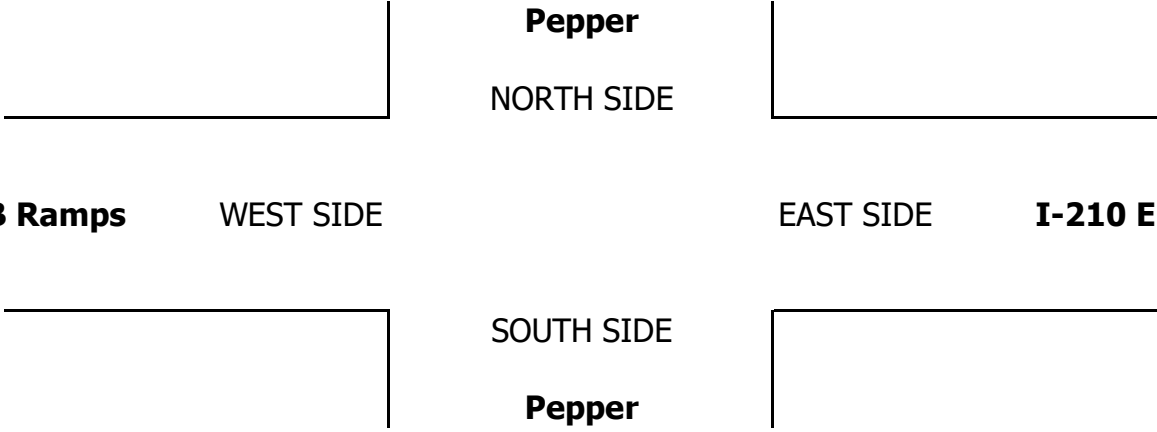
RTOR			
NRR	SRR	ERR	WRR
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0

0	0	1	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0
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0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
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24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

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

DATE: Thursday, August 11, 2022

JOB #: SC3558

CITY: Rialto

LOCATION: CLASS1 Pepper south of Highland

AM TIME	NORTHBOUND													TOTAL	PM Time	NORTHBOUND													TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13			1	2	3	4	5	6	7	8	9	10	11	12	13	
0:00	0	13	1	0	0	0	0	0	1	0	0	0	0	15	12:00	0	46	5	0	4	2	0	0	0	0	4	0	0	61
0:15	0	11	1	0	0	0	0	0	0	0	0	0	0	12	12:15	0	44	10	1	8	2	0	0	3	0	1	0	0	69
0:30	0	8	1	0	0	0	0	0	0	0	0	0	0	9	12:30	0	58	12	0	2	2	0	0	1	0	5	0	0	80
0:45	0	10	1	0	0	0	0	0	0	0	0	0	0	11	12:45	0	48	8	0	2	3	0	0	1	0	3	0	0	65
1:00	0	8	4	0	0	0	0	0	1	0	0	0	0	13	13:00	0	55	18	0	1	1	0	0	1	0	3	0	0	79
1:15	0	4	2	0	0	0	0	0	0	0	0	0	0	6	13:15	0	51	15	0	1	2	0	0	1	0	2	0	0	72
1:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	13:30	0	48	18	0	1	0	0	0	1	0	3	0	0	71
1:45	0	7	0	0	0	0	0	0	0	0	0	0	0	7	13:45	0	56	11	0	3	0	0	0	0	0	6	0	0	76
2:00	0	10	0	0	0	0	0	0	1	0	0	0	0	11	14:00	0	53	19	0	3	2	0	0	3	0	2	0	0	82
2:15	0	19	6	0	0	0	0	0	0	0	0	0	0	25	14:15	0	51	8	0	2	2	0	0	3	0	4	0	0	70
2:30	1	20	7	0	0	1	0	0	0	0	0	0	0	29	14:30	1	58	13	0	3	1	0	0	2	0	2	0	0	80
2:45	0	12	6	0	1	0	0	0	0	0	1	0	0	20	14:45	1	83	24	0	1	1	0	0	1	0	4	0	0	115
3:00	0	24	2	0	0	0	0	0	0	0	2	0	0	28	15:00	0	75	14	0	4	2	0	0	0	0	1	0	0	96
3:15	0	29	7	0	1	2	0	0	1	0	4	0	0	44	15:15	0	74	16	0	2	0	0	0	1	0	0	0	0	93
3:30	0	47	7	0	0	1	0	0	0	0	1	0	0	56	15:30	0	91	17	0	0	0	0	0	0	0	1	0	0	109
3:45	0	36	5	0	1	0	0	0	1	0	3	0	0	46	15:45	0	65	29	0	4	1	0	0	0	0	0	0	0	99
4:00	0	42	12	0	2	0	0	0	0	0	4	0	0	60	16:00	1	99	8	0	0	1	0	0	0	0	0	0	0	109
4:15	0	64	14	0	2	0	0	0	2	0	4	0	0	86	16:15	0	115	4	0	6	1	0	0	1	0	0	0	0	127
4:30	3	92	21	0	4	1	0	0	3	0	3	0	0	127	16:30	0	99	11	0	2	1	0	0	0	0	0	0	0	113
4:45	1	101	24	0	2	0	0	0	3	0	1	0	0	132	16:45	1	101	15	0	2	1	0	0	1	0	0	0	0	121
5:00	0	29	7	0	2	0	0	0	0	0	1	0	0	39	17:00	0	106	9	0	0	0	0	0	0	0	0	0	0	115
5:15	0	23	5	0	4	3	0	0	1	0	2	0	0	38	17:15	1	104	7	0	0	0	0	0	1	0	1	0	0	114
5:30	1	14	10	0	1	2	0	0	0	0	2	0	0	30	17:30	0	95	22	0	1	3	0	0	0	0	0	0	0	121
5:45	0	29	7	0	4	2	0	0	0	0	4	0	0	46	17:45	0	80	19	0	0	0	0	0	0	0	0	0	0	99
6:00	0	21	8	0	1	1	0	0	2	0	2	0	0	35	18:00	0	92	22	0	1	0	0	0	0	0	0	0	0	115
6:15	0	28	14	0	2	1	0	0	1	0	5	0	0	51	18:15	0	78	14	0	0	0	0	0	0	0	0	0	0	92
6:30	1	30	16	0	4	5	0	0	1	0	2	0	0	59	18:30	0	92	13	0	0	1	0	0	2	0	0	0	0	108
6:45	0	27	21	0	2	3	0	0	1	0	5	0	0	59	18:45	1	87	15	0	2	0	0	0	0	0	0	0	0	105
7:00	0	31	10	0	4	3	0	0	1	0	1	0	0	50	19:00	0	65	14	0	0	0	0	0	2	0	0	0	0	81
7:15	0	50	14	0	8	3	0	0	1	0	1	0	0	77	19:15	0	70	16	0	1	0	0	0	0	0	0	0	0	87
7:30	0	61	10	1	2	2	0	0	1	0	2	0	0	79	19:30	0	69	9	0	1	0	0	0	0	0	0	0	0	79
7:45	0	73	14	0	0	6	0	0	2	0	6	1	0	102	19:45	0	58	10	0	0	0	0	0	1	0	0	0	0	69
8:00	1	63	13	0	1	2	0	0	4	0	3	0	0	87	20:00	0	74	9	0	3	0	0	0	0	0	0	0	0	86
8:15	1	55	9	0	2	2	0	0	0	0	5	0	0	74	20:15	0	70	13	0	0	0	0	0	1	0	0	0	0	84
8:30	0	30	11	0	1	1	0	0	2	0	5	0	0	50	20:30	0	61	11	0	0	0	0	0	1	0	0	0	0	73
8:45	0	38	2	0	5	3	0	0	1	0	8	0	0	57	20:45	0	66	8	0	0	1	0	0	0	0	0	0	0	75
9:00	0	30	11	0	8	0	0	0	1	0	5	0	0	55	21:00	0	58	5	0	0	0	0	0	0	0	0	0	0	63
9:15	0	28	9	0	2	1	0	0	1	0	2	0	0	43	21:15	1	57	9	0	0	0	0	0	0	0	0	0	0	67
9:30	0	22	11	0	2	0	0	0	2	0	3	1	0	41	21:30	0	60	8	0	0	0	0	0	0	0	0	0	0	68
9:45	0	26	6	0	2	3	0	0	0	0	5	0	0	42	21:45	0	47	4	0	0	0	0	0	0	0	0	0	0	51
10:00	0	29	13	0	3	6	0	0	0	0	4	0	0	55	22:00	0	58	1	0	0	0	0	0	0	0	0	0	0	59
10:15	0	37	9	0	3	3	0	0	2	0	5	0	0	59	22:15	0	64	8	0	0	3	0	0	1	0	0	0	0	76
10:30	0	35	6	0	6	4	1	0	0	0	4	0	0	56	22:30	0	44	8	0	0	0	0	0	1	0	0	0	0	53
10:45	0	34	8	0	0	3	0	0	1	0	3	0	0	49	22:45	0	36	11	0	0	0	0	0	0	0	0	0	0	47
11:00	0	41	11	0	3	0	0	0	0	0	1	0	0	56	23:00	1	49	4	0	0	0	0	0	0	0	0	0	0	54
11:15	0	36	13	0	3	4	0	0	0	0	2	0	0	58	23:15	0	41	1	0	0	0	0	0	0	0	0	0	0	42
11:30	0	44	11	0	3	5	0	0	0	0	6	0	0	69	23:30	0	31	2	0	0	2	0	0	0	0	1	0	0	36
11:45	0	42	11	0	2	4	0	0	2	0	4	0	0	65	23:45	0	24	2	0	1	0	0	0	1	0	0	0	0	28
TOTAL	9	1,571	411	1	93	77	1	0	40	0	121	2	0	2,326	TOTAL	8	3,206	549	1	61	35	0	0	31	0	43	0	0	3,934
AM PEAK HOUR														4:00 AM	PM PEAK HOUR														4:15 PM
AM PEAK VOLUME														405	PM PEAK VOLUME														476

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	17	4,777	960	2	154	112	1	0	71	0	164	2	0	6,260
% OF TOTAL	0.3%	76.3%	15.3%	0.0%	2.5%	1.8%	0.0%	0.0%	1.1%	0.0%	2.6%	0.0%	0.0%	100.0%

Class	1	2	3	4	5	6	7	8	9	10	11	12	13	
TOTAL: ALL	32	9,075	1,883	2	328	203	22	3	136	0	320	2	0	12,006
% OF TOTAL	0.5%	145.0%	30.1%	0.0%	5.2%	3.2%	0.4%	0.0%	2.2%	0.0%	5.1%	0.0%	0.0%	100.0%

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

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

DATE: Thursday, August 11, 2022

JOB #: SC3558

CITY: Rialto

LOCATION: CLASS1 Pepper south of Highland

AM TIME	SOUTHBOUND													TOTAL	PM Time	SOUTHBOUND													TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13			1	2	3	4	5	6	7	8	9	10	11	12	13	
0:00	0	32	6	0	0	0	0	0	1	0	0	0	0	39	12:00	0	44	8	0	2	1	0	0	0	0	6	0	0	61
0:15	0	23	2	0	1	0	0	0	1	0	0	0	0	27	12:15	0	47	13	0	3	1	0	0	0	0	3	0	0	67
0:30	0	16	2	0	1	0	0	0	0	0	0	0	0	19	12:30	0	45	15	0	3	2	0	0	2	0	1	0	0	68
0:45	0	20	0	0	1	0	0	0	0	0	0	0	0	21	12:45	0	52	14	0	1	3	2	0	2	0	5	0	0	79
1:00	0	14	7	0	0	1	0	0	0	0	0	0	0	22	13:00	0	54	13	0	13	1	1	0	2	0	4	0	0	88
1:15	0	15	1	0	0	1	0	0	0	0	0	0	0	17	13:15	0	59	15	0	1	3	1	0	0	0	3	0	0	82
1:30	0	17	0	0	0	0	0	0	1	0	0	0	0	18	13:30	0	45	6	0	1	2	1	0	0	0	1	0	0	56
1:45	0	20	0	0	0	0	0	0	0	0	0	0	0	20	13:45	0	54	10	0	0	1	0	0	0	0	5	0	0	70
2:00	0	9	4	0	0	1	0	0	0	0	0	0	0	14	14:00	1	49	14	0	1	1	0	0	0	0	2	0	0	68
2:15	0	13	3	0	0	0	0	0	0	0	0	0	0	16	14:15	0	47	18	0	6	0	0	0	0	0	3	0	0	74
2:30	1	5	5	0	0	0	0	0	0	0	0	0	0	11	14:30	1	64	14	0	2	0	0	0	1	0	3	0	0	85
2:45	0	7	2	0	1	0	0	0	0	0	0	0	0	10	14:45	0	54	12	0	2	2	0	0	0	0	2	0	0	72
3:00	0	12	4	0	2	0	0	0	0	0	0	0	0	18	15:00	0	64	7	0	2	1	0	0	0	0	3	0	0	77
3:15	0	17	4	0	1	0	0	0	0	0	0	0	0	22	15:15	0	68	11	0	1	0	0	0	1	0	0	0	0	81
3:30	0	28	5	0	1	1	0	0	0	0	2	0	0	37	15:30	1	59	13	0	1	1	0	0	0	0	1	0	0	76
3:45	0	20	2	0	0	0	0	0	0	0	6	0	0	28	15:45	0	74	19	0	0	0	0	0	1	0	1	0	0	95
4:00	0	24	4	0	0	0	0	0	0	0	1	0	0	29	16:00	0	65	6	0	1	1	0	0	0	0	0	0	0	73
4:15	0	38	5	0	2	0	0	0	1	0	1	0	0	47	16:15	0	70	11	0	4	0	0	0	0	0	0	0	0	85
4:30	0	55	7	0	1	0	0	0	1	0	3	0	0	67	16:30	0	90	13	0	1	0	0	0	0	0	0	0	0	104
4:45	0	59	20	0	4	0	0	0	0	0	1	0	0	84	16:45	0	65	9	0	3	0	0	0	0	0	0	0	0	77
5:00	0	67	26	0	5	1	0	0	0	0	3	0	0	102	17:00	0	66	8	0	1	0	0	0	1	0	0	0	0	76
5:15	0	65	26	0	4	4	0	0	2	0	1	0	0	102	17:15	0	84	11	0	2	0	0	0	0	0	0	0	0	97
5:30	1	51	19	0	4	0	0	0	2	0	2	0	0	79	17:30	0	76	10	0	1	0	0	0	0	0	0	0	0	87
5:45	0	36	19	0	2	2	1	0	1	0	5	0	0	66	17:45	0	69	15	0	2	1	0	0	0	0	0	0	0	87
6:00	1	38	10	0	1	1	0	0	0	0	3	0	0	54	18:00	0	53	8	0	0	0	0	0	2	0	0	0	0	63
6:15	0	43	21	0	4	2	0	0	1	0	0	0	0	71	18:15	0	61	12	0	0	1	0	0	0	0	1	0	0	75
6:30	0	47	20	0	2	1	0	0	1	0	4	0	0	75	18:30	1	62	15	0	0	0	0	0	0	0	0	0	0	78
6:45	0	46	11	0	3	3	0	0	2	0	4	0	0	69	18:45	0	46	14	0	0	1	0	0	1	0	0	0	0	62
7:00	0	80	20	0	5	2	0	0	0	0	5	0	0	112	19:00	0	56	7	0	0	0	0	0	0	0	0	0	0	63
7:15	0	91	18	0	4	3	1	0	1	0	2	0	0	120	19:15	0	45	9	0	0	0	0	0	0	0	0	0	0	54
7:30	0	89	17	0	3	8	2	0	3	0	2	0	0	124	19:30	0	43	5	0	0	0	0	0	0	0	0	0	0	48
7:45	0	66	17	0	4	2	1	0	2	0	2	0	0	94	19:45	0	37	7	0	0	0	1	0	0	0	0	0	0	45
8:00	1	39	12	0	2	5	0	0	2	0	6	0	0	67	20:00	0	48	5	0	1	0	0	0	0	0	0	0	0	54
8:15	0	51	11	0	4	3	0	0	5	0	3	0	0	77	20:15	0	54	12	0	1	1	0	0	0	0	0	0	0	68
8:30	0	59	10	0	4	0	1	0	1	0	6	0	0	81	20:30	0	47	8	0	0	0	0	0	0	0	0	0	0	55
8:45	0	46	10	0	3	4	1	0	4	0	5	0	0	73	20:45	1	64	7	0	0	1	0	0	0	0	0	0	0	73
9:00	0	39	8	0	7	1	0	0	1	0	7	0	0	63	21:00	0	36	7	0	0	0	0	0	0	0	0	0	0	43
9:15	0	45	13	0	4	4	0	1	0	0	6	0	0	73	21:15	0	35	10	0	0	0	0	0	0	0	0	0	0	45
9:30	1	47	10	0	4	0	0	0	3	0	4	0	0	69	21:30	0	36	6	0	0	0	0	0	0	0	0	0	0	42
9:45	1	39	12	0	4	1	0	0	1	0	2	0	0	60	21:45	0	34	8	0	0	0	0	0	0	0	0	0	0	42
10:00	0	31	9	0	5	2	1	0	1	0	5	0	0	54	22:00	0	66	9	0	0	2	0	0	2	0	0	0	0	79
10:15	0	29	9	0	1	1	1	0	1	0	3	0	0	45	22:15	0	41	6	0	0	0	0	0	1	0	0	0	0	48
10:30	0	51	7	0	3	3	2	2	3	0	4	0	0	75	22:30	0	16	2	0	1	0	1	0	0	0	0	0	0	20
10:45	0	39	8	0	4	0	1	0	1	0	3	0	0	56	22:45	0	21	1	0	0	0	0	0	0	0	0	0	0	22
11:00	0	46	14	0	8	3	0	0	4	0	4	0	0	79	23:00	1	22	1	0	0	0	0	0	0	0	0	0	0	24
11:15	1	40	6	0	5	1	1	0	0	0	2	0	0	56	23:15	0	11	0	0	0	0	0	0	1	0	0	0	0	12
11:30	1	45	12	0	0	2	1	0	0	0	3	0	0	64	23:30	0	12	1	0	0	0	0	0	1	0	0	0	0	14
11:45	0	59	17	0	3	1	0	0	0	0	2	0	0	82	23:45	1	20	3	0	0	0	0	0	0	0	0	0	0	24
TOTAL	8	1,868	475	0	117	64	14	3	47	0	112	0	0	2,708	TOTAL	7	2,430	448	0	57	27	7	0	18	0	44	0	0	3,038

AM PEAK HOUR 7:00 AM
AM PEAK VOLUME 450

PM PEAK HOUR 3:45 PM
PM PEAK VOLUME 357

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	15	4,298	923	0	174	91	21	3	65	0	156	0	0	5,746
% OF TOTAL	0.3%	74.8%	16.1%	0.0%	3.0%	1.6%	0.4%	0.1%	1.1%	0.0%	2.7%	0.0%	0.0%	100.0%

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

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:
Thu, May 11, 23

LOCATION:
NORTH & SOUTH:
EAST & WEST:

San Bernardino
University-State
Highland

PROJECT #:
LOCATION #:
CONTROL:

SC4026
1
SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

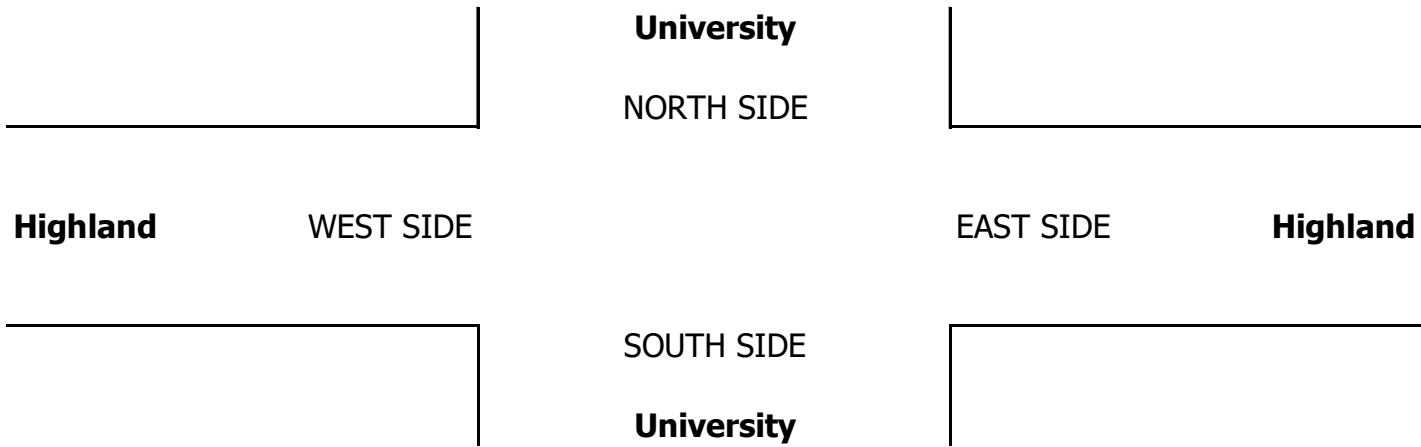
▲
N
▼
S

◀ W
E ▶

☒ Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	University-State			University-State			Highland			Highland			
LANES:	NL 1	NT 3	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 1	WL 2	WT 2	WR 0	TOTAL

AM	7:00 AM	24	26	21	6	76	11	5	26	36	59	19	10	319
	7:15 AM	41	51	23	8	87	19	6	18	42	65	33	5	398
	7:30 AM	124	68	19	11	79	35	10	30	33	68	55	6	538
	7:45 AM	92	71	27	11	65	16	17	26	32	67	48	8	480
	8:00 AM	23	60	30	6	40	10	17	42	34	56	32	3	353
	8:15 AM	22	68	36	8	67	10	15	24	42	53	30	10	385
	8:30 AM	29	56	29	17	54	8	17	26	33	46	31	9	355
	8:45 AM	24	54	41	8	57	14	15	31	28	52	28	7	359
	VOLUMES	379	454	226	75	525	123	102	223	280	466	276	58	3,187
	APPROACH %	36%	43%	21%	10%	73%	17%	17%	37%	46%	58%	35%	7%	
	APP/DEPART	1,059	/	614	723	/	1,271	605	/	524	800	/	778	0
	BEGIN PEAK HR	7:15 AM												
PM	VOLUMES	280	250	99	36	271	80	50	116	141	256	168	22	1,769
	APPROACH %	45%	40%	16%	9%	70%	21%	16%	38%	46%	57%	38%	5%	
	PEAK HR FACTOR	0.745			0.774			0.825			0.864			0.822
	APP/DEPART	629	/	322	387	/	668	307	/	251	446	/	528	0
	4:00 PM	27	74	44	22	75	24	28	52	28	63	51	16	504
	4:15 PM	40	81	46	22	74	19	30	50	20	67	53	23	525
	4:30 PM	27	61	49	20	82	15	15	54	33	75	79	11	521
	4:45 PM	28	81	33	16	58	18	20	56	34	68	61	16	489
	5:00 PM	47	92	54	12	79	16	17	54	35	66	74	21	567
	5:15 PM	49	94	51	15	84	27	21	37	25	59	68	17	547
	5:30 PM	51	79	47	20	65	33	20	40	24	70	72	15	536
	5:45 PM	50	89	52	15	55	19	26	37	30	70	63	19	525
	VOLUMES	319	651	376	142	572	171	177	380	229	538	521	138	4,214
	APPROACH %	24%	48%	28%	16%	65%	19%	23%	48%	29%	45%	44%	12%	
	APP/DEPART	1,346	/	966	885	/	1,340	786	/	897	1,197	/	1,011	0
	BEGIN PEAK HR	5:00 PM												
	VOLUMES	197	354	204	62	283	95	84	168	114	265	277	72	2,175
	APPROACH %	26%	47%	27%	14%	64%	22%	23%	46%	31%	43%	45%	12%	
	PEAK HR FACTOR	0.973			0.873			0.863			0.953			0.959
	APP/DEPART	755	/	510	440	/	663	366	/	434	614	/	568	0



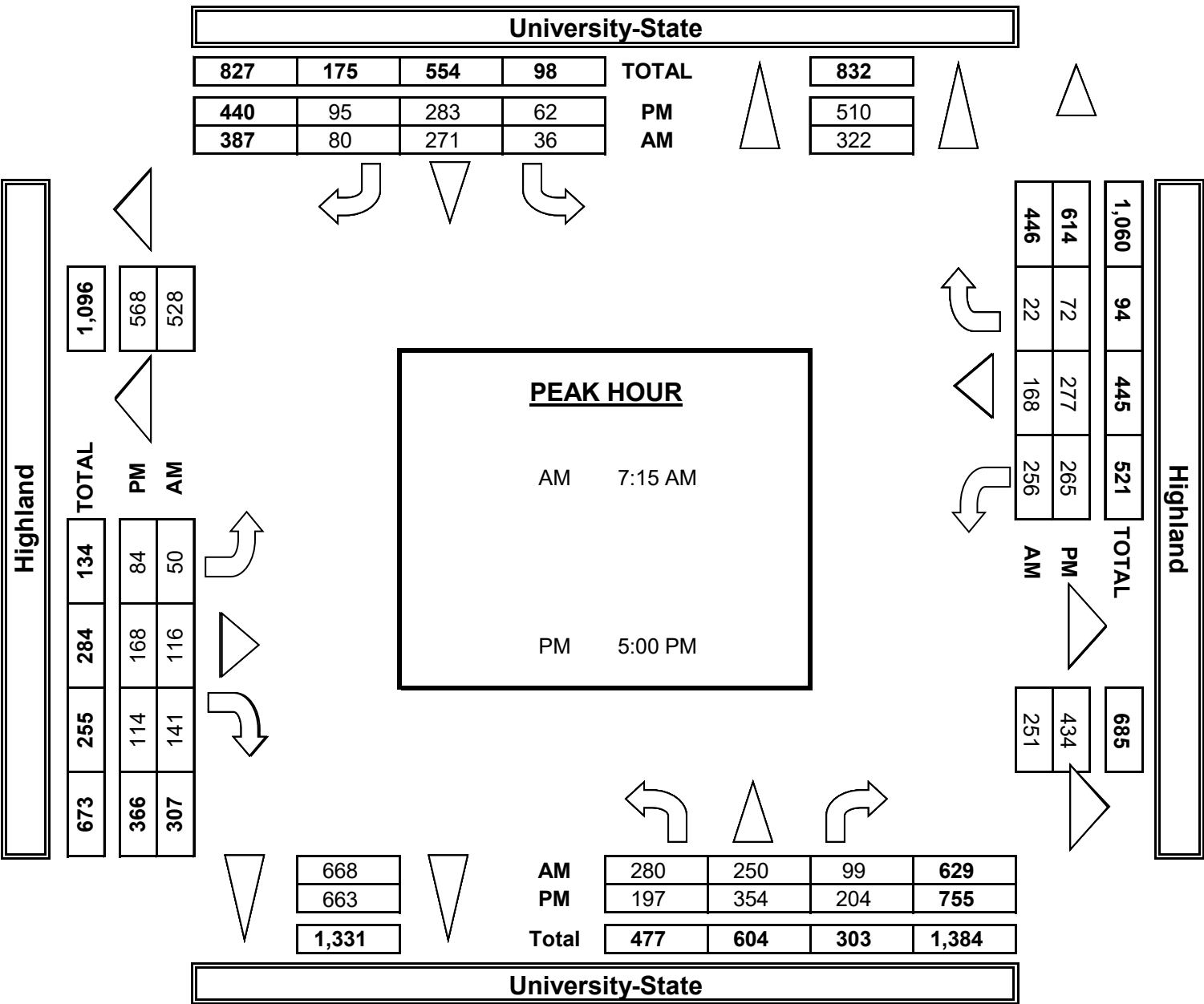
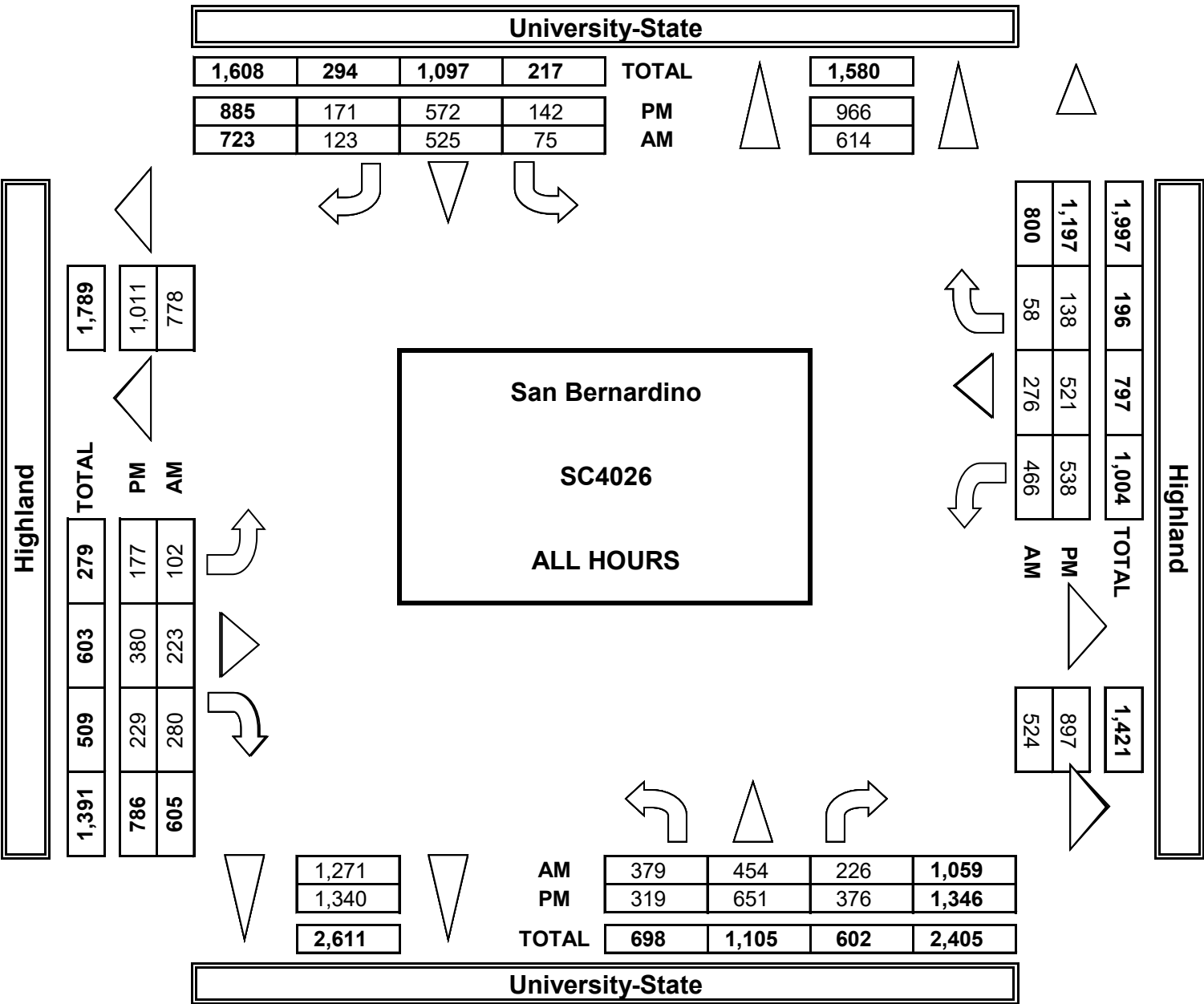
AM	7:00 AM
	7:15 AM
	7:30 AM
	7:45 AM
	8:00 AM
	8:15 AM
	8:30 AM
	8:45 AM
PM	TOTAL
	4:00 PM
	4:15 PM
	4:30 PM
	4:45 PM
	5:00 PM
	5:15 PM
	5:30 PM
	5:45 PM
TOTAL	

ALL PED AND BIKE				
E SIDE	W SIDE	S SIDE	N SIDE	TOTAL
0	0	0	1	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	1	1
1	0	0	1	2
0	0	1	2	3
1	1	0	0	2
2	1	1	5	9
2	0	1	1	4
1	0	1	2	4
0	0	2	2	4
0	0	1	4	5
1	0	0	2	3
0	0	1	4	5
0	0	0	1	1
1	0	1	3	5
5	0	7	19	31

PEDESTRIAN CROSSINGS				
E SIDE	W SIDE	S SIDE	N SIDE	TOTAL
0	0	0	1	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	1	1
1	0	0	1	2
0	0	1	2	3
1	1	0	0	2
2	1	1	5	9
2	0	1	0	3
1	0	0	1	2
0	0	0	2	2
0	0	0	4	4
1	0	0	1	2
0	0	0	4	4
0	0	0	0	0
0	0	0	4	4
0	0	0	0	0
0	0	0	2	2
4	0	1	14	19

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	1	1
0	0	1	1	2
0	0	2	0	2
0	0	1	0	1
0	0	0	1	1
0	0	1	0	1
0	0	0	1	1
1	0	1	1	3
1	0	6	5	12

AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TUR

PREPARED BY: AimTD LI

DATE: 5/11/23 THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

San Bernardino
University-State
Highland

	NOTES:			
PCE Adjusted	Class	1	2	3
	Factor	1	1.5	2

	NORTHBOUND			SOUTHBOUND	
	University-State			University-State	
LANES:	NL 1	NT 3	NR 1	SL 1	ST 2

AM	7:00 AM	25	27	23	6	94
	7:15 AM	45	53	24	9	99
	7:30 AM	130	71	20	13	89
	7:45 AM	103	76	28	11	74
	8:00 AM	23	63	34	8	48
	8:15 AM	22	72	37	9	75
	8:30 AM	33	65	31	18	60
	8:45 AM	27	64	48	8	65
	VOLUMES	407	490	244	81	602
	APPROACH %	36%	43%	21%	10%	74%
	APP/DEPART	1,140	/	659	816	/
	BEGIN PEAK HR	7:15 AM				
	VOLUMES	301	263	105	40	309
	APPROACH %	45%	39%	16%	9%	70%
	PEAK HR FACTOR	0.756			0.789	
	APP/DEPART	668	/	339	439	/
PM	4:00 PM	27	79	49	23	83
	4:15 PM	43	86	48	23	82
	4:30 PM	33	68	53	20	88
	4:45 PM	29	90	34	16	64
	5:00 PM	53	103	57	12	87
	5:15 PM	50	104	58	16	89
	5:30 PM	63	88	48	21	68
	5:45 PM	55	102	53	16	59
	VOLUMES	352	718	397	145	618
	APPROACH %	24%	49%	27%	16%	66%

APP/DEPART	1,467	/	1,042	935	/
BEGIN PEAK HR	5:00 PM				
VOLUMES	221	396	215	64	302
APPROACH %	27%	48%	26%	14%	65%
PEAK HR FACTOR	0.978			0.875	
APP/DEPART	832	/	555	462	/

Highland

WEST SIDE

1,413	815	/	936	1,245	/	1,071	0
97	85	172	117	276	283	75	2,300
21%	23%	46%	31%	44%	45%	12%	
		0.862			0.934		0.950
695	373	/	450	634	/	600	0

University

NORTH SIDE

EAST SIDE

Highland

SOUTH SIDE

University

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

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APPENDIX 3.2: EXISTING (2023) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Configurations								
Traffic Volume (vph)	1	126	373	191	182	30	182	41
Future Volume (vph)	1	126	373	191	182	30	182	41
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases					2		2	
Detector Phase	7	4	3	8	2	2	2	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	39.8	9.6	15.8	15.8	15.8	15.8	14.6
Total Split (s)	9.6	39.8	45.0	75.2	35.2	35.2	35.2	35.2
Total Split (%)	8.0%	33.2%	37.5%	62.7%	29.3%	29.3%	29.3%	29.3%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	4.8	4.8	3.6
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	5.8	4.6	5.8	5.8	5.8	5.8	4.6
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	5.3	11.3	23.0	37.8	17.9	17.9	17.9	19.2
Actuated g/C Ratio	0.08	0.16	0.33	0.55	0.26	0.26	0.26	0.28
v/c Ratio	0.01	0.45	0.76	0.11	0.63	0.07	0.37	0.09
Control Delay	39.0	18.0	31.8	9.5	33.8	21.8	6.0	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	18.0	31.8	9.5	33.8	21.8	6.0	20.3
LOS	D	B	C	A	C	C	A	C
Approach Delay		18.1		24.2		20.0		20.3
Approach LOS		B		C		C		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 69.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 21.5

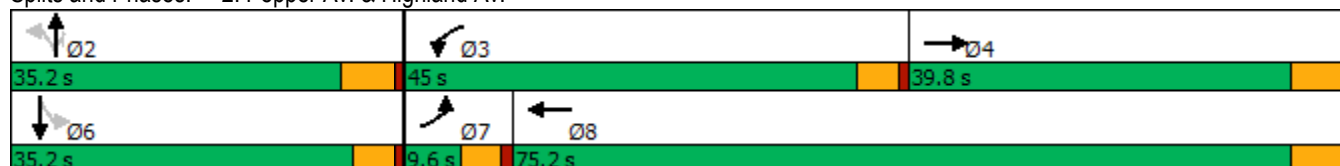
Intersection LOS: C

Intersection Capacity Utilization 62.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	126	132	373	191	0	182	30	182	0	41	2
Future Volume (veh/h)	1	126	132	373	191	0	182	30	182	0	41	2
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	1	138	108	410	210	0	200	33	97	0	45	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	3	348	253	466	1610	0	391	412	349	0	402	9
Arrive On Green	0.00	0.18	0.18	0.29	0.47	0.00	0.23	0.23	0.23	0.00	0.23	0.23
Sat Flow, veh/h	1619	1888	1375	1619	3510	0	1236	1800	1525	0	1754	39
Grp Volume(v), veh/h	1	124	122	410	210	0	200	33	97	0	0	46
Grp Sat Flow(s),veh/h/ln	1619	1710	1553	1619	1710	0	1236	1800	1525	0	0	1793
Q Serve(g_s), s	0.0	3.5	3.8	13.1	1.9	0.0	8.3	0.8	2.8	0.0	0.0	1.1
Cycle Q Clear(g_c), s	0.0	3.5	3.8	13.1	1.9	0.0	9.4	0.8	2.8	0.0	0.0	1.1
Prop In Lane	1.00		0.89	1.00		0.00	1.00		1.00	0.00		0.02
Lane Grp Cap(c), veh/h	3	315	286	466	1610	0	391	412	349	0	0	410
V/C Ratio(X)	0.33	0.39	0.43	0.88	0.13	0.00	0.51	0.08	0.28	0.00	0.00	0.11
Avail Cap(c_a), veh/h	149	1073	974	1207	4379	0	778	976	827	0	0	1012
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	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	19.4	19.6	18.4	8.1	0.0	20.2	16.4	17.2	0.0	0.0	16.5
Incr Delay (d2), s/veh	22.6	0.8	1.0	2.2	0.0	0.0	1.0	0.1	0.4	0.0	0.0	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	0.0	1.2	1.2	4.2	0.5	0.0	2.1	0.3	0.9	0.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	20.2	20.6	20.6	8.1	0.0	21.3	16.5	17.6	0.0	0.0	16.7
LnGrp LOS	D	C	C	C	A	A	C	B	B	A	A	B
Approach Vol, veh/h	247				620				330			
Approach Delay, s/veh	20.5				16.4				19.7			
Approach LOS	C				B				B			
Timer - Assigned Phs	2			3		4		6		7		8
Phs Duration (G+Y+Rc), s	18.2			20.2		15.8		18.2		4.7		31.3
Change Period (Y+Rc), s	5.8			4.6		5.8		* 5.8		4.6		5.8
Max Green Setting (Gmax), s	29.4			40.4		34.0		* 31		5.0		69.4
Max Q Clear Time (g_c+I1), s	11.4			15.1		5.8		3.1		2.0		3.9
Green Ext Time (p_c), s	1.0			0.5		1.3		0.2		0.0		1.3

Intersection Summary

HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Notes

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

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	435	2	494	295	316
Future Volume (vph)	435	2	494	295	316
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	43.0	43.0	48.0	77.0	29.0
Total Split (%)	35.8%	35.8%	40.0%	64.2%	24.2%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	32.1	32.1	35.2	59.7	19.6
Actuated g/C Ratio	0.31	0.31	0.34	0.58	0.19
v/c Ratio	0.85	0.19	0.88	0.15	0.79
Control Delay	50.0	6.8	49.7	10.5	40.7
Queue Delay	0.0	0.0	2.0	0.0	0.0
Total Delay	50.0	6.8	51.8	10.5	40.7
LOS	D	A	D	B	D
Approach Delay		41.9		36.4	40.7
Approach LOS		D		D	D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 102.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 39.2

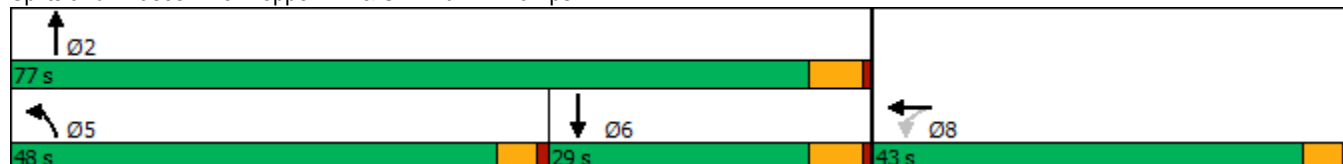
Intersection LOS: D

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	435	2	97	494	295	0	0	316	230
Future Volume (veh/h)	0	0	0	435	2	97	494	295	0	0	316	230
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				478	2	67	543	324	0	0	347	208
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				538	14	467	584	2088	0	0	440	259
Arrive On Green				0.30	0.30	0.30	0.32	0.58	0.00	0.00	0.20	0.20
Sat Flow, veh/h				1810	47	1570	1810	3705	0	0	2282	1287
Grp Volume(v), veh/h				478	0	69	543	324	0	0	285	270
Grp Sat Flow(s),veh/h/ln				1810	0	1617	1810	1805	0	0	1805	1668
Q Serve(g_s), s				21.3	0.0	2.6	24.5	3.5	0.0	0.0	12.7	13.0
Cycle Q Clear(g_c), s				21.3	0.0	2.6	24.5	3.5	0.0	0.0	12.7	13.0
Prop In Lane				1.00		0.97	1.00		0.00	0.00		0.77
Lane Grp Cap(c), veh/h				538	0	481	584	2088	0	0	363	336
V/C Ratio(X)				0.89	0.00	0.14	0.93	0.16	0.00	0.00	0.79	0.80
Avail Cap(c_a), veh/h				821	0	734	931	3046	0	0	496	459
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				28.3	0.0	21.8	27.6	8.2	0.0	0.0	32.0	32.1
Incr Delay (d2), s/veh				8.0	0.0	0.1	7.7	0.0	0.0	0.0	5.7	7.2
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				10.0	0.0	1.0	10.8	1.1	0.0	0.0	5.7	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				36.3	0.0	21.9	35.3	8.3	0.0	0.0	37.7	39.3
LnGrp LOS				D	A	C	D	A	A	A	D	D
Approach Vol, veh/h					547			867			555	
Approach Delay, s/veh					34.5			25.2			38.5	
Approach LOS					C			C			D	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	54.6			31.8			22.8			29.8		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	71.2			43.4			23.2			38.3		
Max Q Clear Time (g_c+I1), s	5.5			26.5			15.0			23.3		
Green Ext Time (p_c), s	2.1			0.7			2.0			1.8		
Intersection Summary												
HCM 6th Ctrl Delay				31.5								
HCM 6th LOS				C								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

10/30/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	129	2	661	84	667
Future Volume (vph)	129	2	661	84	667
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	46.0	46.0	56.4	17.6	74.0
Total Split (%)	38.3%	38.3%	47.0%	14.7%	61.7%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	22.7	22.7	33.7	9.3	44.3
Actuated g/C Ratio	0.29	0.29	0.43	0.12	0.56
v/c Ratio	0.27	0.75	0.73	0.43	0.36
Control Delay	26.6	24.1	22.5	47.4	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay	26.6	24.1	22.5	47.4	10.6
LOS	C	C	C	D	B
Approach Delay		24.7	22.5		14.7
Approach LOS		C	C		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 79.2

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 20.5

Intersection LOS: C

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps



HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	2	413	0	0	0	0	661	346	84	667	0
Future Volume (veh/h)	129	2	413	0	0	0	0	661	346	84	667	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	142	2	198				0	726	318	92	733	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	357	3	315				0	1052	461	130	2144	0
Arrive On Green	0.20	0.20	0.20				0.00	0.43	0.43	0.07	0.59	0.00
Sat Flow, veh/h	1810	16	1597				0	2538	1070	1810	3705	0
Grp Volume(v), veh/h	142	0	200				0	536	508	92	733	0
Grp Sat Flow(s),veh/h/ln	1810	0	1613				0	1805	1707	1810	1805	0
Q Serve(g_s), s	3.4	0.0	5.7				0.0	12.1	12.1	2.5	5.2	0.0
Cycle Q Clear(g_c), s	3.4	0.0	5.7				0.0	12.1	12.1	2.5	5.2	0.0
Prop In Lane	1.00		0.99				0.00		0.63	1.00		0.00
Lane Grp Cap(c), veh/h	357	0	318				0	777	735	130	2144	0
V/C Ratio(X)	0.40	0.00	0.63				0.00	0.69	0.69	0.71	0.34	0.00
Avail Cap(c_a), veh/h	1486	0	1325				0	1816	1718	468	4897	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	17.6	0.0	18.5				0.0	11.6	11.6	22.8	5.2	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.0				0.0	1.1	1.2	2.6	0.1	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	1.4	0.0	2.1				0.0	3.6	3.4	1.0	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	0.0	20.5				0.0	12.7	12.8	25.4	5.3	0.0
LnGrp LOS	B	A	C				A	B	B	C	A	A
Approach Vol, veh/h	342						1044			825		
Approach Delay, s/veh	19.6						12.7			7.5		
Approach LOS	B						B			A		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	8.2	27.4	14.6		35.7							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	13.0	50.6	* 41		68.2							
Max Q Clear Time (g_c+I1), s	4.5	14.1	7.7		7.2							
Green Ext Time (p_c), s	0.1	7.5	1.8		5.3							
Intersection Summary												
HCM 6th Ctrl Delay	11.9											
HCM 6th LOS	B											
Notes												

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	51	123	153	274	174	300	260	105	40	306	89
Future Volume (vph)	51	123	153	274	174	300	260	105	40	306	89
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	9.6	44.4	44.4	13.0	47.8	19.0	48.4	48.4	14.2	43.6	43.6
Total Split (%)	8.0%	37.0%	37.0%	10.8%	39.8%	15.8%	40.3%	40.3%	11.8%	36.3%	36.3%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.0	10.1	10.1	8.4	13.5	14.4	24.7	24.7	6.6	12.8	12.8
Actuated g/C Ratio	0.08	0.15	0.15	0.13	0.20	0.22	0.37	0.37	0.10	0.19	0.19
v/c Ratio	0.51	0.29	0.48	0.89	0.35	1.04	0.17	0.20	0.30	0.56	0.26
Control Delay	46.6	27.0	9.3	57.1	23.2	87.7	15.6	4.7	32.9	27.5	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	27.0	9.3	57.1	23.2	87.7	15.6	4.7	32.9	27.5	3.6
LOS	D	C	A	E	C	F	B	A	C	C	A
Approach Delay		21.7			42.9		46.4			23.1	
Approach LOS		C			D		D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 65.9

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 35.9

Intersection LOS: D

Intersection Capacity Utilization 61.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.

			
14.2 s	48.4 s	13 s	44.4 s
			
19 s	43.6 s	9.6 s	47.8 s

HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	123	153	274	174	25	300	260	105	40	306	89
Future Volume (veh/h)	51	123	153	274	174	25	300	260	105	40	306	89
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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	62	150	104	334	212	18	366	317	80	49	373	54
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	84	546	243	387	761	64	363	1725	535	73	589	263
Arrive On Green	0.05	0.16	0.16	0.13	0.24	0.24	0.22	0.35	0.35	0.05	0.17	0.17
Sat Flow, veh/h	1619	3420	1525	2956	3192	269	1619	4914	1525	1619	3420	1525
Grp Volume(v), veh/h	62	150	104	334	113	117	366	317	80	49	373	54
Grp Sat Flow(s),veh/h/ln	1619	1710	1525	1478	1710	1751	1619	1638	1525	1619	1710	1525
Q Serve(g_s), s	2.4	2.5	3.9	7.1	3.5	3.5	14.4	2.9	2.3	1.9	6.5	2.0
Cycle Q Clear(g_c), s	2.4	2.5	3.9	7.1	3.5	3.5	14.4	2.9	2.3	1.9	6.5	2.0
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	546	243	387	408	417	363	1725	535	73	589	263
V/C Ratio(X)	0.73	0.27	0.43	0.86	0.28	0.28	1.01	0.18	0.15	0.67	0.63	0.21
Avail Cap(c_a), veh/h	126	2057	917	387	1119	1146	363	3315	1029	242	2051	915
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	30.0	23.7	24.3	27.3	19.9	20.0	24.9	14.4	14.3	30.2	24.7	22.8
Incr Delay (d2), s/veh	4.6	0.3	1.2	17.2	0.4	0.4	49.2	0.1	0.1	3.8	1.1	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	1.0	0.9	1.4	3.2	1.2	1.3	9.9	0.9	0.7	0.8	2.5	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	24.0	25.5	44.5	20.3	20.3	74.1	14.5	14.4	34.0	25.8	23.2
LnGrp LOS	C	C	C	D	C	C	F	B	B	C	C	C
Approach Vol, veh/h	316			564			763			476		
Approach Delay, s/veh	26.6			34.7			43.1			26.4		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	27.6	13.0	16.0	19.0	16.1	7.9	21.1				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	9.6	43.3	8.4	38.6	14.4	38.5	5.0	42.0				
Max Q Clear Time (g_c+I1), s	3.9	4.9	9.1	5.9	16.4	8.5	4.4	5.5				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.2	0.0	2.5	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay	34.6											
HCM 6th LOS	C											

Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

	→	↖	←	↙	↑	↗	↓	
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBT	Ø7
Lane Configurations	↑↑	↖	↑↑	↖	↑	↗	↕	
Traffic Volume (vph)	263	279	253	114	3	403	2	
Future Volume (vph)	263	279	253	114	3	403	2	
Turn Type	NA	Prot	NA	Perm	NA	Perm	NA	
Protected Phases	4	3	8		2		6	7
Permitted Phases				2		2		
Detector Phase	4	3	8	2	2	2	6	
Switch Phase								
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	39.8	9.6	15.8	15.8	15.8	15.8	14.6	9.6
Total Split (s)	40.0	40.0	70.4	40.0	40.0	40.0	40.0	9.6
Total Split (%)	33.3%	33.3%	58.7%	33.3%	33.3%	33.3%	33.3%	8%
Yellow Time (s)	4.8	3.6	4.8	4.8	4.8	4.8	3.6	3.6
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	
Total Lost Time (s)	5.8	4.6	5.8	5.8	5.8	5.8	4.6	
Lead/Lag	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	None	None	None	Min	Min	Min	Min	None
Act Effect Green (s)	12.6	15.7	33.1	13.1	13.1	13.1	14.4	
Actuated g/C Ratio	0.22	0.27	0.57	0.22	0.22	0.22	0.25	
v/c Ratio	0.48	0.67	0.14	0.41	0.01	0.63	0.01	
Control Delay	22.0	28.2	6.2	26.4	20.7	7.5	18.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.0	28.2	6.2	26.4	20.7	7.5	18.0	
LOS	C	C	A	C	C	A	B	
Approach Delay	22.0		17.8		11.7		18.0	
Approach LOS	C		B		B		B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 58.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.6

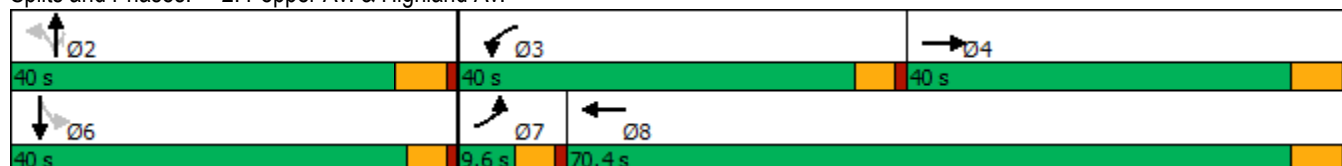
Intersection LOS: B

Intersection Capacity Utilization 58.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	263	79	279	253	0	114	3	403	0	2	1
Future Volume (veh/h)	0	263	79	279	253	0	114	3	403	0	2	1
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	0	274	53	291	264	0	119	3	253	0	2	1
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	3	612	117	352	1810	0	438	401	340	0	252	126
Arrive On Green	0.00	0.21	0.21	0.22	0.53	0.00	0.22	0.22	0.22	0.00	0.22	0.22
Sat Flow, veh/h	1619	2865	546	1619	3510	0	1285	1800	1525	0	1132	566
Grp Volume(v), veh/h	0	162	165	291	264	0	119	3	253	0	0	3
Grp Sat Flow(s),veh/h/ln	1619	1710	1702	1619	1710	0	1285	1800	1525	0	0	1698
Q Serve(g_s), s	0.0	3.8	4.0	8.0	1.8	0.0	3.7	0.1	7.2	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	3.8	4.0	8.0	1.8	0.0	3.8	0.1	7.2	0.0	0.0	0.1
Prop In Lane	1.00		0.32	1.00		0.00	1.00		1.00	0.00		0.33
Lane Grp Cap(c), veh/h	3	365	364	352	1810	0	438	401	340	0	0	378
V/C Ratio(X)	0.00	0.44	0.45	0.83	0.15	0.00	0.27	0.01	0.74	0.00	0.00	0.01
Avail Cap(c_a), veh/h	173	1251	1244	1226	4724	0	1092	1316	1116	0	0	1285
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.0	16.0	17.5	5.6	0.0	15.6	14.2	16.9	0.0	0.0	14.2
Incr Delay (d2), s/veh	0.0	0.8	0.9	1.9	0.0	0.0	0.3	0.0	3.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.3	1.3	2.5	0.4	0.0	0.9	0.0	2.3	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.8	16.9	19.4	5.7	0.0	16.0	14.2	20.2	0.0	0.0	14.2
LnGrp LOS	A	B	B	B	A	A	B	B	C	A	A	B
Approach Vol, veh/h		327			555			375			3	
Approach Delay, s/veh		16.9			12.9			18.8			14.2	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		16.2	14.8	15.8		16.2	0.0	30.6				
Change Period (Y+Rc), s		5.8	4.6	5.8		* 5.8	4.6	5.8				
Max Green Setting (Gmax), s		34.2	35.4	34.2		* 35	5.0	64.6				
Max Q Clear Time (g_c+I1), s		9.2	10.0	6.0		2.1	0.0	3.8				
Green Ext Time (p_c), s		1.2	0.4	1.7		0.0	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			15.7									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

	↙ ← ↖ ↑ ↓				
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↖	↖	↑↑	↑↑
Traffic Volume (vph)	324	7	367	461	208
Future Volume (vph)	324	7	367	461	208
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	44.0	44.0	48.0	76.0	28.0
Total Split (%)	36.7%	36.7%	40.0%	63.3%	23.3%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	19.2	19.2	19.9	37.0	12.2
Actuated g/C Ratio	0.28	0.28	0.30	0.55	0.18
v/c Ratio	0.65	0.13	0.71	0.24	0.51
Control Delay	28.9	7.9	30.4	8.8	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	7.9	30.4	8.8	20.3
LOS	C	A	C	A	C
Approach Delay		25.3		18.4	20.3
Approach LOS		C		B	C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 67.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 20.5

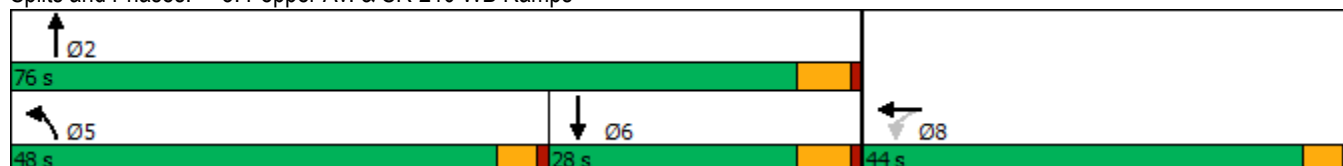
Intersection LOS: C

Intersection Capacity Utilization 71.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	324	7	59	367	461	0	0	208	152
Future Volume (veh/h)	0	0	0	324	7	59	367	461	0	0	208	152
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				334	7	32	378	475	0	0	214	88
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				430	71	323	449	1975	0	0	516	205
Arrive On Green				0.24	0.24	0.24	0.25	0.55	0.00	0.00	0.20	0.20
Sat Flow, veh/h				1810	297	1358	1810	3705	0	0	2616	1003
Grp Volume(v), veh/h				334	0	39	378	475	0	0	151	151
Grp Sat Flow(s),veh/h/ln				1810	0	1655	1810	1805	0	0	1805	1719
Q Serve(g_s), s				8.4	0.0	0.9	9.7	3.4	0.0	0.0	3.6	3.7
Cycle Q Clear(g_c), s				8.4	0.0	0.9	9.7	3.4	0.0	0.0	3.6	3.7
Prop In Lane				1.00		0.82	1.00		0.00	0.00		0.58
Lane Grp Cap(c), veh/h				430	0	394	449	1975	0	0	370	352
V/C Ratio(X)				0.78	0.00	0.10	0.84	0.24	0.00	0.00	0.41	0.43
Avail Cap(c_a), veh/h				1456	0	1332	1608	5189	0	0	820	782
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				17.4	0.0	14.5	17.4	5.8	0.0	0.0	16.9	16.9
Incr Delay (d2), s/veh				3.0	0.0	0.1	1.7	0.1	0.0	0.0	0.7	0.8
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				3.4	0.0	0.3	3.4	0.7	0.0	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.4	0.0	14.6	19.1	5.8	0.0	0.0	17.6	17.8
LnGrp LOS				C	A	B	B	A	A	A	B	B
Approach Vol, veh/h					373			853			302	
Approach Delay, s/veh					19.8			11.7			17.7	
Approach LOS					B			B			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	32.5			16.7			15.8			16.3		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	70.2			43.4			22.2			39.3		
Max Q Clear Time (g_c+I1), s	5.4			11.7			5.7			10.4		
Green Ext Time (p_c), s	3.1			0.5			1.4			1.3		
Intersection Summary												
HCM 6th Ctrl Delay	14.9											
HCM 6th LOS	B											

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

10/30/2023

					
Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	246	0	582	32	499
Future Volume (vph)	246	0	582	32	499
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	54.0	54.0	54.0	12.0	66.0
Total Split (%)	45.0%	45.0%	45.0%	10.0%	55.0%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	20.2	20.2	23.7	6.6	26.9
Actuated g/C Ratio	0.34	0.34	0.40	0.11	0.45
v/c Ratio	0.42	0.68	0.65	0.17	0.32
Control Delay	19.8	13.9	17.2	36.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	13.9	17.2	36.6	11.0
LOS	B	B	B	D	B
Approach Delay		15.9	17.2		12.6
Approach LOS		B	B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 59.5

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 15.6

Intersection LOS: B

Intersection Capacity Utilization 71.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps

		
Ø1	Ø2	Ø4
12 s	54 s	54 s
		
Ø6		
66 s		

HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	246	0	474	0	0	0	0	582	287	32	499	0
Future Volume (veh/h)	246	0	474	0	0	0	0	582	287	32	499	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	259	0	294				0	613	246	34	525	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	487	0	433				0	928	372	69	1826	0
Arrive On Green	0.27	0.00	0.27				0.00	0.37	0.37	0.04	0.51	0.00
Sat Flow, veh/h	1810	0	1610				0	2610	1008	1810	3705	0
Grp Volume(v), veh/h	259	0	294				0	440	419	34	525	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1805	1718	1810	1805	0
Q Serve(g_s), s	5.7	0.0	7.6				0.0	9.5	9.5	0.9	3.9	0.0
Cycle Q Clear(g_c), s	5.7	0.0	7.6				0.0	9.5	9.5	0.9	3.9	0.0
Prop In Lane	1.00		1.00				0.00		0.59	1.00		0.00
Lane Grp Cap(c), veh/h	487	0	433				0	666	634	69	1826	0
V/C Ratio(X)	0.53	0.00	0.68				0.00	0.66	0.66	0.49	0.29	0.00
Avail Cap(c_a), veh/h	1912	0	1702				0	1865	1776	287	4659	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	14.5	0.0	15.2				0.0	12.3	12.3	22.0	6.7	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.9				0.0	1.1	1.2	2.0	0.1	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	2.1	0.0	2.6				0.0	2.9	2.8	0.3	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	0.0	17.1				0.0	13.4	13.5	24.0	6.8	0.0
LnGrp LOS	B	A	B				A	B	B	C	A	A
Approach Vol, veh/h	553						859			559		
Approach Delay, s/veh	16.3						13.4			7.8		
Approach LOS	B						B			A		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	6.4	23.0	17.3		29.4							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	7.4	48.2	* 49		60.2							
Max Q Clear Time (g_c+I1), s	2.9	11.5	9.6		5.9							
Green Ext Time (p_c), s	0.0	5.7	2.9		3.5							
Intersection Summary												
HCM 6th Ctrl Delay			12.6									
HCM 6th LOS			B									
Notes												

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	85	171	117	276	282	221	395	215	64	301	97
Future Volume (vph)	85	171	117	276	282	221	395	215	64	301	97
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	11.0	43.8	43.8	15.0	47.8	18.0	45.6	45.6	15.6	43.2	43.2
Total Split (%)	9.2%	36.5%	36.5%	12.5%	39.8%	15.0%	38.0%	38.0%	13.0%	36.0%	36.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.4	10.4	10.4	10.4	14.4	13.4	19.9	19.9	7.3	11.8	11.8
Actuated g/C Ratio	0.10	0.16	0.16	0.16	0.22	0.20	0.30	0.30	0.11	0.18	0.18
v/c Ratio	0.57	0.33	0.36	0.62	0.50	0.70	0.28	0.37	0.38	0.51	0.28
Control Delay	46.3	27.2	9.2	33.4	23.8	39.3	19.5	5.3	33.8	27.8	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	27.2	9.2	33.4	23.8	39.3	19.5	5.3	33.8	27.8	7.2
LOS	D	C	A	C	C	D	B	A	C	C	A
Approach Delay		25.9			28.0		21.1			24.3	
Approach LOS		C			C		C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 66.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 24.4

Intersection LOS: C

Intersection Capacity Utilization 60.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.

Ø1	Ø2	Ø3	Ø4
15.6 s	45.6 s	15 s	43.8 s
Ø5	Ø6	Ø7	Ø8
18 s	43.2 s	11 s	47.8 s

HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	171	117	276	282	75	221	395	215	64	301	97
Future Volume (veh/h)	85	171	117	276	282	75	221	395	215	64	301	97
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		0.98	1.00		0.99	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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	89	178	63	288	294	46	230	411	98	67	314	61
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	110	662	291	382	754	116	274	1397	428	91	586	261
Arrive On Green	0.07	0.19	0.19	0.13	0.25	0.25	0.17	0.28	0.28	0.06	0.17	0.17
Sat Flow, veh/h	1619	3420	1504	2956	2958	457	1619	4914	1504	1619	3420	1525
Grp Volume(v), veh/h	89	178	63	288	168	172	230	411	98	67	314	61
Grp Sat Flow(s),veh/h/ln	1619	1710	1504	1478	1710	1705	1619	1638	1504	1619	1710	1525
Q Serve(g_s), s	3.2	2.6	2.1	5.6	4.9	5.0	8.2	3.9	3.0	2.4	5.0	2.1
Cycle Q Clear(g_c), s	3.2	2.6	2.1	5.6	4.9	5.0	8.2	3.9	3.0	2.4	5.0	2.1
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	662	291	382	436	435	274	1397	428	91	586	261
V/C Ratio(X)	0.81	0.27	0.22	0.75	0.39	0.40	0.84	0.29	0.23	0.74	0.54	0.23
Avail Cap(c_a), veh/h	174	2178	958	515	1204	1200	364	3335	1021	298	2184	974
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	27.4	20.5	20.2	25.1	18.4	18.4	24.0	16.7	16.3	27.7	22.6	21.3
Incr Delay (d2), s/veh	6.7	0.2	0.4	2.7	0.6	0.6	9.9	0.1	0.3	4.3	0.8	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	1.3	0.9	0.7	1.9	1.7	1.7	3.6	1.3	0.9	1.0	1.9	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	20.7	20.6	27.7	18.9	19.0	33.9	16.8	16.6	32.0	23.3	21.8
LnGrp LOS	C	C	C	C	B	B	C	B	B	C	C	C
Approach Vol, veh/h		330			628			739			442	
Approach Delay, s/veh		24.3			23.0			22.1			24.4	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	22.1	12.3	17.4	14.7	15.3	8.6	21.0				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	11.0	40.5	10.4	38.0	13.4	38.1	6.4	42.0				
Max Q Clear Time (g_c+I1), s	4.4	5.9	7.6	4.6	10.2	7.0	5.2	7.0				
Green Ext Time (p_c), s	0.0	3.2	0.2	1.2	0.1	2.3	0.0	1.8				
Intersection Summary												
HCM 6th Ctrl Delay			23.2									
HCM 6th LOS			C									

APPENDIX 3.3: EXISTING (2023) CONDITIONS OFF-RAMP QUEUEING ANALYSIS WORKSHEETS

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Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

10/30/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	478	109	543	324	600
v/c Ratio	0.85	0.19	0.88	0.15	0.79
Control Delay	50.0	6.8	49.7	10.5	40.7
Queue Delay	0.0	0.0	2.0	0.0	0.0
Total Delay	50.0	6.8	51.8	10.5	40.7
Queue Length 50th (ft)	322	1	369	53	172
Queue Length 95th (ft)	#516	42	#567	77	252
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	705	698	799	2589	904
Starvation Cap Reductn	0	0	134	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.16	0.82	0.13	0.66

Intersection Summary

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

Queue shown is maximum after two cycles.

4: Pepper Av. & SR-210 EB Ramps

10/30/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	142	456	1106	92	733
v/c Ratio	0.27	0.75	0.73	0.43	0.36
Control Delay	26.6	24.1	22.5	47.4	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay	26.6	24.1	22.5	47.4	10.6
Queue Length 50th (ft)	54	111	212	42	87
Queue Length 95th (ft)	130	289	423	124	193
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	1066	1037	2353	343	3003
Starvation Cap Reductn	0	0	0	0	739
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.44	0.47	0.27	0.32
Intersection Summary					

Queues
3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

10/30/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	334	68	378	475	371
v/c Ratio	0.65	0.13	0.71	0.24	0.51
Control Delay	28.9	7.9	30.4	8.8	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	7.9	30.4	8.8	20.3
Queue Length 50th (ft)	111	2	126	45	42
Queue Length 95th (ft)	256	32	287	98	113
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	1117	1041	1234	3365	1272
Starvation Cap Reductn	0	0	21	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.30	0.07	0.31	0.14	0.29
Intersection Summary					



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	259	499	915	34	525
v/c Ratio	0.42	0.68	0.65	0.17	0.32
Control Delay	19.8	13.9	17.2	36.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	13.9	17.2	36.6	11.0
Queue Length 50th (ft)	57	48	93	10	51
Queue Length 95th (ft)	182	217	288	51	127
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	1483	1377	2802	263	3185
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.36	0.33	0.13	0.16
Intersection Summary					

APPENDIX 4.1: POST PROCESSING WORKSEHETS

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Project: Pepper 210 Commerce Center
Scenario: Horizon Year (2040) Without Project

Job #: 14324
Analyst: CP
Date: 10/30/23

LOCATION: State St. & Highland Av.
FORECAST YEAR: 2040

INDIVIDUAL TURN VOLUME GROWTH REVIEW									
APPROACH	TURNING MOVEMENT	AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
		EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	280	315	35	13%	197	292	95	48%
	Through	250	454	204	82%	354	590	236	67%
	Right	99	131	32	32%	204	267	63	31%
	NB Total	629	900	271	43%	755	1,149	394	52%
SOUTH BOUND	Left	36	62	26	72%	62	93	31	50%
	Through	271	410	139	51%	283	405	122	43%
	Right	80	117	37	46%	95	162	67	71%
	SB Total	387	589	202	52%	440	660	220	50%
EAST BOUND	Left	50	91	41	82%	84	198	114	136%
	Through	116	155	39	34%	168	311	143	85%
	Right	141	164	23	16%	114	201	87	76%
	EB Total	307	410	103	34%	366	710	344	94%
WEST BOUND	Left	256	288	32	13%	265	287	22	8%
	Through	168	183	15	9%	277	358	81	29%
	Right	22	39	17	77%	72	105	33	46%
	WB Total	446	510	64	14%	614	750	136	22%
TOTAL ENTERING VOLUME		1,769	2,409	640	36%	2,175	3,269	1094	50%

FORECAST PEAK HOUR TO ADT COMPARISON					
		VOLUMES		PERCENT OF ADT	
		AM	PM	AM	PM
North Leg	Inbound	589	660		
North Leg	Outbound	584	893		
North Leg	TOTAL	1,173	1,553	7%	9%
South Leg	Inbound	900	1,149		
South Leg	Outbound	862	893		
South Leg	TOTAL	1,762	2,042	9%	11%
East Leg	Inbound	510	750		
East Leg	Outbound	348	671		
East Leg	TOTAL	858	1,421	12%	20%
West Leg	Inbound	410	710		
West Leg	Outbound	615	812		
West Leg	TOTAL	1,025	1,522	17%	26%
OVERALL TOTAL		4,818	6,538	10%	13%

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APPENDIX 5.1: E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	263	375	69	16	1
Future Vol, veh/h	4	263	375	69	16	1
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	4	286	408	75	17	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	483	0	0 597 242
Stage 1	-	-	- 446 -
Stage 2	-	-	- 151 -
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	1090	-	- 439 765
Stage 1	-	-	- 618 -
Stage 2	-	-	- 867 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1090	-	- 437 765
Mov Cap-2 Maneuver	-	-	- 514 -
Stage 1	-	-	- 616 -
Stage 2	-	-	- 867 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.1	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1090	-	-	-	524
HCM Lane V/C Ratio	0.004	-	-	-	0.035
HCM Control Delay (s/veh)	8.3	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.1

Timings

Pepper 210 Commerce Center TA (JN:14324)

2: Pepper Av. & Highland Av.

04/03/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	4	128	373	198	243	58	182	2	14	3
Future Volume (vph)	4	128	373	198	243	58	182	2	14	3
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	35.8	9.6	15.8	10.8	15.8	15.8	9.6	14.6	14.6
Total Split (s)	10.8	35.8	40.2	65.2	29.0	34.4	34.4	9.6	15.0	15.0
Total Split (%)	9.0%	29.8%	33.5%	54.3%	24.2%	28.7%	28.7%	8.0%	12.5%	12.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	4.8	4.8	3.6	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	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	5.8	4.6	5.8	5.8	5.8	5.8	4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	Min	Min	Min	Min	Min
Act Effect Green (s)	5.2	11.2	28.1	42.2	20.5	25.6	25.6	5.1	10.2	10.2
Actuated g/C Ratio	0.06	0.12	0.31	0.46	0.23	0.28	0.28	0.06	0.11	0.11
v/c Ratio	0.04	0.57	0.82	0.14	0.73	0.12	0.34	0.02	0.07	0.00
Control Delay (s/veh)	46.7	23.2	44.5	14.8	47.3	27.2	6.1	46.5	42.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.7	23.2	44.5	14.8	47.3	27.2	6.1	46.5	42.2	0.0
LOS	D	C	D	B	D	C	A	D	D	A
Approach Delay (s/veh)		23.6		34.0		29.4			36.3	
Approach LOS		C		C		C			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 91.1

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay (s/veh): 30.3

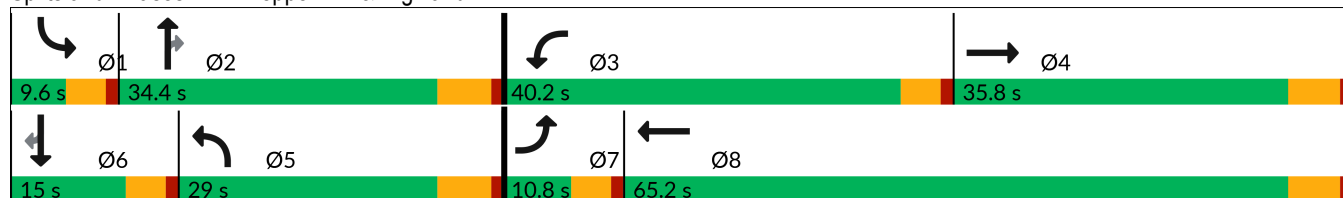
Intersection LOS: C

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	128	147	373	198	7	243	58	182	2	14	3
Future Volume (veh/h)	4	128	147	373	198	7	243	58	182	2	14	3
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	4	141	-30	410	218	6	267	64	151	2	15	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	9	444	0	449	1367	38	311	463	392	105	234	198
Arrive On Green	0.01	0.13	0.00	0.28	0.40	0.40	0.19	0.26	0.26	0.07	0.13	0.13
Sat Flow, veh/h	1619	3510	0	1619	3400	93	1619	1800	1525	1619	1800	1525
Grp Volume(v), veh/h	4	111	0	410	109	115	267	64	151	2	15	2
Grp Sat Flow(s),veh/h/ln	1619	1710	0	1619	1710	1783	1619	1800	1525	1619	1800	1525
Q Serve(g_s), s	0.2	2.2	0.0	18.8	3.1	3.2	12.3	2.1	6.3	0.1	0.6	0.1
Cycle Q Clear(g_c), s	0.2	2.2	0.0	18.8	3.1	3.2	12.3	2.1	6.3	0.1	0.6	0.1
Prop In Lane	1.00		0.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	9	444	0	449	688	717	311	463	392	105	234	198
V/C Ratio(X)	0.46	0.25	0.00	0.91	0.16	0.16	0.86	0.14	0.39	0.02	0.06	0.01
Avail Cap(c_a), veh/h	131	1334	0	749	1321	1377	488	669	567	105	243	206
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	30.1	0.0	26.9	14.7	14.7	30.1	22.0	23.6	33.7	29.3	21.4
Incr Delay (d2), s/veh	13.7	0.3	0.0	6.0	0.1	0.1	8.9	0.1	0.6	0.1	0.1	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.9	0.0	7.3	1.1	1.1	5.1	0.8	2.1	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.9	30.4	0.0	32.9	14.8	14.8	39.0	22.1	24.2	33.7	29.5	21.4
LnGrp LOS	D	C		C	B	B	D	C	C	C	C	C
Approach Vol, veh/h		115			634			482			19	
Approach Delay, s/veh		31.1			26.5			32.1			29.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	25.6	25.9	15.8	20.6	14.6	5.0	36.7				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	5.8	4.6	4.6	5.8				
Max Green Setting (Gmax), s	5.0	28.6	35.6	30.0	23.2	10.4	6.2	59.4				
Max Q Clear Time (g_c+I1), s	2.1	8.3	20.8	4.2	14.3	2.6	2.2	5.2				
Green Ext Time (p_c), s	0.0	0.7	0.5	0.5	0.5	0.0	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			29.1									
HCM 6th LOS			C									

Timings

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/03/2024

	↙	←	↖	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↙	↖	↖	↑↑	↑↖
Traffic Volume (vph)	435	2	494	347	317
Future Volume (vph)	435	2	494	347	317
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	43.0	43.0	41.0	77.0	36.0
Total Split (%)	35.8%	35.8%	34.2%	64.2%	30.0%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	32.1	32.1	36.0	61.1	20.5
Actuated g/C Ratio	0.31	0.31	0.35	0.59	0.20
v/c Ratio	0.85	0.24	0.87	0.17	0.75
Control Delay (s/veh)	50.6	5.9	50.1	10.6	37.0
Queue Delay	0.0	0.0	13.2	0.0	0.0
Total Delay (s/veh)	50.6	5.9	63.3	10.6	37.1
LOS	D	A	E	B	D
Approach Delay (s/veh)		40.0		41.6	37.1
Approach LOS		D		D	D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 103.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay (s/veh): 39.9

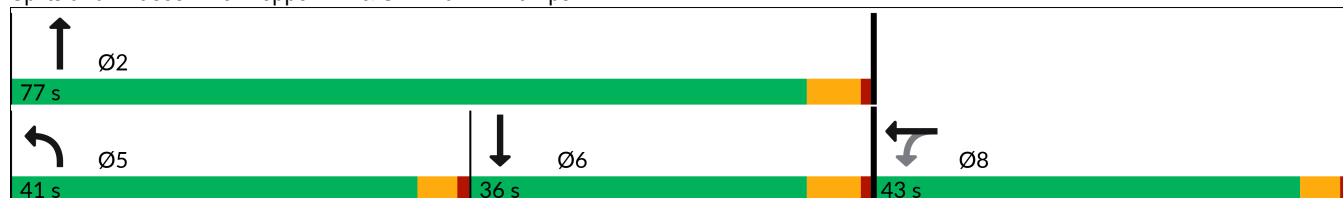
Intersection LOS: D

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	435	2	134	494	347	0	0	317	217
Future Volume (veh/h)	0	0	0	435	2	134	494	347	0	0	317	217
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				478	2	107	543	381	0	0	348	193
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				540	9	473	582	2089	0	0	458	249
Arrive On Green				0.30	0.30	0.30	0.32	0.58	0.00	0.00	0.20	0.20
Sat Flow, veh/h				1810	30	1585	1810	3705	0	0	2351	1228
Grp Volume(v), veh/h				478	0	109	543	381	0	0	277	264
Grp Sat Flow(s),veh/h/ln				1810	0	1615	1810	1805	0	0	1805	1679
Q Serve(g_s), s				21.5	0.0	4.3	24.9	4.3	0.0	0.0	12.4	12.7
Cycle Q Clear(g_c), s				21.5	0.0	4.3	24.9	4.3	0.0	0.0	12.4	12.7
Prop In Lane				1.00		0.98	1.00		0.00	0.00		0.73
Lane Grp Cap(c), veh/h				540	0	482	582	2089	0	0	367	341
V/C Ratio(X)				0.88	0.00	0.23	0.93	0.18	0.00	0.00	0.76	0.77
Avail Cap(c_a), veh/h				810	0	723	770	3006	0	0	637	593
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				28.6	0.0	22.6	28.1	8.5	0.0	0.0	32.1	32.2
Incr Delay (d2), s/veh				7.9	0.0	0.2	13.5	0.0	0.0	0.0	3.2	3.8
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				10.1	0.0	1.6	11.9	1.4	0.0	0.0	5.4	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				36.5	0.0	22.8	41.6	8.5	0.0	0.0	35.3	36.0
LnGrp LOS				D		C	D	A			D	D
Approach Vol, veh/h					587			924			541	
Approach Delay, s/veh					33.9			28.0			35.6	
Approach LOS					C			C			D	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	55.3			32.1			23.2			30.2		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	71.2			36.4			30.2			38.3		
Max Q Clear Time (g_c+I1), s	6.3			26.9			14.7			23.5		
Green Ext Time (p_c), s	2.5			0.6			2.7			2.0		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				31.7								
HCM 6th LOS				C								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

04/03/2024



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	159	2	683	79	672
Future Volume (vph)	159	2	683	79	672
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	46.0	46.0	24.0	50.0	74.0
Total Split (%)	38.3%	38.3%	20.0%	41.7%	61.7%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	17.1	17.1	19.0	7.8	28.8
Actuated g/C Ratio	0.30	0.30	0.33	0.14	0.51
v/c Ratio	0.32	0.72	0.95	0.35	0.40
Control Delay (s/veh)	17.7	17.7	39.9	29.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.7	17.7	39.9	29.2	10.2
LOS	B	B	D	C	B
Approach Delay (s/veh)		17.7	39.9		12.2
Approach LOS		B	D		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 56.8

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay (s/veh): 25.7

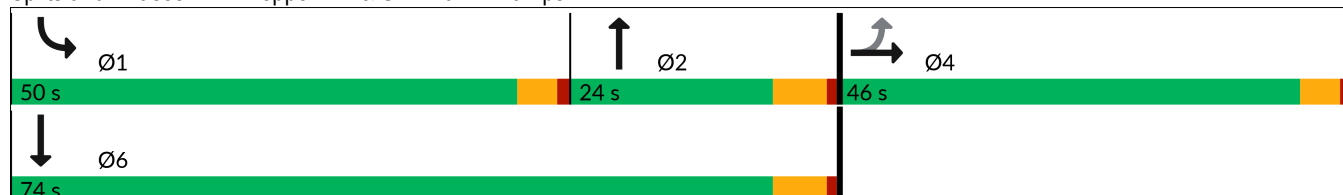
Intersection LOS: C

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15

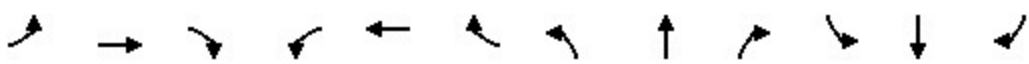
Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps



HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	2	413	0	0	0	0	683	346	79	672	0
Future Volume (veh/h)	159	2	413	0	0	0	0	683	346	79	672	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	175	2	42				0	751	188	87	738	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	396	16	338				0	995	249	137	1923	0
Arrive On Green	0.22	0.22	0.22				0.00	0.35	0.35	0.08	0.53	0.00
Sat Flow, veh/h	1810	74	1548				0	2955	716	1810	3705	0
Grp Volume(v), veh/h	175	0	44				0	474	465	87	738	0
Grp Sat Flow(s),veh/h/ln	1810	0	1621				0	1805	1771	1810	1805	0
Q Serve(g_s), s	3.5	0.0	0.9				0.0	9.8	9.8	2.0	5.1	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.9				0.0	9.8	9.8	2.0	5.1	0.0
Prop In Lane	1.00		0.95				0.00		0.40	1.00		0.00
Lane Grp Cap(c), veh/h	396	0	355				0	628	616	137	1923	0
V/C Ratio(X)	0.44	0.00	0.12				0.00	0.75	0.75	0.63	0.38	0.00
Avail Cap(c_a), veh/h	1770	0	1586				0	778	763	1946	5831	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	14.3	0.0	13.2				0.0	12.2	12.2	18.9	5.8	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.2				0.0	3.3	3.4	1.8	0.1	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	1.3	0.0	0.3				0.0	3.2	3.1	0.7	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.0	0.0	13.4				0.0	15.5	15.5	20.8	5.9	0.0
LnGrp LOS	B		B					B	B	C	A	
Approach Vol, veh/h	219						939			825		
Approach Delay, s/veh	14.7						15.5			7.5		
Approach LOS	B						B			A		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	7.8	20.5		13.9		28.3						
Change Period (Y+Rc), s	4.6	5.8		4.7		5.8						
Max Green Setting (Gmax), s	45.4	18.2		41.3		68.2						
Max Q Clear Time (g_c+I1), s	4.0	11.8		5.5		7.1						
Green Ext Time (p_c), s	0.1	2.9		0.8		5.3						
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	12.1											
HCM 6th LOS	B											

Timings

Pepper 210 Commerce Center TA (JN:14324)

5: State St. & Highland Av.

04/03/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	52	125	154	274	183	303	260	105	40	306	92
Future Volume (vph)	52	125	154	274	183	303	260	105	40	306	92
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	9.6	44.4	44.4	13.0	47.8	19.0	48.4	48.4	14.2	43.6	43.6
Total Split (%)	8.0%	37.0%	37.0%	10.8%	39.8%	15.8%	40.3%	40.3%	11.8%	36.3%	36.3%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.0	10.1	10.1	8.4	13.5	14.4	24.7	24.7	6.6	12.8	12.8
Actuated g/C Ratio	0.08	0.15	0.15	0.13	0.20	0.22	0.37	0.37	0.10	0.19	0.19
v/c Ratio	0.51	0.28	0.47	0.88	0.36	1.04	0.17	0.19	0.30	0.56	0.26
Control Delay (s/veh)	47.1	26.9	9.2	57.1	23.5	90.8	15.5	4.6	32.8	27.4	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	47.1	26.9	9.2	57.1	23.5	90.8	15.5	4.6	32.8	27.4	3.8
LOS	D	C	A	E	C	F	B	A	C	C	A
Approach Delay (s/veh)		21.9			42.6		48.0			23.0	
Approach LOS		C			D		D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 65.9

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay (s/veh): 36.5

Intersection LOS: D

Intersection Capacity Utilization 62.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.



HCM 6th Signalized Intersection Summary 5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	125	154	274	183	25	303	260	105	40	306	92
Future Volume (veh/h)	52	125	154	274	183	25	303	260	105	40	306	92
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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	63	152	105	334	223	18	370	317	80	49	373	57
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	85	546	243	387	763	61	363	1726	536	73	589	263
Arrive On Green	0.05	0.16	0.16	0.13	0.24	0.24	0.22	0.35	0.35	0.05	0.17	0.17
Sat Flow, veh/h	1619	3420	1525	2956	3207	257	1619	4914	1525	1619	3420	1525
Grp Volume(v), veh/h	63	152	105	334	118	123	370	317	80	49	373	57
Grp Sat Flow(s),veh/h/ln	1619	1710	1525	1478	1710	1753	1619	1638	1525	1619	1710	1525
Q Serve(g_s), s	2.5	2.5	4.0	7.1	3.6	3.7	14.4	2.9	2.3	1.9	6.5	2.1
Cycle Q Clear(g_c), s	2.5	2.5	4.0	7.1	3.6	3.7	14.4	2.9	2.3	1.9	6.5	2.1
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	546	243	387	407	417	363	1726	536	73	589	263
V/C Ratio(X)	0.74	0.28	0.43	0.86	0.29	0.29	1.02	0.18	0.15	0.67	0.63	0.22
Avail Cap(c_a), veh/h	126	2056	917	387	1119	1147	363	3314	1029	242	2051	915
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	30.0	23.7	24.3	27.3	20.0	20.1	24.9	14.4	14.3	30.2	24.7	22.8
Incr Delay (d2), s/veh	4.7	0.3	1.2	17.2	0.4	0.4	52.1	0.1	0.1	3.8	1.1	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	1.0	0.9	1.4	3.2	1.3	1.4	10.2	0.9	0.7	0.8	2.5	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.6	24.0	25.6	44.6	20.4	20.4	77.0	14.5	14.4	34.0	25.8	23.3
LnGrp LOS	C	C	C	D	C	C	F	B	B	C	C	C
Approach Vol, veh/h	320			575			767			479		
Approach Delay, s/veh	26.6			34.4			44.6			26.4		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	27.6	13.0	16.0	19.0	16.2	8.0	21.1				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	9.6	43.3	8.4	38.6	14.4	38.5	5.0	42.0				
Max Q Clear Time (g_c+I1), s	3.9	4.9	9.1	6.0	16.4	8.5	4.5	5.7				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.2	0.0	2.6	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	35.1											
HCM 6th LOS	D											

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	343	373	35	88	6
Future Vol, veh/h	2	343	373	35	88	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	2	373	405	38	96	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	443	0	0	615	222
Stage 1	-	-	-	424	-
Stage 2	-	-	-	191	-
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	1128	-	-	428	788
Stage 1	-	-	-	634	-
Stage 2	-	-	-	828	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1128	-	-	427	788
Mov Cap-2 Maneuver	-	-	-	514	-
Stage 1	-	-	-	633	-
Stage 2	-	-	-	828	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1128	-	-	-	526
HCM Lane V/C Ratio	0.002	-	-	-	0.194
HCM Control Delay (s/veh)	8.2	-	-	-	13.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.7

Timings

Pepper 210 Commerce Center TA (JN:14324)

2: Pepper Av. & Highland Av.

04/03/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	1	272	279	257	145	77	403	9	130	5
Future Volume (vph)	1	272	279	257	145	77	403	9	130	5
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	39.8	9.6	15.8	9.6	15.8	15.8	9.6	14.6	14.6
Total Split (s)	9.6	39.8	36.6	66.8	25.5	34.0	34.0	9.6	18.1	18.1
Total Split (%)	8.0%	33.2%	30.5%	55.7%	21.3%	28.3%	28.3%	8.0%	15.1%	15.1%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	4.8	4.8	3.6	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	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	5.8	4.6	5.8	4.6	5.8	5.8	4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.3	15.4	19.5	38.3	12.5	26.7	26.7	5.3	12.1	12.1
Actuated g/C Ratio	0.07	0.19	0.24	0.48	0.16	0.33	0.33	0.07	0.15	0.15
v/c Ratio	0.00	0.64	0.74	0.16	0.59	0.13	0.53	0.08	0.49	0.01
Control Delay (s/veh)	46.0	29.1	41.6	12.9	44.8	23.9	5.8	46.2	43.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.0	29.1	41.6	12.9	44.8	23.9	5.8	46.2	43.1	0.0
LOS	D	C	D	B	D	C	A	D	D	A
Approach Delay (s/veh)		29.2		27.8		17.1			41.8	
Approach LOS		C		C		B			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 80

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 25.5

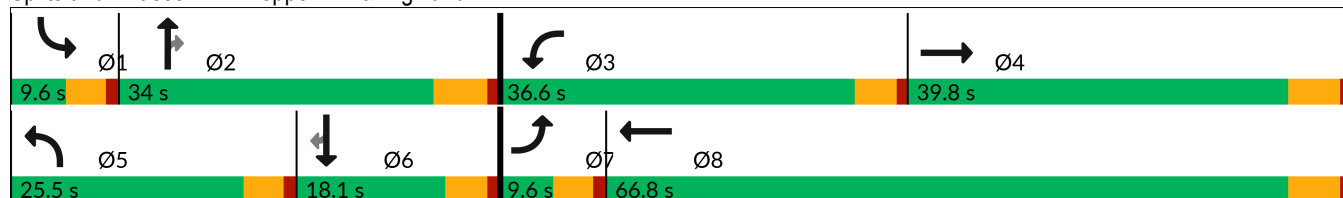
Intersection LOS: C

Intersection Capacity Utilization 64.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	272	158	279	257	4	145	77	403	9	130	5
Future Volume (veh/h)	1	272	158	279	257	4	145	77	403	9	130	5
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	1	283	76	291	268	4	151	80	165	9	135	4
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	3	442	117	341	1290	19	188	486	411	19	297	252
Arrive On Green	0.00	0.17	0.17	0.21	0.37	0.37	0.12	0.27	0.27	0.01	0.17	0.17
Sat Flow, veh/h	1619	2677	706	1619	3449	51	1619	1800	1525	1619	1800	1525
Grp Volume(v), veh/h	1	179	180	291	133	139	151	80	165	9	135	4
Grp Sat Flow(s),veh/h/ln	1619	1710	1673	1619	1710	1791	1619	1800	1525	1619	1800	1525
Q Serve(g_s), s	0.0	5.9	6.1	10.5	3.2	3.2	5.5	2.1	5.4	0.3	4.1	0.1
Cycle Q Clear(g_c), s	0.0	5.9	6.1	10.5	3.2	3.2	5.5	2.1	5.4	0.3	4.1	0.1
Prop In Lane	1.00		0.42	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	3	282	276	341	640	670	188	486	411	19	297	252
V/C Ratio(X)	0.37	0.63	0.65	0.85	0.21	0.21	0.80	0.16	0.40	0.48	0.45	0.02
Avail Cap(c_a), veh/h	134	960	939	855	1721	1803	558	838	710	134	401	340
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	30.2	23.6	23.7	23.0	12.9	12.9	26.1	16.9	18.1	29.8	22.8	21.2
Incr Delay (d2), s/veh	29.3	2.4	2.6	2.4	0.2	0.2	3.0	0.2	0.6	6.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.3	2.3	3.7	1.0	1.1	2.0	0.8	1.7	0.2	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	25.9	26.3	25.4	13.0	13.0	29.1	17.1	18.7	36.6	23.9	21.2
LnGrp LOS	E	C	C	C	B	B	C	B	B	D	C	C
Approach Vol, veh/h	360				563				396			
Approach Delay, s/veh	26.2				19.4				22.4			
Approach LOS	C				B				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.3	22.1	17.3	15.8	11.6	15.8	4.7	28.5				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	* 5.8	4.6	5.8				
Max Green Setting (Gmax), s	5.0	28.2	32.0	34.0	20.9	* 14	5.0	61.0				
Max Q Clear Time (g_c+l1), s	2.3	7.4	12.5	8.1	7.5	6.1	2.0	5.2				
Green Ext Time (p_c), s	0.0	0.8	0.4	1.9	0.1	0.4	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	22.4
HCM 6th LOS	C

Notes

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

Timings

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/03/2024

	WBL	WBT	NBL	NBT	SBT
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↰	↰	↰	↑↑	↑↑
Traffic Volume (vph)	324	7	367	523	321
Future Volume (vph)	324	7	367	523	321
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	44.0	44.0	24.0	76.0	52.0
Total Split (%)	36.7%	36.7%	20.0%	63.3%	43.3%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	18.5	18.5	19.8	39.9	15.3
Actuated g/C Ratio	0.27	0.27	0.29	0.58	0.22
v/c Ratio	0.69	0.21	0.73	0.25	0.65
Control Delay (s/veh)	31.2	6.5	35.5	8.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.2	6.5	35.5	8.3	20.3
LOS	C	A	D	A	C
Approach Delay (s/veh)		25.1		19.6	20.4
Approach LOS		C		B	C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 69.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay (s/veh): 21.1

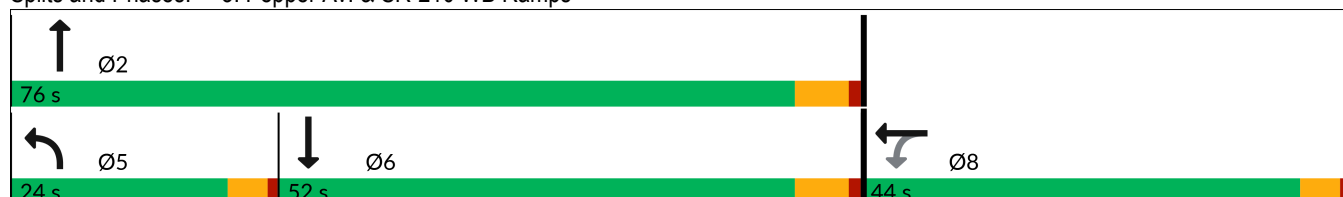
Intersection LOS: C

Intersection Capacity Utilization 74.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	324	7	102	367	523	0	0	321	246
Future Volume (veh/h)	0	0	0	324	7	102	367	523	0	0	321	246
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				334	7	48	378	539	0	0	331	53
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				434	50	344	445	1968	0	0	639	101
Arrive On Green				0.24	0.24	0.24	0.25	0.55	0.00	0.00	0.20	0.20
Sat Flow, veh/h				1810	209	1433	1810	3705	0	0	3216	495
Grp Volume(v), veh/h				334	0	55	378	539	0	0	190	194
Grp Sat Flow(s),veh/h/ln				1810	0	1642	1810	1805	0	0	1805	1811
Q Serve(g_s), s				8.4	0.0	1.3	9.7	3.9	0.0	0.0	4.6	4.7
Cycle Q Clear(g_c), s				8.4	0.0	1.3	9.7	3.9	0.0	0.0	4.6	4.7
Prop In Lane				1.00		0.87	1.00		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				434	0	394	445	1968	0	0	370	371
V/C Ratio(X)				0.77	0.00	0.14	0.85	0.27	0.00	0.00	0.51	0.52
Avail Cap(c_a), veh/h				1457	0	1322	719	5191	0	0	1708	1714
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				17.3	0.0	14.6	17.5	5.9	0.0	0.0	17.2	17.3
Incr Delay (d2), s/veh				2.9	0.0	0.2	2.8	0.1	0.0	0.0	1.1	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
%ile BackOfQ(50%),veh/ln				3.4	0.0	0.4	3.5	0.8	0.0	0.0	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				20.2	0.0	14.8	20.3	6.0	0.0	0.0	18.4	18.4
LnGrp LOS				C		B	C	A			B	B
Approach Vol, veh/h					389			917			384	
Approach Delay, s/veh					19.4			11.9			18.4	
Approach LOS					B			B			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	32.4			16.6			15.8			16.4		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	70.2			19.4			46.2			39.3		
Max Q Clear Time (g_c+l1), s	5.9			11.7			6.7			10.4		
Green Ext Time (p_c), s	3.6			0.4			2.1			1.4		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	15.1											
HCM 6th LOS	B											

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

04/03/2024



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	297	0	593	117	527
Future Volume (vph)	297	0	593	117	527
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	54.0	54.0	54.0	12.0	66.0
Total Split (%)	45.0%	45.0%	45.0%	10.0%	55.0%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	22.5	22.5	25.8	7.9	38.5
Actuated g/C Ratio	0.31	0.31	0.36	0.11	0.53
v/c Ratio	0.55	0.73	0.72	0.62	0.28
Control Delay (s/veh)	25.2	17.5	22.5	53.0	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.2	17.5	22.5	53.0	10.8
LOS	C	B	C	D	B
Approach Delay (s/veh)		20.5	22.5		18.5
Approach LOS		C	C		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 72.2

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay (s/veh): 20.7

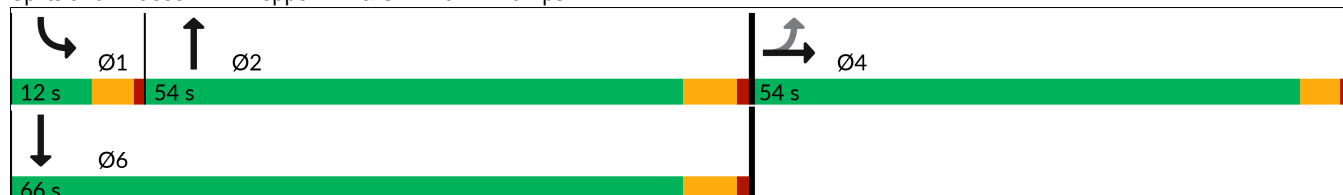
Intersection LOS: C

Intersection Capacity Utilization 74.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps



HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	0	474	0	0	0	0	593	287	117	527	0
Future Volume (veh/h)	297	0	474	0	0	0	0	593	287	117	527	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	313	0	136				0	624	118	123	555	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	443	0	394				0	986	186	159	1869	0
Arrive On Green	0.24	0.00	0.24				0.00	0.33	0.33	0.09	0.52	0.00
Sat Flow, veh/h	1810	0	1610				0	3125	572	1810	3705	0
Grp Volume(v), veh/h	313	0	136				0	371	371	123	555	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1805	1797	1810	1805	0
Q Serve(g_s), s	7.0	0.0	3.1				0.0	7.7	7.8	2.9	3.9	0.0
Cycle Q Clear(g_c), s	7.0	0.0	3.1				0.0	7.7	7.8	2.9	3.9	0.0
Prop In Lane	1.00		1.00				0.00		0.32	1.00		0.00
Lane Grp Cap(c), veh/h	443	0	394				0	588	585	159	1869	0
V/C Ratio(X)	0.71	0.00	0.34				0.00	0.63	0.63	0.77	0.30	0.00
Avail Cap(c_a), veh/h	2017	0	1795				0	1967	1959	303	4915	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	15.2	0.0	13.8				0.0	12.7	12.7	19.7	6.1	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.5				0.0	1.1	1.1	3.0	0.1	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	2.7	0.0	1.0				0.0	2.4	2.4	1.1	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.3	0.0	14.3				0.0	13.8	13.8	22.7	6.2	0.0
LnGrp LOS	B		B					B	B	C	A	
Approach Vol, veh/h	449						742			678		
Approach Delay, s/veh	16.4						13.8			9.2		
Approach LOS	B						B			A		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	8.5	20.2		15.5			28.7					
Change Period (Y+Rc), s	4.6	5.8		4.7			5.8					
Max Green Setting (Gmax), s	7.4	48.2		49.3			60.2					
Max Q Clear Time (g_c+l1), s	4.9	9.8		9.0			5.9					
Green Ext Time (p_c), s	0.0	4.6		1.9			3.8					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	12.7											
HCM 6th LOS	B											

Timings

Pepper 210 Commerce Center TA (JN:14324)

5: State St. & Highland Av.

04/03/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	89	182	121	276	286	222	395	215	64	301	98
Future Volume (vph)	89	182	121	276	286	222	395	215	64	301	98
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	11.0	43.8	43.8	15.0	47.8	18.0	45.6	45.6	15.6	43.2	43.2
Total Split (%)	9.2%	36.5%	36.5%	12.5%	39.8%	15.0%	38.0%	38.0%	13.0%	36.0%	36.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.4	10.4	10.4	10.4	14.4	13.4	20.0	20.0	7.3	11.8	11.8
Actuated g/C Ratio	0.10	0.16	0.16	0.16	0.22	0.20	0.30	0.30	0.11	0.18	0.18
v/c Ratio	0.59	0.35	0.36	0.62	0.50	0.70	0.27	0.36	0.37	0.51	0.28
Control Delay (s/veh)	48.0	27.4	9.0	33.3	23.9	39.5	19.5	5.3	33.8	27.8	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	48.0	27.4	9.0	33.3	23.9	39.5	19.5	5.3	33.8	27.8	7.2
LOS	D	C	A	C	C	D	B	A	C	C	A
Approach Delay (s/veh)		26.4			28.0		21.2			24.3	
Approach LOS		C			C		C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 66.2

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay (s/veh): 24.6

Intersection LOS: C

Intersection Capacity Utilization 60.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.

 Ø1	 Ø2	 Ø3	 Ø4
15.6 s	45.6 s	15 s	43.8 s
 Ø5	 Ø6	 Ø7	 Ø8
18 s	43.2 s	11 s	47.8 s

HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	182	121	276	286	75	222	395	215	64	301	98
Future Volume (veh/h)	89	182	121	276	286	75	222	395	215	64	301	98
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		0.98	1.00		0.99	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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	93	190	67	288	298	46	231	411	98	67	314	62
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	115	662	291	381	746	114	275	1399	428	91	586	261
Arrive On Green	0.07	0.19	0.19	0.13	0.25	0.25	0.17	0.28	0.28	0.06	0.17	0.17
Sat Flow, veh/h	1619	3420	1504	2956	2964	452	1619	4914	1504	1619	3420	1525
Grp Volume(v), veh/h	93	190	67	288	170	174	231	411	98	67	314	62
Grp Sat Flow(s),veh/h/ln	1619	1710	1504	1478	1710	1706	1619	1638	1504	1619	1710	1525
Q Serve(g_s), s	3.4	2.8	2.2	5.6	4.9	5.1	8.3	3.9	3.0	2.4	5.0	2.1
Cycle Q Clear(g_c), s	3.4	2.8	2.2	5.6	4.9	5.1	8.3	3.9	3.0	2.4	5.0	2.1
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	115	662	291	381	430	429	275	1399	428	91	586	261
V/C Ratio(X)	0.81	0.29	0.23	0.75	0.40	0.40	0.84	0.29	0.23	0.74	0.54	0.24
Avail Cap(c_a), veh/h	174	2176	957	515	1203	1200	363	3332	1020	298	2182	973
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	27.3	20.6	20.3	25.1	18.6	18.6	24.0	16.7	16.3	27.7	22.6	21.4
Incr Delay (d2), s/veh	8.8	0.2	0.4	2.7	0.6	0.6	10.0	0.1	0.3	4.3	0.8	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	1.4	1.0	0.7	1.9	1.7	1.8	3.6	1.3	0.9	1.0	1.9	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.2	20.8	20.7	27.8	19.2	19.2	34.0	16.8	16.6	32.0	23.3	21.8
LnGrp LOS	D	C	C	C	B	B	C	B	B	C	C	C
Approach Vol, veh/h		350			632			740			443	
Approach Delay, s/veh		24.9			23.1			22.1			24.4	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	22.1	12.3	17.4	14.7	15.3	8.8	20.8				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	11.0	40.5	10.4	38.0	13.4	38.1	6.4	42.0				
Max Q Clear Time (g_c+I1), s	4.4	5.9	7.6	4.8	10.3	7.0	5.4	7.1				
Green Ext Time (p_c), s	0.0	3.2	0.2	1.3	0.1	2.3	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			23.3									
HCM 6th LOS			C									

APPENDIX 5.2: E+P CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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

DIST	CO	RTE	PM	CALC	TRAFFIC CONDITIONS	E+P
Jurisdiction: <u>County of San Bernardino</u>				CHK	<u>CP</u>	DATE <u>10/30/23</u>
Major Street: <u>Highland Av.</u>						DATE <u>10/30/23</u>
Minor Street: <u>Driveway 1</u>					Critical Approach Speed (Major)	<u>45</u> mph
					Critical Approach Speed (Minor)	<u>25</u> mph
Major Street Approach Lanes = <u>2</u> lane				Minor Street Approach Lanes: <u>1</u> lane		
Major Street Future ADT = <u>10,768</u> vpd				Minor Street Future ADT = <u>781</u> 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		XX		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
<u>Satisfied</u>		<u>Not Satisfied</u>	XX				
Number of lanes for moving traffic on each approach		Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
<u>Major Street</u>		<u>Minor Street</u>					
<u>1</u>		<u>1</u>		8,000	5,600	2,400	1,680
<u>2 + 10,768</u>		<u>1 781</u>		9,600	6,720 *	2,400	1,680
<u>2 +</u>		<u>2 +</u>		9,600	6,720	3,200	2,240
<u>1</u>		<u>2 +</u>		8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		XX		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
<u>Satisfied</u>		<u>Not Satisfied</u>					
Number of lanes for moving traffic on each approach		Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
<u>Major Street</u>		<u>Minor Street</u>					
<u>1</u>		<u>1</u>		12,000	8,400	1,200	850
<u>2 + 10,768</u>		<u>1 781</u>		14,400	10,080 *	1,200	850
<u>2 +</u>		<u>2 +</u>		14,400	10,080	1,600	1,120
<u>1</u>		<u>2 +</u>		12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B		XX		2 CONDITIONS		2 CONDITIONS	
<u>Satisfied</u>		<u>Not Satisfied</u>		80%		80%	
No one condition satisfied, but following conditions fulfilled 80% of more							
		A	B				
		46%	92%				

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.

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APPENDIX 5.3: E+P CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

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Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/03/2024



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	478	149	543	381	586
v/c Ratio	0.85	0.24	0.87	0.17	0.75
Control Delay (s/veh)	50.6	5.9	50.1	10.6	37.0
Queue Delay	0.0	0.0	13.2	0.0	0.0
Total Delay (s/veh)	50.6	5.9	63.3	10.6	37.1
Queue Length 50th (ft)	301	1	351	61	156
Queue Length 95th (ft)	#507	47	#644	91	225
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	677	699	644	2519	1099
Starvation Cap Reductn	0	0	92	0	27
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.21	0.98	0.15	0.55

Intersection Summary

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

Queue shown is maximum after two cycles.

4: Pepper Av. & SR-210 EB Ramps

04/03/2024



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	175	456	1131	87	738
v/c Ratio	0.32	0.72	0.95	0.35	0.40
Control Delay (s/veh)	17.7	17.7	39.9	29.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.7	17.7	39.9	29.2	10.2
Queue Length 50th (ft)	47	75	189	28	70
Queue Length 95th (ft)	95	180	#450	74	150
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	1347	1257	1190	1445	3569
Starvation Cap Reductn	0	0	0	0	158
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.36	0.95	0.06	0.22

Intersection Summary

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

Queue shown is maximum after two cycles.

Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/03/2024



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	334	112	378	539	585
v/c Ratio	0.69	0.21	0.73	0.25	0.65
Control Delay (s/veh)	31.2	6.5	35.5	8.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.2	6.5	35.5	8.3	20.3
Queue Length 50th (ft)	124	2	140	51	76
Queue Length 95th (ft)	232	38	#370	105	147
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	1049	992	517	3437	2365
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.11	0.73	0.16	0.25

Intersection Summary

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

Queue shown is maximum after two cycles.

4: Pepper Av. & SR-210 EB Ramps

04/03/2024



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	313	499	926	123	555
v/c Ratio	0.55	0.73	0.72	0.62	0.28
Control Delay (s/veh)	25.2	17.5	22.5	53.0	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.2	17.5	22.5	53.0	10.8
Queue Length 50th (ft)	109	85	156	51	61
Queue Length 95th (ft)	227	235	306	#196	142
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	1307	1241	2455	196	3044
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.40	0.38	0.63	0.18

Intersection Summary

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

Queue shown is maximum after two cycles.

APPENDIX 6.1: OPENING YEAR CUMULATIVE (2029) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Configurations								
Traffic Volume (vph)	1	146	510	221	278	33	279	46
Future Volume (vph)	1	146	510	221	278	33	279	46
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases					2		2	
Detector Phase	7	4	3	8	2	2	2	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	39.8	9.6	15.8	15.8	15.8	15.8	14.6
Total Split (s)	10.2	51.0	30.0	70.8	39.0	39.0	39.0	39.0
Total Split (%)	8.5%	42.5%	25.0%	59.0%	32.5%	32.5%	32.5%	32.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	4.8	4.8	3.6
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	5.8	4.6	5.8	5.8	5.8	5.8	4.6
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	5.0	11.5	25.6	40.0	27.4	27.4	27.4	28.6
Actuated g/C Ratio	0.06	0.14	0.32	0.50	0.34	0.34	0.34	0.35
v/c Ratio	0.01	0.64	1.10	0.14	0.73	0.06	0.43	0.08
Control Delay	40.0	17.5	98.6	13.1	35.3	18.2	4.4	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	17.5	98.6	13.1	35.3	18.2	4.5	17.1
LOS	D	B	F	B	D	B	A	B
Approach Delay		17.6		72.7		19.7		17.1
Approach LOS		B		E		B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 80.8

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 41.2

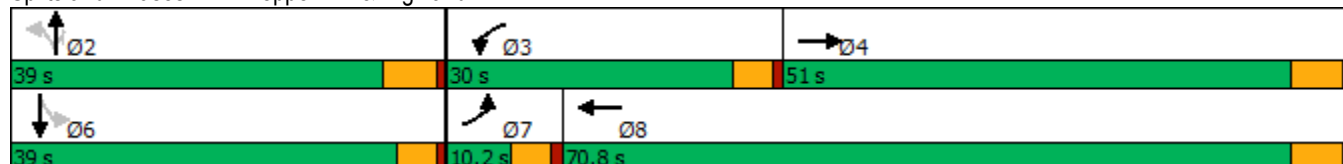
Intersection LOS: D

Intersection Capacity Utilization 81.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	146	242	510	221	0	278	33	279	0	46	2
Future Volume (veh/h)	1	146	242	510	221	0	278	33	279	0	46	2
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	1	160	229	560	243	0	305	36	204	0	51	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	2	332	296	500	1715	0	431	541	458	0	529	10
Arrive On Green	0.00	0.19	0.19	0.31	0.50	0.00	0.30	0.30	0.30	0.00	0.30	0.30
Sat Flow, veh/h	1619	1710	1525	1619	3510	0	1229	1800	1525	0	1759	34
Grp Volume(v), veh/h	1	160	229	560	243	0	305	36	204	0	0	52
Grp Sat Flow(s),veh/h/ln	1619	1710	1525	1619	1710	0	1229	1800	1525	0	0	1794
Q Serve(g_s), s	0.1	6.8	11.7	25.4	3.1	0.0	19.6	1.2	8.9	0.0	0.0	1.7
Cycle Q Clear(g_c), s	0.1	6.8	11.7	25.4	3.1	0.0	21.3	1.2	8.9	0.0	0.0	1.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.02
Lane Grp Cap(c), veh/h	2	332	296	500	1715	0	431	541	458	0	0	539
V/C Ratio(X)	0.45	0.48	0.77	1.12	0.14	0.00	0.71	0.07	0.45	0.00	0.00	0.10
Avail Cap(c_a), veh/h	110	939	838	500	2700	0	558	726	615	0	0	750
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	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	41.1	29.5	31.4	28.5	11.0	0.0	28.4	20.6	23.3	0.0	0.0	20.7
Incr Delay (d2), s/veh	44.9	1.1	4.3	77.8	0.0	0.0	2.9	0.1	0.7	0.0	0.0	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	0.0	2.7	4.4	19.7	1.0	0.0	5.6	0.5	3.0	0.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.0	30.6	35.7	106.3	11.1	0.0	31.3	20.6	23.9	0.0	0.0	20.8
LnGrp LOS	F	C	D	F	B	A	C	C	C	A	A	C
Approach Vol, veh/h		390			803			545			52	
Approach Delay, s/veh		33.7			77.5			27.8			20.8	
Approach LOS		C			E			C			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		30.5	30.0	21.8		30.5	4.7	47.1				
Change Period (Y+Rc), s		5.8	4.6	5.8		* 5.8	4.6	5.8				
Max Green Setting (Gmax), s		33.2	25.4	45.2		* 34	5.6	65.0				
Max Q Clear Time (g_c+I1), s		23.3	27.4	13.7		3.7	2.1	5.1				
Green Ext Time (p_c), s		1.4	0.0	2.3		0.2	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			51.2									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

	↙	←	↖	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↖	↖	↑↑	↑↑
Traffic Volume (vph)	693	3	719	474	516
Future Volume (vph)	693	3	719	474	516
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	43.0	43.0	48.0	77.0	29.0
Total Split (%)	35.8%	35.8%	40.0%	64.2%	24.2%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	38.3	38.3	43.4	71.2	23.2
Actuated g/C Ratio	0.32	0.32	0.36	0.59	0.19
v/c Ratio	1.32	0.22	1.21	0.24	1.22
Control Delay	191.5	6.2	143.8	12.0	149.6
Queue Delay	0.0	0.0	1.5	0.0	0.0
Total Delay	191.5	6.2	145.3	12.0	149.6
LOS	F	A	F	B	F
Approach Delay		164.0		92.3	149.6
Approach LOS		F		F	F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.32

Intersection Signal Delay: 129.5

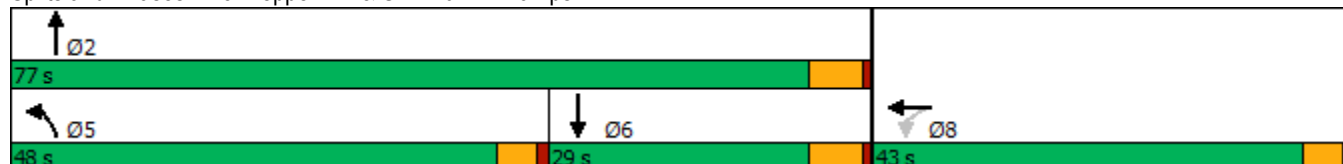
Intersection LOS: F

Intersection Capacity Utilization 156.9%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	693	3	118	719	474	0	0	516	288
Future Volume (veh/h)	0	0	0	693	3	118	719	474	0	0	516	288
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				762	3	90	790	521	0	0	567	271
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				578	17	500	654	2142	0	0	458	219
Arrive On Green				0.32	0.32	0.32	0.36	0.59	0.00	0.00	0.19	0.19
Sat Flow, veh/h				1810	52	1566	1810	3705	0	0	2465	1131
Grp Volume(v), veh/h				762	0	93	790	521	0	0	432	406
Grp Sat Flow(s),veh/h/ln				1810	0	1618	1810	1805	0	0	1805	1696
Q Serve(g_s), s				38.3	0.0	5.0	43.4	8.2	0.0	0.0	23.2	23.2
Cycle Q Clear(g_c), s				38.3	0.0	5.0	43.4	8.2	0.0	0.0	23.2	23.2
Prop In Lane				1.00		0.97	1.00		0.00	0.00		0.67
Lane Grp Cap(c), veh/h				578	0	516	654	2142	0	0	349	328
V/C Ratio(X)				1.32	0.00	0.18	1.21	0.24	0.00	0.00	1.24	1.24
Avail Cap(c_a), veh/h				578	0	516	654	2142	0	0	349	328
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				40.8	0.0	29.5	38.3	11.6	0.0	0.0	48.4	48.4
Incr Delay (d2), s/veh				155.6	0.0	0.2	107.2	0.1	0.0	0.0	128.8	131.0
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				41.8	0.0	2.0	37.6	3.1	0.0	0.0	22.6	21.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				196.5	0.0	29.7	145.5	11.7	0.0	0.0	177.2	179.4
LnGrp LOS				F	A	C	F	B	A	A	F	F
Approach Vol, veh/h					855			1311			838	
Approach Delay, s/veh					178.3			92.3			178.3	
Approach LOS					F			F			F	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.0			48.0	29.0		43.0				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		71.2			43.4	23.2		38.3				
Max Q Clear Time (g_c+I1), s		10.2			45.4	25.2		40.3				
Green Ext Time (p_c), s		3.5			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				140.8								
HCM 6th LOS				F								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

11/20/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	169	2	1024	105	1101
Future Volume (vph)	169	2	1024	105	1101
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	46.0	46.0	56.4	17.6	74.0
Total Split (%)	38.3%	38.3%	47.0%	14.7%	61.7%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	41.3	41.3	50.6	10.9	66.1
Actuated g/C Ratio	0.35	0.35	0.43	0.09	0.56
v/c Ratio	0.29	1.29	1.11	0.69	0.60
Control Delay	29.8	173.5	89.1	73.3	18.6
Queue Delay	0.0	0.0	0.0	0.0	3.7
Total Delay	29.8	173.5	89.1	73.3	22.3
LOS	C	F	F	E	C
Approach Delay		145.9	89.1		26.8
Approach LOS		F	F		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.9

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 82.1

Intersection LOS: F

Intersection Capacity Utilization 156.9%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps



HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	169	2	710	0	0	0	0	1024	509	105	1101	0
Future Volume (veh/h)	169	2	710	0	0	0	0	1024	509	105	1101	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	186	2	368				0	1125	367	115	1210	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	490	2	434				0	1307	420	145	2224	0
Arrive On Green	0.27	0.27	0.27				0.00	0.49	0.49	0.08	0.62	0.00
Sat Flow, veh/h	1810	9	1603				0	2782	863	1810	3705	0
Grp Volume(v), veh/h	186	0	370				0	750	742	115	1210	0
Grp Sat Flow(s),veh/h/ln	1810	0	1611				0	1805	1745	1810	1805	0
Q Serve(g_s), s	7.8	0.0	20.2				0.0	33.9	35.3	5.8	18.0	0.0
Cycle Q Clear(g_c), s	7.8	0.0	20.2				0.0	33.9	35.3	5.8	18.0	0.0
Prop In Lane	1.00		0.99				0.00		0.49	1.00		0.00
Lane Grp Cap(c), veh/h	490	0	436				0	878	848	145	2224	0
V/C Ratio(X)	0.38	0.00	0.85				0.00	0.85	0.87	0.79	0.54	0.00
Avail Cap(c_a), veh/h	805	0	717				0	984	951	254	2653	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	27.5	0.0	32.0				0.0	20.9	21.3	41.9	10.3	0.0
Incr Delay (d2), s/veh	0.5	0.0	5.1				0.0	6.8	8.4	3.7	0.2	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	3.4	0.0	8.3				0.0	14.1	14.5	2.6	5.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	37.2				0.0	27.8	29.7	45.6	10.5	0.0
LnGrp LOS	C	A	D				A	C	C	D	B	A
Approach Vol, veh/h	556						1492			1325		
Approach Delay, s/veh	34.1						28.8			13.5		
Approach LOS	C						C			B		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	12.0	50.9	29.8		63.0							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	13.0	50.6	* 41		68.2							
Max Q Clear Time (g_c+I1), s	7.8	37.3	22.2		20.0							
Green Ext Time (p_c), s	0.1	7.8	3.0		10.7							
Intersection Summary												
HCM 6th Ctrl Delay			23.7									
HCM 6th LOS			C									
Notes												

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	57	216	172	308	291	337	292	118	45	344	100
Future Volume (vph)	57	216	172	308	291	337	292	118	45	344	100
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	9.6	44.4	44.4	13.0	47.8	19.0	48.4	48.4	14.2	43.6	43.6
Total Split (%)	8.0%	37.0%	37.0%	10.8%	39.8%	15.8%	40.3%	40.3%	11.8%	36.3%	36.3%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.0	11.7	11.7	8.4	15.1	14.5	26.3	26.3	6.9	14.4	14.4
Actuated g/C Ratio	0.07	0.17	0.17	0.12	0.22	0.21	0.38	0.38	0.10	0.21	0.21
v/c Ratio	0.60	0.46	0.49	1.05	0.52	1.22	0.19	0.21	0.34	0.59	0.28
Control Delay	56.8	29.2	8.6	94.2	26.6	151.5	16.5	4.7	36.1	28.4	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	29.2	8.6	94.2	26.6	151.5	16.5	4.7	36.1	28.4	4.6
LOS	E	C	A	F	C	F	B	A	D	C	A
Approach Delay		24.8			59.9		75.6			24.3	
Approach LOS		C			E		E			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 69.2

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 50.6

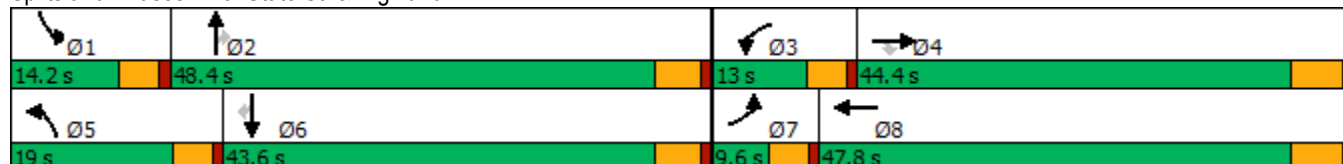
Intersection LOS: D

Intersection Capacity Utilization 66.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.



HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	216	172	308	291	28	337	292	118	45	344	100
Future Volume (veh/h)	57	216	172	308	291	28	337	292	118	45	344	100
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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	70	263	127	376	355	22	411	356	96	55	420	67
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	89	535	239	379	752	46	356	1770	549	78	645	288
Arrive On Green	0.05	0.16	0.16	0.13	0.23	0.23	0.22	0.36	0.36	0.05	0.19	0.19
Sat Flow, veh/h	1619	3420	1525	2956	3271	202	1619	4914	1525	1619	3420	1525
Grp Volume(v), veh/h	70	263	127	376	185	192	411	356	96	55	420	67
Grp Sat Flow(s),veh/h/ln	1619	1710	1525	1478	1710	1763	1619	1638	1525	1619	1710	1525
Q Serve(g_s), s	2.8	4.6	5.0	8.3	6.1	6.2	14.4	3.3	2.8	2.2	7.4	2.4
Cycle Q Clear(g_c), s	2.8	4.6	5.0	8.3	6.1	6.2	14.4	3.3	2.8	2.2	7.4	2.4
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	89	535	239	379	393	405	356	1770	549	78	645	288
V/C Ratio(X)	0.79	0.49	0.53	0.99	0.47	0.47	1.15	0.20	0.17	0.70	0.65	0.23
Avail Cap(c_a), veh/h	124	2015	899	379	1096	1131	356	3248	1008	237	2010	897
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	30.6	25.2	25.4	28.5	21.8	21.8	25.6	14.5	14.3	30.7	24.6	22.6
Incr Delay (d2), s/veh	13.2	0.7	1.8	43.9	0.9	0.9	96.8	0.1	0.1	4.3	1.1	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	1.3	1.7	1.8	5.0	2.3	2.3	14.5	1.1	0.8	0.9	2.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	25.9	27.3	72.4	22.7	22.7	122.3	14.5	14.5	35.0	25.7	23.0
LnGrp LOS	D	C	C	E	C	C	F	B	B	C	C	C
Approach Vol, veh/h		460			753			863			542	
Approach Delay, s/veh		29.0			47.5			65.8			26.3	
Approach LOS		C			D			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	28.7	13.0	16.0	19.0	17.5	8.2	20.8				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	9.6	43.3	8.4	38.6	14.4	38.5	5.0	42.0				
Max Q Clear Time (g_c+I1), s	4.2	5.3	10.3	7.0	16.4	9.4	4.8	8.2				
Green Ext Time (p_c), s	0.0	2.7	0.0	2.0	0.0	2.9	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay			45.9									
HCM 6th LOS			D									

Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

	→	↖	←	↙	↑	↗	↓	
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBT	Ø7
Lane Configurations	↑↑	↖	↑↑	↖	↑	↗	↕	
Traffic Volume (vph)	303	400	290	227	3	556	2	
Future Volume (vph)	303	400	290	227	3	556	2	
Turn Type	NA	Prot	NA	Perm	NA	Perm	NA	
Protected Phases	4	3	8		2		6	7
Permitted Phases				2		2		
Detector Phase	4	3	8	2	2	2	6	
Switch Phase								
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	39.8	9.6	15.8	15.8	15.8	15.8	14.6	9.6
Total Split (s)	59.0	21.0	70.4	40.0	40.0	40.0	40.0	9.6
Total Split (%)	49.2%	17.5%	58.7%	33.3%	33.3%	33.3%	33.3%	8%
Yellow Time (s)	4.8	3.6	4.8	4.8	4.8	4.8	3.6	3.6
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	
Total Lost Time (s)	5.8	4.6	5.8	5.8	5.8	5.8	4.6	
Lead/Lag	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	None	None	None	Min	Min	Min	Min	None
Act Effect Green (s)	14.6	16.8	36.1	18.9	18.9	18.9	20.1	
Actuated g/C Ratio	0.22	0.25	0.54	0.28	0.28	0.28	0.30	
v/c Ratio	0.62	1.03	0.16	0.65	0.01	0.70	0.01	
Control Delay	22.3	83.5	9.1	30.5	17.3	7.6	15.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.3	83.5	9.1	30.5	17.3	7.6	15.0	
LOS	C	F	A	C	B	A	B	
Approach Delay	22.3		52.3		14.2		15.0	
Approach LOS	C		D		B		B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 66.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 29.6

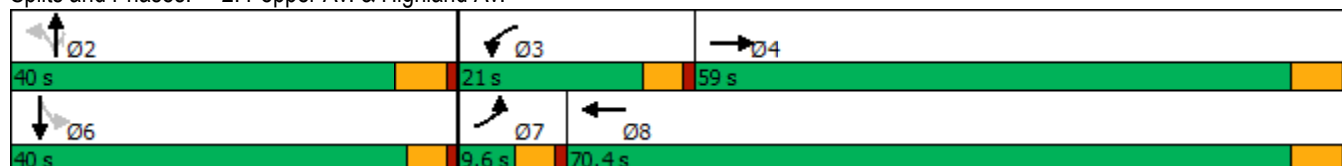
Intersection LOS: C

Intersection Capacity Utilization 73.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	303	169	400	290	0	227	3	556	0	2	1
Future Volume (veh/h)	0	303	169	400	290	0	227	3	556	0	2	1
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	0	316	147	417	302	0	236	3	412	0	2	1
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	2	460	210	395	1758	0	508	564	478	0	355	178
Arrive On Green	0.00	0.20	0.20	0.24	0.51	0.00	0.31	0.31	0.31	0.00	0.31	0.31
Sat Flow, veh/h	1619	2283	1039	1619	3510	0	1285	1800	1525	0	1132	566
Grp Volume(v), veh/h	0	235	228	417	302	0	236	3	412	0	0	3
Grp Sat Flow(s),veh/h/ln	1619	1710	1613	1619	1710	0	1285	1800	1525	0	0	1698
Q Serve(g_s), s	0.0	8.6	8.8	16.4	3.2	0.0	10.4	0.1	17.1	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	8.6	8.8	16.4	3.2	0.0	10.5	0.1	17.1	0.0	0.0	0.1
Prop In Lane	1.00		0.64	1.00		0.00	1.00		1.00	0.00		0.33
Lane Grp Cap(c), veh/h	2	345	325	395	1758	0	508	564	478	0	0	533
V/C Ratio(X)	0.00	0.68	0.70	1.06	0.17	0.00	0.46	0.01	0.86	0.00	0.00	0.01
Avail Cap(c_a), veh/h	120	1353	1276	395	3285	0	759	915	776	0	0	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	24.8	25.0	25.4	8.7	0.0	19.5	15.9	21.7	0.0	0.0	15.9
Incr Delay (d2), s/veh	0.0	2.4	2.8	60.9	0.0	0.0	0.7	0.0	5.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.3	3.3	12.2	0.9	0.0	2.8	0.0	6.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	27.2	27.7	86.3	8.8	0.0	20.1	15.9	27.4	0.0	0.0	15.9
LnGrp LOS	A	C	C	F	A	A	C	B	C	A	A	B
Approach Vol, veh/h	463		719			651			3			
Approach Delay, s/veh	27.5		53.7			24.7			15.9			
Approach LOS	C		D			C			B			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	26.9		21.0		19.4		26.9		0.0		40.4	
Change Period (Y+Rc), s	5.8		4.6		5.8		* 5.8		4.6		5.8	
Max Green Setting (Gmax), s	34.2		16.4		53.2		* 35		5.0		64.6	
Max Q Clear Time (g_c+I1), s	19.1		18.4		10.8		2.1		0.0		5.2	
Green Ext Time (p_c), s	2.0		0.0		2.7		0.0		0.0		1.9	
Intersection Summary												
HCM 6th Ctrl Delay			36.8									
HCM 6th LOS			D									
Notes												

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

	↙	←	↖	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↖	↖	↑↑	↑↑
Traffic Volume (vph)	495	8	675	708	360
Future Volume (vph)	495	8	675	708	360
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	44.0	44.0	48.0	76.0	28.0
Total Split (%)	36.7%	36.7%	40.0%	63.3%	23.3%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	35.6	35.6	43.6	68.7	20.4
Actuated g/C Ratio	0.31	0.31	0.38	0.60	0.18
v/c Ratio	0.91	0.15	1.02	0.34	0.86
Control Delay	60.3	8.2	75.5	12.6	53.8
Queue Delay	0.0	0.0	31.1	0.5	0.0
Total Delay	60.3	8.2	106.6	13.1	53.8
LOS	E	A	F	B	D
Approach Delay		52.7		58.7	53.8
Approach LOS		D		E	D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 114.8

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 56.3

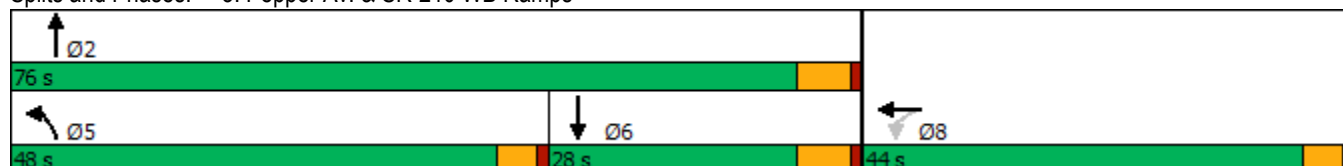
Intersection LOS: E

Intersection Capacity Utilization 105.8%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	495	8	77	675	708	0	0	360	206
Future Volume (veh/h)	0	0	0	495	8	77	675	708	0	0	360	206
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				510	8	50	696	730	0	0	371	143
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				548	69	430	706	2176	0	0	438	166
Arrive On Green				0.30	0.30	0.30	0.39	0.60	0.00	0.00	0.17	0.17
Sat Flow, veh/h				1810	227	1418	1810	3705	0	0	2653	972
Grp Volume(v), veh/h				510	0	58	696	730	0	0	260	254
Grp Sat Flow(s),veh/h/ln				1810	0	1645	1810	1805	0	0	1805	1725
Q Serve(g_s), s				30.4	0.0	2.8	42.4	11.2	0.0	0.0	15.5	15.9
Cycle Q Clear(g_c), s				30.4	0.0	2.8	42.4	11.2	0.0	0.0	15.5	15.9
Prop In Lane				1.00		0.86	1.00		0.00	0.00		0.56
Lane Grp Cap(c), veh/h				548	0	498	706	2176	0	0	309	295
V/C Ratio(X)				0.93	0.00	0.12	0.99	0.34	0.00	0.00	0.84	0.86
Avail Cap(c_a), veh/h				639	0	581	706	2279	0	0	360	344
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				37.6	0.0	28.0	33.6	11.0	0.0	0.0	44.6	44.8
Incr Delay (d2), s/veh				18.7	0.0	0.1	30.1	0.1	0.0	0.0	14.6	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				16.1	0.0	1.1	23.2	4.0	0.0	0.0	7.9	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				56.4	0.0	28.1	63.7	11.1	0.0	0.0	59.2	62.1
LnGrp LOS				E	A	C	E	B	A	A	E	E
Approach Vol, veh/h					568			1426			514	
Approach Delay, s/veh					53.5			36.8			60.7	
Approach LOS					D			D			E	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	72.8			48.0			24.8			38.4		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	70.2			43.4			22.2			39.3		
Max Q Clear Time (g_c+I1), s	13.2			44.4			17.9			32.4		
Green Ext Time (p_c), s	5.3			0.0			1.1			1.3		
Intersection Summary												
HCM 6th Ctrl Delay				45.5								
HCM 6th LOS				D								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

11/20/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	321	0	1058	43	822
Future Volume (vph)	321	0	1058	43	822
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	54.0	54.0	54.0	12.0	66.0
Total Split (%)	45.0%	45.0%	45.0%	10.0%	55.0%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	49.4	49.4	48.3	6.6	57.4
Actuated g/C Ratio	0.42	0.42	0.41	0.06	0.49
v/c Ratio	0.45	0.99	1.13	0.44	0.49
Control Delay	27.2	61.0	101.2	68.3	21.1
Queue Delay	0.0	0.0	0.0	0.0	1.2
Total Delay	27.2	61.0	101.2	68.3	22.4
LOS	C	E	F	E	C
Approach Delay		50.4	101.2		24.6
Approach LOS		D	F		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.3

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 67.1

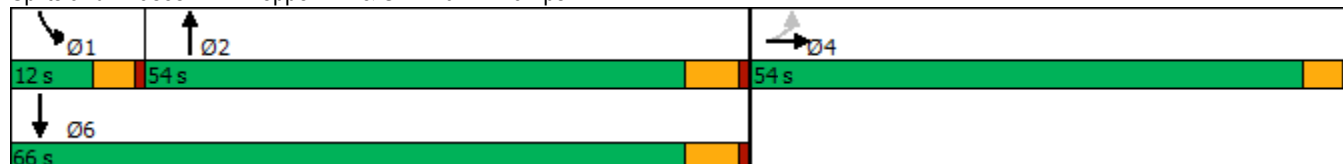
Intersection LOS: E

Intersection Capacity Utilization 105.8%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps



HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	321	0	700	0	0	0	0	1058	515	43	822	0
Future Volume (veh/h)	321	0	700	0	0	0	0	1058	515	43	822	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	338	0	448				0	1114	358	45	865	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	593	0	527				0	1276	404	67	2020	0
Arrive On Green	0.33	0.00	0.33				0.00	0.47	0.47	0.04	0.56	0.00
Sat Flow, veh/h	1810	0	1610				0	2792	854	1810	3705	0
Grp Volume(v), veh/h	338	0	448				0	740	732	45	865	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1805	1746	1810	1805	0
Q Serve(g_s), s	14.4	0.0	24.1				0.0	34.1	35.4	2.3	12.9	0.0
Cycle Q Clear(g_c), s	14.4	0.0	24.1				0.0	34.1	35.4	2.3	12.9	0.0
Prop In Lane	1.00		1.00				0.00		0.49	1.00		0.00
Lane Grp Cap(c), veh/h	593	0	527				0	854	826	67	2020	0
V/C Ratio(X)	0.57	0.00	0.85				0.00	0.87	0.89	0.67	0.43	0.00
Avail Cap(c_a), veh/h	959	0	853				0	935	905	144	2335	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	25.9	0.0	29.1				0.0	21.9	22.2	44.3	11.9	0.0
Incr Delay (d2), s/veh	0.9	0.0	4.6				0.0	8.1	9.9	4.3	0.1	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	6.2	0.0	9.7				0.0	14.6	14.9	1.1	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	0.0	33.8				0.0	30.0	32.1	48.6	12.0	0.0
LnGrp LOS	C	A	C				A	C	C	D	B	A
Approach Vol, veh/h	786						1472			910		
Approach Delay, s/veh	30.7						31.1			13.8		
Approach LOS	C						C			B		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	8.0	49.8	35.2		57.9							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	7.4	48.2	* 49		60.2							
Max Q Clear Time (g_c+I1), s	4.3	37.4	26.1		14.9							
Green Ext Time (p_c), s	0.0	6.7	4.4		6.5							
Intersection Summary												
HCM 6th Ctrl Delay			26.0									
HCM 6th LOS			C									
Notes												

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	95	300	131	311	408	248	445	242	72	339	109
Future Volume (vph)	95	300	131	311	408	248	445	242	72	339	109
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	11.0	43.8	43.8	15.0	47.8	18.0	45.6	45.6	15.6	43.2	43.2
Total Split (%)	9.2%	36.5%	36.5%	12.5%	39.8%	15.0%	38.0%	38.0%	13.0%	36.0%	36.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.4	12.8	12.8	10.5	16.8	13.5	21.1	21.1	7.8	13.2	13.2
Actuated g/C Ratio	0.09	0.18	0.18	0.15	0.24	0.19	0.30	0.30	0.11	0.19	0.19
v/c Ratio	0.67	0.50	0.35	0.74	0.63	0.83	0.31	0.40	0.42	0.55	0.30
Control Delay	57.7	29.1	8.0	41.9	27.0	54.2	21.5	5.6	37.6	29.5	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	29.1	8.0	41.9	27.0	54.2	21.5	5.6	37.6	29.5	7.9
LOS	E	C	A	D	C	D	C	A	D	C	A
Approach Delay		29.0			32.8		26.0			26.1	
Approach LOS		C			C		C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 70.2	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 28.5	Intersection LOS: C
Intersection Capacity Utilization 66.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: State St. & Highland Av.

			
Ø1	Ø2	Ø3	Ø4
15.6 s	45.6 s	15 s	43.8 s
			
Ø5	Ø6	Ø7	Ø8
18 s	43.2 s	11 s	47.8 s

HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	300	131	311	408	84	248	445	242	72	339	109
Future Volume (veh/h)	95	300	131	311	408	84	248	445	242	72	339	109
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		0.98	1.00		0.99	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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	99	312	77	324	425	56	258	464	126	75	353	74
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	123	632	278	412	752	98	300	1469	450	94	587	262
Arrive On Green	0.08	0.18	0.18	0.14	0.25	0.25	0.19	0.30	0.30	0.06	0.17	0.17
Sat Flow, veh/h	1619	3420	1503	2956	3031	397	1619	4914	1504	1619	3420	1525
Grp Volume(v), veh/h	99	312	77	324	239	242	258	464	126	75	353	74
Grp Sat Flow(s),veh/h/ln	1619	1710	1503	1478	1710	1718	1619	1638	1504	1619	1710	1525
Q Serve(g_s), s	3.8	5.2	2.8	6.7	7.7	7.8	9.7	4.6	4.0	2.9	6.0	2.7
Cycle Q Clear(g_c), s	3.8	5.2	2.8	6.7	7.7	7.8	9.7	4.6	4.0	2.9	6.0	2.7
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	632	278	412	424	426	300	1469	450	94	587	262
V/C Ratio(X)	0.81	0.49	0.28	0.79	0.56	0.57	0.86	0.32	0.28	0.80	0.60	0.28
Avail Cap(c_a), veh/h	165	2063	907	488	1140	1145	344	3160	967	283	2069	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.7	23.0	22.1	26.2	20.7	20.7	24.9	17.1	16.9	29.3	24.1	22.7
Incr Delay (d2), s/veh	14.1	0.6	0.5	5.8	1.2	1.2	15.9	0.1	0.3	5.7	1.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.9	0.9	2.4	2.8	2.8	4.7	1.6	1.2	1.2	2.3	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	23.6	22.6	32.0	21.9	21.9	40.7	17.2	17.2	35.0	25.1	23.3
LnGrp LOS	D	C	C	C	C	C	D	B	B	D	C	C
Approach Vol, veh/h	488			805			848			502		
Approach Delay, s/veh	27.4			26.0			24.4			26.3		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	23.9	13.4	17.4	16.3	15.9	9.4	21.4				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	11.0	40.5	10.4	38.0	13.4	38.1	6.4	42.0				
Max Q Clear Time (g_c+I1), s	4.9	6.6	8.7	7.2	11.7	8.0	5.8	9.8				
Green Ext Time (p_c), s	0.0	3.7	0.1	2.1	0.1	2.6	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay	25.8											
HCM 6th LOS	C											

APPENDIX 6.2: OPENING YEAR CUMULATIVE (2029) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	391	502	69	16	1
Future Vol, veh/h	4	391	502	69	16	1
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	4	425	546	75	17	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	621	0	0	805	311
Stage 1	-	-	-	584	-
Stage 2	-	-	-	221	-
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	969	-	-	324	691
Stage 1	-	-	-	526	-
Stage 2	-	-	-	801	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	969	-	-	323	691
Mov Cap-2 Maneuver	-	-	-	424	-
Stage 1	-	-	-	524	-
Stage 2	-	-	-	801	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	969	-	-	-	434
HCM Lane V/C Ratio	0.004	-	-	-	0.043
HCM Control Delay (s)	8.7	-	-	-	13.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	4	148	510	228	339	61	279	2	19	3
Future Volume (vph)	4	148	510	228	339	61	279	2	19	3
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	35.8	9.6	15.8	10.8	15.8	15.8	9.6	14.6	14.6
Total Split (s)	10.8	35.8	40.2	65.2	29.0	34.4	34.4	9.6	15.0	15.0
Total Split (%)	9.0%	29.8%	33.5%	54.3%	24.2%	28.7%	28.7%	8.0%	12.5%	12.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	4.8	4.8	3.6	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	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	5.8	4.6	5.8	5.8	5.8	5.8	4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	Min	Min	Min	Min	Min
Act Effect Green (s)	5.1	12.4	35.6	50.7	23.2	28.2	28.2	5.0	10.0	10.0
Actuated g/C Ratio	0.05	0.12	0.35	0.50	0.23	0.28	0.28	0.05	0.10	0.10
v/c Ratio	0.05	0.71	0.99	0.15	1.02	0.13	0.48	0.03	0.12	0.01
Control Delay	49.0	22.2	71.3	14.6	91.9	29.6	6.3	48.5	45.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	22.2	71.3	14.6	91.9	29.6	6.3	48.5	45.1	0.0
LOS	D	C	E	B	F	C	A	D	D	A
Approach Delay		22.4		53.4		51.1			40.1	
Approach LOS		C		D		D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 102.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 45.6

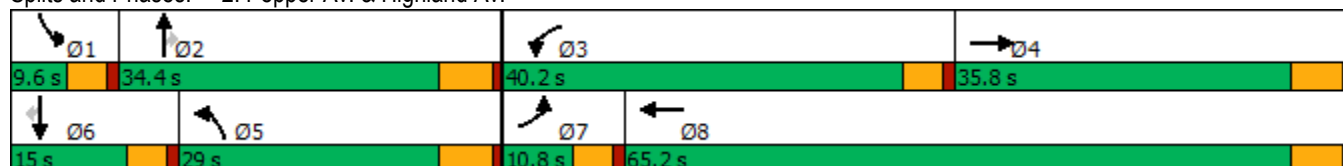
Intersection LOS: D

Intersection Capacity Utilization 85.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	148	257	510	228	7	339	61	279	2	19	3
Future Volume (veh/h)	4	148	257	510	228	7	339	61	279	2	19	3
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	4	163	90	560	251	6	373	67	258	2	21	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	9	235	123	573	1562	37	374	505	428	81	179	152
Arrive On Green	0.01	0.11	0.11	0.35	0.46	0.46	0.23	0.28	0.28	0.05	0.10	0.10
Sat Flow, veh/h	1619	2167	1138	1619	3414	81	1619	1800	1525	1619	1800	1525
Grp Volume(v), veh/h	4	127	126	560	125	132	373	67	258	2	21	2
Grp Sat Flow(s),veh/h/ln	1619	1710	1595	1619	1710	1785	1619	1800	1525	1619	1800	1525
Q Serve(g_s), s	0.2	7.2	7.7	34.3	4.3	4.3	23.1	2.8	14.7	0.1	1.1	0.1
Cycle Q Clear(g_c), s	0.2	7.2	7.7	34.3	4.3	4.3	23.1	2.8	14.7	0.1	1.1	0.1
Prop In Lane	1.00		0.71	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	9	186	173	573	782	817	374	505	428	81	179	152
V/C Ratio(X)	0.47	0.68	0.73	0.98	0.16	0.16	1.00	0.13	0.60	0.02	0.12	0.01
Avail Cap(c_a), veh/h	100	510	476	573	1011	1055	374	512	434	81	186	158
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	49.8	43.1	43.4	32.0	16.0	16.0	38.6	27.0	31.3	45.4	41.2	32.5
Incr Delay (d2), s/veh	14.2	4.4	5.8	31.4	0.1	0.1	46.0	0.1	2.3	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.1	3.2	17.4	1.6	1.7	13.5	1.2	5.4	0.1	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.1	47.5	49.1	63.5	16.1	16.1	84.6	27.1	33.6	45.6	41.5	32.5
LnGrp LOS	E	D	D	E	B	B	F	C	C	D	D	C
Approach Vol, veh/h	257		817				698			25		
Approach Delay, s/veh	48.6		48.6				60.3			41.1		
Approach LOS	D		D				E			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	34.0	40.2	16.7	29.0	14.6	5.1	51.8				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	5.8	4.6	4.6	5.8				
Max Green Setting (Gmax), s	5.0	28.6	35.6	30.0	23.2	10.4	6.2	59.4				
Max Q Clear Time (g_c+I1), s	2.1	16.7	36.3	9.7	25.1	3.1	2.2	6.3				
Green Ext Time (p_c), s	0.0	0.9	0.0	1.2	0.0	0.0	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay	53.0											
HCM 6th LOS	D											

Timings
3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

	↖	←	↗	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↗	↖	↑↑	↑↗
Traffic Volume (vph)	693	3	719	526	517
Future Volume (vph)	693	3	719	526	517
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	43.0	43.0	51.0	77.0	26.0
Total Split (%)	35.8%	35.8%	42.5%	64.2%	21.7%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	38.3	38.3	46.4	71.2	20.2
Actuated g/C Ratio	0.32	0.32	0.39	0.59	0.17
v/c Ratio	1.32	0.27	1.13	0.27	1.37
Control Delay	191.5	5.8	112.1	12.2	212.8
Queue Delay	0.0	0.0	1.7	0.0	0.0
Total Delay	191.5	5.8	113.7	12.2	212.8
LOS	F	A	F	B	F
Approach Delay		157.2		70.8	212.8
Approach LOS		F		E	F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.37

Intersection Signal Delay: 135.2

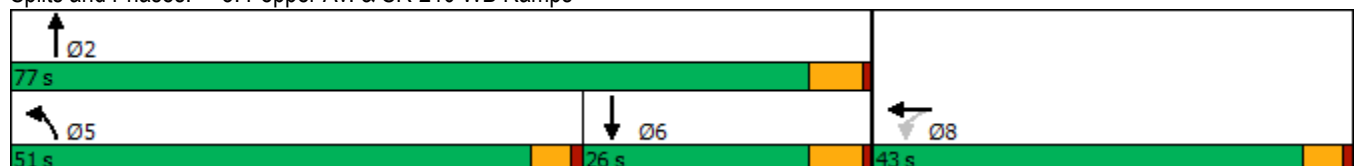
Intersection LOS: F

Intersection Capacity Utilization 157.1%

ICU Level of Service H

Analysis Period (min) 15

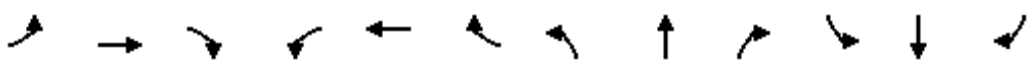
Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	693	3	155	719	526	0	0	517	275
Future Volume (veh/h)	0	0	0	693	3	155	719	526	0	0	517	275
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				762	3	130	790	578	0	0	568	257
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				578	12	504	700	2142	0	0	407	184
Arrive On Green				0.32	0.32	0.32	0.39	0.59	0.00	0.00	0.17	0.17
Sat Flow, veh/h				1810	36	1579	1810	3705	0	0	2512	1092
Grp Volume(v), veh/h				762	0	133	790	578	0	0	424	401
Grp Sat Flow(s),veh/h/ln				1810	0	1616	1810	1805	0	0	1805	1704
Q Serve(g_s), s				38.3	0.0	7.3	46.4	9.3	0.0	0.0	20.2	20.2
Cycle Q Clear(g_c), s				38.3	0.0	7.3	46.4	9.3	0.0	0.0	20.2	20.2
Prop In Lane				1.00		0.98	1.00		0.00	0.00		0.64
Lane Grp Cap(c), veh/h				578	0	516	700	2142	0	0	304	287
V/C Ratio(X)				1.32	0.00	0.26	1.13	0.27	0.00	0.00	1.40	1.40
Avail Cap(c_a), veh/h				578	0	516	700	2142	0	0	304	287
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				40.8	0.0	30.3	36.8	11.8	0.0	0.0	49.9	49.9
Incr Delay (d2), s/veh				155.6	0.0	0.3	75.4	0.1	0.0	0.0	196.8	199.2
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				41.8	0.0	2.9	33.9	3.5	0.0	0.0	25.4	24.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				196.5	0.0	30.6	112.2	11.9	0.0	0.0	246.7	249.1
LnGrp LOS				F	A	C	F	B	A	A	F	F
Approach Vol, veh/h					895			1368			825	
Approach Delay, s/veh					171.8			69.8			247.9	
Approach LOS					F			E			F	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.0			51.0	26.0		43.0				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		71.2			46.4	20.2		38.3				
Max Q Clear Time (g_c+I1), s		11.3			48.4	22.2		40.3				
Green Ext Time (p_c), s		3.9			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				146.9								
HCM 6th LOS				F								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

11/20/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	199	2	1046	100	1106
Future Volume (vph)	199	2	1046	100	1106
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	46.0	46.0	56.4	17.6	74.0
Total Split (%)	38.3%	38.3%	47.0%	14.7%	61.7%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	41.3	41.3	50.6	10.7	66.0
Actuated g/C Ratio	0.35	0.35	0.43	0.09	0.56
v/c Ratio	0.35	1.29	1.12	0.67	0.60
Control Delay	30.6	172.7	94.9	71.8	18.7
Queue Delay	0.0	0.0	0.0	0.0	3.6
Total Delay	30.6	172.7	94.9	71.8	22.3
LOS	C	F	F	E	C
Approach Delay		141.6	94.9		26.4
Approach LOS		F	F		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.8

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 84.0

Intersection LOS: F

Intersection Capacity Utilization 157.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps



HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	2	710	0	0	0	0	1046	509	100	1106	0
Future Volume (veh/h)	199	2	710	0	0	0	0	1046	509	100	1106	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	219	2	368				0	1149	367	110	1215	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	491	2	435				0	1325	416	139	2225	0
Arrive On Green	0.27	0.27	0.27				0.00	0.49	0.49	0.08	0.62	0.00
Sat Flow, veh/h	1810	9	1603				0	2798	849	1810	3705	0
Grp Volume(v), veh/h	219	0	370				0	761	755	110	1215	0
Grp Sat Flow(s),veh/h/ln	1810	0	1611				0	1805	1747	1810	1805	0
Q Serve(g_s), s	9.4	0.0	20.3				0.0	34.7	36.3	5.6	18.2	0.0
Cycle Q Clear(g_c), s	9.4	0.0	20.3				0.0	34.7	36.3	5.6	18.2	0.0
Prop In Lane	1.00		0.99				0.00		0.49	1.00		0.00
Lane Grp Cap(c), veh/h	491	0	437				0	885	856	139	2225	0
V/C Ratio(X)	0.45	0.00	0.85				0.00	0.86	0.88	0.79	0.55	0.00
Avail Cap(c_a), veh/h	799	0	712				0	977	945	252	2633	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	28.2	0.0	32.2				0.0	21.0	21.4	42.4	10.4	0.0
Incr Delay (d2), s/veh	0.6	0.0	5.2				0.0	7.3	9.2	3.7	0.2	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	4.1	0.0	8.3				0.0	14.5	15.0	2.5	5.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	0.0	37.4				0.0	28.3	30.6	46.2	10.6	0.0
LnGrp LOS	C	A	D				A	C	C	D	B	A
Approach Vol, veh/h	589						1516			1325		
Approach Delay, s/veh	34.2						29.4			13.5		
Approach LOS	C						C			B		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	11.8	51.6	30.1		63.4							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	13.0	50.6	* 41		68.2							
Max Q Clear Time (g_c+I1), s	7.6	38.3	22.3		20.2							
Green Ext Time (p_c), s	0.1	7.5	3.1		10.8							
Intersection Summary												
HCM 6th Ctrl Delay			24.1									
HCM 6th LOS			C									
Notes												

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	58	218	173	308	300	340	292	118	45	344	103
Future Volume (vph)	58	218	173	308	300	340	292	118	45	344	103
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	9.6	44.4	44.4	13.0	47.8	19.0	48.4	48.4	14.2	43.6	43.6
Total Split (%)	8.0%	37.0%	37.0%	10.8%	39.8%	15.8%	40.3%	40.3%	11.8%	36.3%	36.3%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.0	11.7	11.7	8.4	15.1	14.5	26.3	26.3	7.0	14.5	14.5
Actuated g/C Ratio	0.07	0.17	0.17	0.12	0.22	0.21	0.38	0.38	0.10	0.21	0.21
v/c Ratio	0.61	0.46	0.49	1.05	0.54	1.23	0.19	0.21	0.34	0.59	0.29
Control Delay	57.7	29.3	8.6	94.8	26.9	156.7	16.6	4.8	36.2	28.5	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	29.3	8.6	94.8	26.9	156.7	16.6	4.8	36.2	28.5	5.0
LOS	E	C	A	F	C	F	B	A	D	C	A
Approach Delay		25.0			59.8		78.3			24.2	
Approach LOS		C			E		E			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 69.3

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 51.5

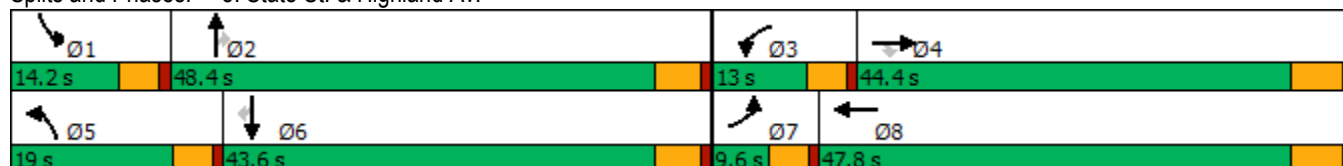
Intersection LOS: D

Intersection Capacity Utilization 66.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.



HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	218	173	308	300	28	340	292	118	45	344	103
Future Volume (veh/h)	58	218	173	308	300	28	340	292	118	45	344	103
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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	71	266	128	376	366	22	415	356	96	55	420	71
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	90	535	239	379	752	45	356	1770	550	78	645	288
Arrive On Green	0.06	0.16	0.16	0.13	0.23	0.23	0.22	0.36	0.36	0.05	0.19	0.19
Sat Flow, veh/h	1619	3420	1525	2956	3278	196	1619	4914	1525	1619	3420	1525
Grp Volume(v), veh/h	71	266	128	376	190	198	415	356	96	55	420	71
Grp Sat Flow(s),veh/h/ln	1619	1710	1525	1478	1710	1764	1619	1638	1525	1619	1710	1525
Q Serve(g_s), s	2.8	4.7	5.1	8.3	6.3	6.4	14.4	3.3	2.8	2.2	7.4	2.6
Cycle Q Clear(g_c), s	2.8	4.7	5.1	8.3	6.3	6.4	14.4	3.3	2.8	2.2	7.4	2.6
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	90	535	239	379	392	405	356	1770	550	78	645	288
V/C Ratio(X)	0.79	0.50	0.54	0.99	0.49	0.49	1.17	0.20	0.17	0.70	0.65	0.25
Avail Cap(c_a), veh/h	124	2015	899	379	1096	1131	356	3248	1008	237	2010	896
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	30.6	25.3	25.4	28.5	21.9	21.9	25.6	14.5	14.3	30.7	24.6	22.6
Incr Delay (d2), s/veh	14.4	0.7	1.9	43.9	0.9	0.9	101.0	0.1	0.1	4.3	1.1	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	1.4	1.7	1.8	5.0	2.3	2.4	14.9	1.1	0.8	0.9	2.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	26.0	27.3	72.5	22.8	22.8	126.6	14.5	14.5	35.0	25.7	23.1
LnGrp LOS	D	C	C	E	C	C	F	B	B	C	C	C
Approach Vol, veh/h		465			764			867			546	
Approach Delay, s/veh		29.3			47.3			68.2			26.3	
Approach LOS		C			D			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	28.7	13.0	16.0	19.0	17.5	8.2	20.8				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	9.6	43.3	8.4	38.6	14.4	38.5	5.0	42.0				
Max Q Clear Time (g_c+I1), s	4.2	5.3	10.3	7.1	16.4	9.4	4.8	8.4				
Green Ext Time (p_c), s	0.0	2.7	0.0	2.0	0.0	2.9	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay			46.6									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	473	522	35	88	6
Future Vol, veh/h	2	473	522	35	88	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	2	514	567	38	96	7
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	605	0	-	0	847	303
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	261	-
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	983	-	-	-	305	699
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	983	-	-	-	304	699
Mov Cap-2 Maneuver	-	-	-	-	413	-
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	765	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		16.2		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	983	-	-	-	424	
HCM Lane V/C Ratio	0.002	-	-	-	0.241	
HCM Control Delay (s)	8.7	-	-	-	16.2	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.9	

Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	1	312	400	294	258	77	556	9	130	5
Future Volume (vph)	1	312	400	294	258	77	556	9	130	5
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	39.8	9.6	15.8	9.6	15.8	15.8	9.6	14.6	14.6
Total Split (s)	9.6	39.8	36.6	66.8	25.5	34.0	34.0	9.6	18.1	18.1
Total Split (%)	8.0%	33.2%	30.5%	55.7%	21.3%	28.3%	28.3%	8.0%	15.1%	15.1%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	4.8	4.8	3.6	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	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	5.8	4.6	5.8	4.6	5.8	5.8	4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.0	20.2	30.9	54.0	20.4	34.4	34.4	5.0	12.3	12.3
Actuated g/C Ratio	0.05	0.19	0.30	0.52	0.20	0.33	0.33	0.05	0.12	0.12
v/c Ratio	0.01	0.77	0.87	0.17	0.85	0.13	0.65	0.12	0.63	0.01
Control Delay	52.0	35.5	55.2	13.8	66.1	28.4	6.7	54.7	59.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	52.0	35.5	55.2	13.8	66.1	28.4	7.0	54.7	59.4	0.0
LOS	D	D	E	B	E	C	A	D	E	A
Approach Delay		35.6		37.5		26.0			57.2	
Approach LOS		D		D		C			E	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 103.6

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 33.8

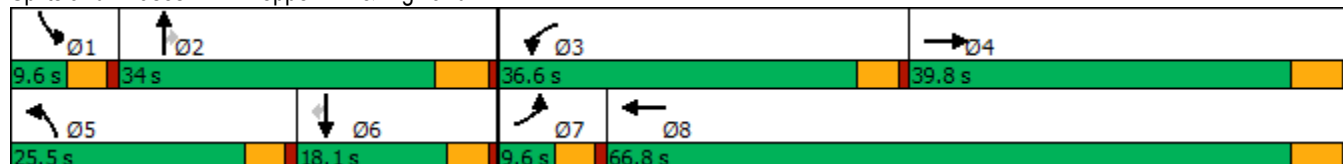
Intersection LOS: C

Intersection Capacity Utilization 82.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	312	248	400	294	4	258	77	556	9	130	5
Future Volume (veh/h)	1	312	248	400	294	4	258	77	556	9	130	5
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	1	325	169	417	306	4	269	80	324	9	135	4
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	2	426	217	449	1627	21	301	515	436	18	200	169
Arrive On Green	0.00	0.19	0.19	0.28	0.47	0.47	0.19	0.29	0.29	0.01	0.11	0.11
Sat Flow, veh/h	1619	2193	1116	1619	3457	45	1619	1800	1525	1619	1800	1525
Grp Volume(v), veh/h	1	252	242	417	151	159	269	80	324	9	135	4
Grp Sat Flow(s),veh/h/ln	1619	1710	1599	1619	1710	1792	1619	1800	1525	1619	1800	1525
Q Serve(g_s), s	0.1	12.5	12.9	22.6	4.6	4.6	14.6	3.0	17.3	0.5	6.5	0.2
Cycle Q Clear(g_c), s	0.1	12.5	12.9	22.6	4.6	4.6	14.6	3.0	17.3	0.5	6.5	0.2
Prop In Lane	1.00		0.70	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	2	333	311	449	805	843	301	515	436	18	200	169
V/C Ratio(X)	0.45	0.76	0.78	0.93	0.19	0.19	0.89	0.16	0.74	0.50	0.68	0.02
Avail Cap(c_a), veh/h	90	646	604	576	1159	1214	376	564	478	90	270	229
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	44.9	34.3	34.4	31.7	13.8	13.8	35.8	24.0	29.1	44.3	38.5	35.7
Incr Delay (d2), s/veh	45.1	3.5	4.2	16.8	0.1	0.1	17.5	0.1	5.6	7.6	3.9	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	0.0	5.2	5.1	10.2	1.6	1.7	6.9	1.2	6.6	0.2	3.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.0	37.8	38.6	48.5	14.0	14.0	53.3	24.2	34.8	51.9	42.4	35.7
LnGrp LOS	F	D	D	D	B	B	D	C	C	D	D	D
Approach Vol, veh/h	495			727			673			148		
Approach Delay, s/veh	38.3			33.8			40.9			42.8		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	31.5	29.6	23.3	21.3	15.8	4.7	48.2				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	* 5.8	4.6	5.8				
Max Green Setting (Gmax), s	5.0	28.2	32.0	34.0	20.9	* 14	5.0	61.0				
Max Q Clear Time (g_c+I1), s	2.5	19.3	24.6	14.9	16.6	8.5	2.1	6.6				
Green Ext Time (p_c), s	0.0	1.0	0.4	2.6	0.2	0.3	0.0	1.7				

Intersection Summary

HCM 6th Ctrl Delay	37.9
HCM 6th LOS	D

Notes

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

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

	↙	←	↖	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↗	↖	↑↑	↑↗
Traffic Volume (vph)	495	8	675	770	473
Future Volume (vph)	495	8	675	770	473
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	44.0	44.0	48.0	76.0	28.0
Total Split (%)	36.7%	36.7%	40.0%	63.3%	23.3%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	36.0	36.0	43.5	70.3	22.2
Actuated g/C Ratio	0.31	0.31	0.37	0.60	0.19
v/c Ratio	0.92	0.22	1.04	0.37	1.09
Control Delay	61.8	6.9	81.7	12.9	99.8
Queue Delay	0.0	0.0	24.7	0.7	0.0
Total Delay	61.8	6.9	106.4	13.6	99.8
LOS	E	A	F	B	F
Approach Delay		50.5		57.0	99.8
Approach LOS		D		E	F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 116.8

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 67.2

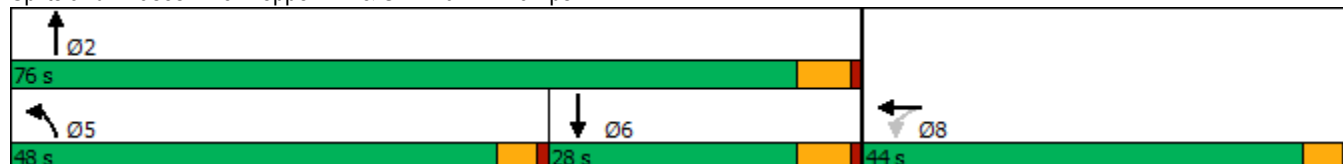
Intersection LOS: E

Intersection Capacity Utilization 109.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	495	8	120	675	770	0	0	473	300
Future Volume (veh/h)	0	0	0	495	8	120	675	770	0	0	473	300
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				510	8	67	696	794	0	0	488	108
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				547	53	442	688	2187	0	0	546	120
Arrive On Green				0.30	0.30	0.30	0.38	0.61	0.00	0.00	0.19	0.19
Sat Flow, veh/h				1810	175	1462	1810	3705	0	0	3036	647
Grp Volume(v), veh/h				510	0	75	696	794	0	0	298	298
Grp Sat Flow(s),veh/h/ln				1810	0	1637	1810	1805	0	0	1805	1783
Q Serve(g_s), s				31.3	0.0	3.8	43.4	12.7	0.0	0.0	18.4	18.6
Cycle Q Clear(g_c), s				31.3	0.0	3.8	43.4	12.7	0.0	0.0	18.4	18.6
Prop In Lane				1.00		0.89	1.00		0.00	0.00		0.36
Lane Grp Cap(c), veh/h				547	0	495	688	2187	0	0	335	331
V/C Ratio(X)				0.93	0.00	0.15	1.01	0.36	0.00	0.00	0.89	0.90
Avail Cap(c_a), veh/h				623	0	563	688	2220	0	0	351	347
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				38.7	0.0	29.1	35.4	11.4	0.0	0.0	45.4	45.5
Incr Delay (d2), s/veh				19.8	0.0	0.1	37.3	0.1	0.0	0.0	23.0	24.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				16.7	0.0	1.5	25.0	4.6	0.0	0.0	10.1	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				58.5	0.0	29.3	72.7	11.5	0.0	0.0	68.3	70.0
LnGrp LOS				E	A	C	F	B	A	A	E	E
Approach Vol, veh/h					585			1490			596	
Approach Delay, s/veh					54.8			40.1			69.2	
Approach LOS					D			D			E	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	75.0			48.0			27.0			39.2		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	70.2			43.4			22.2			39.3		
Max Q Clear Time (g_c+I1), s	14.7			45.4			20.6			33.3		
Green Ext Time (p_c), s	5.9			0.0			0.6			1.2		
Intersection Summary												
HCM 6th Ctrl Delay				49.8								
HCM 6th LOS				D								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

11/20/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	372	0	1069	128	850
Future Volume (vph)	372	0	1069	128	850
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	54.0	54.0	54.0	12.0	66.0
Total Split (%)	45.0%	45.0%	45.0%	10.0%	55.0%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	49.3	49.3	48.2	7.4	60.2
Actuated g/C Ratio	0.41	0.41	0.40	0.06	0.50
v/c Ratio	0.53	1.02	1.17	1.22	0.49
Control Delay	29.8	68.9	115.8	201.6	21.0
Queue Delay	0.0	0.0	0.0	0.0	1.8
Total Delay	29.8	68.9	115.8	201.6	22.8
LOS	C	E	F	F	C
Approach Delay		55.3	115.8		46.2
Approach LOS		E	F		D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 79.2
Intersection LOS: E
Intersection Capacity Utilization 109.0%
ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps

12 s	54 s	54 s
66 s		

HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	372	0	700	0	0	0	0	1069	515	128	850	0
Future Volume (veh/h)	372	0	700	0	0	0	0	1069	515	128	850	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	392	0	374				0	1125	358	135	895	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	511	0	454				0	1287	403	144	2184	0
Arrive On Green	0.28	0.00	0.28				0.00	0.48	0.48	0.08	0.60	0.00
Sat Flow, veh/h	1810	0	1610				0	2799	848	1810	3705	0
Grp Volume(v), veh/h	392	0	374				0	745	738	135	895	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1805	1747	1810	1805	0
Q Serve(g_s), s	18.4	0.0	20.2				0.0	34.3	35.6	6.9	12.1	0.0
Cycle Q Clear(g_c), s	18.4	0.0	20.2				0.0	34.3	35.6	6.9	12.1	0.0
Prop In Lane	1.00		1.00				0.00		0.49	1.00		0.00
Lane Grp Cap(c), veh/h	511	0	454				0	859	831	144	2184	0
V/C Ratio(X)	0.77	0.00	0.82				0.00	0.87	0.89	0.94	0.41	0.00
Avail Cap(c_a), veh/h	960	0	854				0	936	906	144	2338	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	30.6	0.0	31.2				0.0	21.8	22.1	42.5	9.6	0.0
Incr Delay (d2), s/veh	2.5	0.0	3.8				0.0	8.2	10.1	55.5	0.1	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	8.2	0.0	8.1				0.0	14.6	15.1	5.2	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.0	0.0	35.0				0.0	30.0	32.2	98.0	9.8	0.0
LnGrp LOS	C	A	C				A	C	C	F	A	A
Approach Vol, veh/h	766						1483			1030		
Approach Delay, s/veh	34.0						31.1			21.3		
Approach LOS	C						C			C		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	12.0	50.0	30.9		62.0							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	7.4	48.2	* 49		60.2							
Max Q Clear Time (g_c+I1), s	8.9	37.6	22.2		14.1							
Green Ext Time (p_c), s	0.0	6.6	4.0		6.8							
Intersection Summary												
HCM 6th Ctrl Delay			28.7									
HCM 6th LOS			C									
Notes												

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	99	311	135	311	412	249	445	242	72	339	110
Future Volume (vph)	99	311	135	311	412	249	445	242	72	339	110
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	11.0	43.8	43.8	15.0	47.8	18.0	45.6	45.6	15.6	43.2	43.2
Total Split (%)	9.2%	36.5%	36.5%	12.5%	39.8%	15.0%	38.0%	38.0%	13.0%	36.0%	36.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.4	12.9	12.9	10.5	16.9	13.5	21.1	21.1	7.8	13.2	13.2
Actuated g/C Ratio	0.09	0.18	0.18	0.15	0.24	0.19	0.30	0.30	0.11	0.19	0.19
v/c Ratio	0.70	0.52	0.36	0.74	0.63	0.84	0.32	0.40	0.42	0.55	0.30
Control Delay	60.2	29.3	7.9	42.1	27.0	54.8	21.5	5.6	37.7	29.6	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	29.3	7.9	42.1	27.0	54.8	21.5	5.6	37.7	29.6	7.9
LOS	E	C	A	D	C	D	C	A	D	C	A
Approach Delay		29.6			32.8		26.2			26.1	
Approach LOS		C			C		C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 70.3

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 28.8

Intersection LOS: C

Intersection Capacity Utilization 67.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.

Ø1	Ø2	Ø3	Ø4
15.6 s	45.6 s	15 s	43.8 s
Ø5	Ø6	Ø7	Ø8
18 s	43.2 s	11 s	47.8 s

HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 			  			 	
Traffic Volume (veh/h)	99	311	135	311	412	84	249	445	242	72	339	110
Future Volume (veh/h)	99	311	135	311	412	84	249	445	242	72	339	110
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		0.98	1.00		0.99	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	1600	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	103	324	82	324	429	56	259	464	126	75	353	75
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	128	631	277	411	743	96	301	1472	451	94	587	262
Arrive On Green	0.08	0.18	0.18	0.14	0.24	0.24	0.19	0.30	0.30	0.06	0.17	0.17
Sat Flow, veh/h	1619	3420	1503	2956	3035	394	1619	4914	1504	1619	3420	1525
Grp Volume(v), veh/h	103	324	82	324	241	244	259	464	126	75	353	75
Grp Sat Flow(s),veh/h/ln	1619	1710	1503	1478	1710	1718	1619	1638	1504	1619	1710	1525
Q Serve(g_s), s	3.9	5.4	3.0	6.7	7.8	7.9	9.8	4.6	4.0	2.9	6.0	2.7
Cycle Q Clear(g_c), s	3.9	5.4	3.0	6.7	7.8	7.9	9.8	4.6	4.0	2.9	6.0	2.7
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	128	631	277	411	419	421	301	1472	451	94	587	262
V/C Ratio(X)	0.81	0.51	0.30	0.79	0.57	0.58	0.86	0.32	0.28	0.80	0.60	0.29
Avail Cap(c_a), veh/h	164	2061	906	488	1139	1144	344	3156	966	282	2067	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	23.2	22.2	26.2	20.9	21.0	24.9	17.1	16.9	29.3	24.1	22.8
Incr Delay (d2), s/veh	15.7	0.6	0.6	5.9	1.2	1.3	16.0	0.1	0.3	5.7	1.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.0	1.0	2.4	2.9	2.9	4.8	1.6	1.2	1.2	2.3	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	23.8	22.8	32.1	22.2	22.2	40.9	17.2	17.2	35.1	25.1	23.3
LnGrp LOS	D	C	C	C	C	C	D	B	B	D	C	C
Approach Vol, veh/h		509			809			849			503	
Approach Delay, s/veh		27.8			26.2			24.4			26.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	24.0	13.4	17.4	16.3	15.9	9.6	21.2				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	11.0	40.5	10.4	38.0	13.4	38.1	6.4	42.0				
Max Q Clear Time (g_c+I1), s	4.9	6.6	8.7	7.4	11.8	8.0	5.9	9.9				
Green Ext Time (p_c), s	0.0	3.7	0.1	2.2	0.1	2.6	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay			26.0									
HCM 6th LOS			C									

APPENDIX 6.3: OPENING YEAR CUMULATIVE (2029) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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

DIST	CO	RTE	PM	CALC	TRAFFIC CONDITIONS	2029 With Project
Jurisdiction: <u>County of San Bernardino</u>				CHK	<u>CP</u>	DATE <u>10/30/23</u>
Major Street: <u>Highland Av.</u>						DATE <u>10/30/23</u>
Minor Street: <u>Driveway 1</u>					Critical Approach Speed (Major) <u>45</u> mph	
					Critical Approach Speed (Minor) <u>25</u> mph	
Major Street Approach Lanes = <u>2</u> lane				Minor Street Approach Lanes: <u>1</u> lane		
Major Street Future ADT = <u>14,683</u> vpd				Minor Street Future ADT = <u>781</u> 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		XX		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
<u>Satisfied</u>		<u>Not Satisfied</u>	XX				
Number of lanes for moving traffic on each approach		Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
Major Street		Minor Street					
1		1		8,000	5,600	2,400	1,680
2 + 14,683		1 781		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		XX		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
<u>Satisfied</u>		<u>Not Satisfied</u>	XX				
Number of lanes for moving traffic on each approach		Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
Major Street		Minor Street					
1		1		12,000	8,400	1,200	850
2 + 14,683		1 781		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		XX		2 CONDITIONS 80%		2 CONDITIONS 80%	
<u>Satisfied</u>		<u>Not Satisfied</u>	XX				
No one condition satisfied, but following conditions fulfilled 80% of more							
		A	B				
		46%	92%				

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.

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APPENDIX 6.4: OPENING YEAR CUMULATIVE (2029) WITHOUT PROJECT CONDITIONS OFF-RAMP QUEUEING ANALYSIS WORKSHEETS

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Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

11/20/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	762	133	790	521	883
v/c Ratio	1.32	0.22	1.21	0.24	1.22
Control Delay	191.5	6.2	143.8	12.0	149.6
Queue Delay	0.0	0.0	1.5	0.0	0.0
Total Delay	191.5	6.2	145.3	12.0	149.6
Queue Length 50th (ft)	~764	2	~747	95	~416
Queue Length 95th (ft)	#1002	46	#987	124	#548
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	576	605	652	2141	723
Starvation Cap Reductn	0	0	122	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.32	0.22	1.49	0.24	1.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	186	782	1684	115	1210
v/c Ratio	0.29	1.29	1.11	0.69	0.60
Control Delay	29.8	173.5	89.1	73.3	18.6
Queue Delay	0.0	0.0	0.0	0.0	3.7
Total Delay	29.8	173.5	89.1	73.3	22.3
Queue Length 50th (ft)	103	~739	~760	86	304
Queue Length 95th (ft)	166	#994	#915	150	370
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	632	606	1523	199	2088
Starvation Cap Reductn	0	0	0	0	769
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	1.29	1.11	0.58	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

11/20/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	510	87	696	730	583
v/c Ratio	0.91	0.15	1.02	0.34	0.86
Control Delay	60.3	8.2	75.5	12.6	53.8
Queue Delay	0.0	0.0	31.1	0.5	0.0
Total Delay	60.3	8.2	106.6	13.1	53.8
Queue Length 50th (ft)	369	4	~596	146	200
Queue Length 95th (ft)	#558	41	#829	185	#286
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	620	616	685	2217	728
Starvation Cap Reductn	0	0	136	992	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.14	1.27	0.60	0.80

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	338	737	1656	45	865
v/c Ratio	0.45	0.99	1.13	0.44	0.49
Control Delay	27.2	61.0	101.2	68.3	21.1
Queue Delay	0.0	0.0	0.0	0.0	1.2
Total Delay	27.2	61.0	101.2	68.3	22.4
Queue Length 50th (ft)	187	~522	~781	34	223
Queue Length 95th (ft)	273	#787	#923	74	278
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	759	743	1460	114	1855
Starvation Cap Reductn	0	0	0	0	720
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.99	1.13	0.39	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.

APPENDIX 6.5: OPENING YEAR CUMULATIVE (2029) WITH PROJECT CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

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Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

11/20/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	762	173	790	578	870
v/c Ratio	1.32	0.27	1.13	0.27	1.37
Control Delay	191.5	5.8	112.1	12.2	212.8
Queue Delay	0.0	0.0	1.7	0.0	0.0
Total Delay	191.5	5.8	113.7	12.2	212.8
Queue Length 50th (ft)	~764	2	~711	107	~446
Queue Length 95th (ft)	#1002	52	#951	139	#577
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	576	633	697	2141	634
Starvation Cap Reductn	0	0	146	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.32	0.27	1.43	0.27	1.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically 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	NBT	SBL	SBT
Lane Group Flow (vph)	219	782	1708	110	1215
v/c Ratio	0.35	1.29	1.12	0.67	0.60
Control Delay	30.6	172.7	94.9	71.8	18.7
Queue Delay	0.0	0.0	0.0	0.0	3.6
Total Delay	30.6	172.7	94.9	71.8	22.3
Queue Length 50th (ft)	123	~736	~778	82	306
Queue Length 95th (ft)	194	#994	#936	144	372
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	633	607	1524	199	2091
Starvation Cap Reductn	0	0	0	0	764
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	1.29	1.12	0.55	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

11/20/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	510	132	696	794	797
v/c Ratio	0.92	0.22	1.04	0.37	1.09
Control Delay	61.8	6.9	81.7	12.9	99.8
Queue Delay	0.0	0.0	24.7	0.7	0.0
Total Delay	61.8	6.9	106.4	13.6	99.8
Queue Length 50th (ft)	369	4	~596	163	~337
Queue Length 95th (ft)	#558	48	#829	204	#466
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	608	632	671	2172	731
Starvation Cap Reductn	0	0	136	969	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.21	1.30	0.66	1.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	392	737	1667	135	895
v/c Ratio	0.53	1.02	1.17	1.22	0.49
Control Delay	29.8	68.9	115.8	201.6	21.0
Queue Delay	0.0	0.0	0.0	0.0	1.8
Total Delay	29.8	68.9	115.8	201.6	22.8
Queue Length 50th (ft)	225	~554	~791	~128	234
Queue Length 95th (ft)	322	#795	#933	#258	291
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	741	724	1427	111	1811
Starvation Cap Reductn	0	0	0	0	712
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	1.02	1.17	1.22	0.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

**APPENDIX 6.6: OPENING YEAR CUMULATIVE (2029) WITH PROJECT
CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
WITH IMPROVEMENTS**

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Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

	↙	←	↘	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↘	↕	↘	↑↑	↑↑
Traffic Volume (vph)	693	3	719	526	517
Future Volume (vph)	693	3	719	526	517
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	35.0	35.0	52.0	85.0	33.0
Total Split (%)	29.2%	29.2%	43.3%	70.8%	27.5%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lag		Lead
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Min	C-Min
Act Effect Green (s)	30.3	30.3	47.4	79.2	27.2
Actuated g/C Ratio	0.25	0.25	0.40	0.66	0.23
v/c Ratio	1.11	1.05	1.11	0.24	1.04
Control Delay	118.1	97.2	102.8	8.6	84.7
Queue Delay	0.0	0.0	1.7	0.0	21.4
Total Delay	118.1	97.2	104.5	8.6	106.1
LOS	F	F	F	A	F
Approach Delay		107.9		64.0	106.1
Approach LOS		F		E	F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 79.2 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 88.5

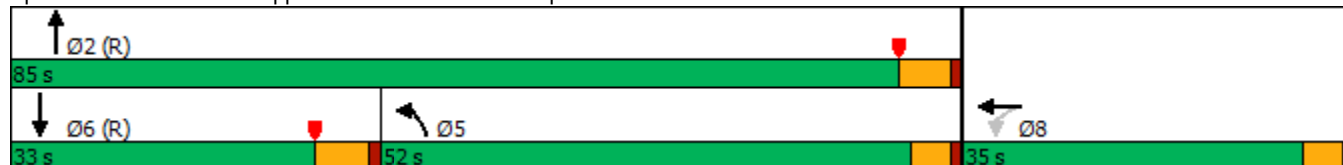
Intersection LOS: F

Intersection Capacity Utilization 142.7%

ICU Level of Service H

Analysis Period (min) 15

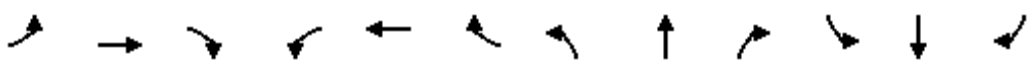
Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	693	3	155	719	526	0	0	517	275
Future Volume (veh/h)	0	0	0	693	3	155	719	526	0	0	517	275
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				866	0	0	790	578	0	0	568	154
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				913	479	0	898	2761	0	0	618	167
Arrive On Green				0.25	0.00	0.00	0.50	0.76	0.00	0.00	0.22	0.22
Sat Flow, veh/h				3619	1900	0	1810	3705	0	0	2904	759
Grp Volume(v), veh/h				866	0	0	790	578	0	0	364	358
Grp Sat Flow(s),veh/h/ln				1810	1900	0	1810	1805	0	0	1805	1763
Q Serve(g_s), s				28.2	0.0	0.0	46.8	5.4	0.0	0.0	23.7	23.8
Cycle Q Clear(g_c), s				28.2	0.0	0.0	46.8	5.4	0.0	0.0	23.7	23.8
Prop In Lane				1.00		0.00	1.00		0.00	0.00		0.43
Lane Grp Cap(c), veh/h				913	479	0	898	2761	0	0	397	388
V/C Ratio(X)				0.95	0.00	0.00	0.88	0.21	0.00	0.00	0.92	0.92
Avail Cap(c_a), veh/h				914	480	0	898	2761	0	0	409	400
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	0.00	0.09	0.09	0.00	0.00	0.11	0.11
Uniform Delay (d), s/veh				44.1	0.0	0.0	27.0	3.9	0.0	0.0	45.7	45.8
Incr Delay (d2), s/veh				18.6	0.0	0.0	1.0	0.0	0.0	0.0	4.9	5.2
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				14.9	0.0	0.0	18.8	1.5	0.0	0.0	10.8	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				62.7	0.0	0.0	28.0	4.0	0.0	0.0	50.6	51.0
LnGrp LOS				E	A	A	C	A	A	A	D	D
Approach Vol, veh/h					866			1368			722	
Approach Delay, s/veh					62.7			17.9			50.8	
Approach LOS					E			B			D	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		98.0			65.7	32.2		35.0				
Change Period (Y+Rc), s		5.8			5.8	* 5.8		4.7				
Max Green Setting (Gmax), s		79.2			47.4	* 27		30.3				
Max Q Clear Time (g_c+I1), s		7.4			48.8	25.8		30.2				
Green Ext Time (p_c), s		4.0			0.0	0.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				39.0								
HCM 6th LOS				D								
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.												

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	495	8	675	770	473
Future Volume (vph)	495	8	675	770	473
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	30.0	30.0	54.0	90.0	36.0
Total Split (%)	25.0%	25.0%	45.0%	75.0%	30.0%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lag		Lead
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Min	C-Min
Act Effect Green (s)	25.0	25.0	48.1	84.5	31.8
Actuated g/C Ratio	0.21	0.21	0.40	0.70	0.26
v/c Ratio	0.91	0.87	0.96	0.31	0.81
Control Delay	76.8	66.3	61.0	7.2	43.3
Queue Delay	0.0	0.0	45.6	0.6	2.4
Total Delay	76.8	66.3	106.6	7.8	45.7
LOS	E	E	F	A	D
Approach Delay		71.6		54.0	45.7
Approach LOS		E		D	D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 84.2 (70%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 55.6

Intersection LOS: E

Intersection Capacity Utilization 109.0%

ICU Level of Service H

Analysis Period (min) 15

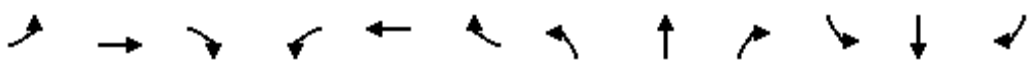
Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	495	8	120	675	770	0	0	473	300
Future Volume (veh/h)	0	0	0	495	8	120	675	770	0	0	473	300
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				579	0	0	696	794	0	0	488	108
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				655	344	0	881	2640	0	0	576	127
Arrive On Green				0.18	0.00	0.00	0.49	0.73	0.00	0.00	0.20	0.20
Sat Flow, veh/h				3619	1900	0	1810	3705	0	0	3036	647
Grp Volume(v), veh/h				579	0	0	696	794	0	0	298	298
Grp Sat Flow(s),veh/h/ln				1810	1900	0	1810	1805	0	0	1805	1783
Q Serve(g_s), s				18.7	0.0	0.0	38.5	9.1	0.0	0.0	19.1	19.3
Cycle Q Clear(g_c), s				18.7	0.0	0.0	38.5	9.1	0.0	0.0	19.1	19.3
Prop In Lane				1.00		0.00	1.00		0.00	0.00		0.36
Lane Grp Cap(c), veh/h				655	344	0	881	2640	0	0	354	350
V/C Ratio(X)				0.88	0.00	0.00	0.79	0.30	0.00	0.00	0.84	0.85
Avail Cap(c_a), veh/h				763	401	0	881	2640	0	0	454	449
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	0.00	0.09	0.09	0.00	0.00	0.48	0.48
Uniform Delay (d), s/veh				47.9	0.0	0.0	25.6	5.5	0.0	0.0	46.5	46.6
Incr Delay (d2), s/veh				10.8	0.0	0.0	0.4	0.0	0.0	0.0	11.3	12.0
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				9.4	0.0	0.0	15.4	2.7	0.0	0.0	9.4	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				58.7	0.0	0.0	26.1	5.6	0.0	0.0	57.8	58.6
LnGrp LOS				E	A	A	C	A	A	A	E	E
Approach Vol, veh/h					579			1490			596	
Approach Delay, s/veh					58.7			15.1			58.2	
Approach LOS					E			B			E	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		93.6			64.3	29.3		26.4				
Change Period (Y+Rc), s		5.8			5.8	* 5.8		4.7				
Max Green Setting (Gmax), s		84.2			49.4	* 30		25.3				
Max Q Clear Time (g_c+I1), s		11.1			40.5	21.3		20.7				
Green Ext Time (p_c), s		5.9			0.9	2.2		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				34.2								
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.												

Timings

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/04/2024

	↙	←	↖	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖↖	↖↖	↖	↖↖	↖↖
Traffic Volume (vph)	693	3	719	526	517
Future Volume (vph)	693	3	719	526	517
Turn Type	Perm	NA	Split	NA	NA
Protected Phases		8	2	2	6
Permitted Phases	8				
Detector Phase	8	8	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.7	14.7	22.8	22.8	22.8
Total Split (s)	31.0	31.0	49.0	49.0	40.0
Total Split (%)	25.8%	25.8%	40.8%	40.8%	33.3%
Yellow Time (s)	3.7	3.7	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Min	C-Min	Min
Act Effect Green (s)	25.5	25.5	45.8	45.8	32.4
Actuated g/C Ratio	0.21	0.21	0.38	0.38	0.27
v/c Ratio	0.82	0.72	0.71	0.70	0.87
Control Delay (s/veh)	55.0	46.9	40.0	35.6	48.7
Queue Delay	0.0	0.0	3.7	2.2	20.1
Total Delay (s/veh)	55.0	46.9	43.8	37.8	68.8
LOS	E	D	D	D	E
Approach Delay (s/veh)		52.5		39.8	68.8
Approach LOS		D		D	E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay (s/veh): 51.5

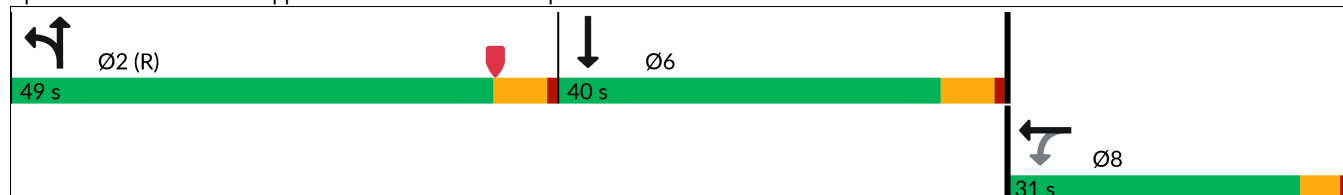
Intersection LOS: D

Intersection Capacity Utilization 134.7%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	693	3	155	719	526	0	0	517	275
Future Volume (veh/h)	0	0	0	693	3	155	719	526	0	0	517	275
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				661	132	97	782	572	0	0	562	65
Peak Hour Factor				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
Cap, veh/h				741	208	153	1642	862	0	0	670	77
Arrive On Green				0.20	0.20	0.20	0.45	0.45	0.00	0.00	0.21	0.21
Sat Flow, veh/h				3619	1018	748	3619	1900	0	0	3356	376
Grp Volume(v), veh/h				661	0	229	782	572	0	0	310	317
Grp Sat Flow(s),veh/h/ln				1810	0	1765	1810	1900	0	0	1805	1832
Q Serve(g_s), s				21.3	0.0	14.2	18.1	28.2	0.0	0.0	19.8	19.9
Cycle Q Clear(g_c), s				21.3	0.0	14.2	18.1	28.2	0.0	0.0	19.8	19.9
Prop In Lane				1.00		0.42	1.00		0.00	0.00		0.21
Lane Grp Cap(c), veh/h				741	0	362	1642	862	0	0	371	377
V/C Ratio(X)				0.89	0.00	0.63	0.48	0.66	0.00	0.00	0.84	0.84
Avail Cap(c_a), veh/h				793	0	387	1642	862	0	0	514	522
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	0.09	0.09	0.00	0.00	0.39	0.39
Uniform Delay (d), s/veh				46.4	0.0	43.6	22.8	25.6	0.0	0.0	45.7	45.8
Incr Delay (d2), s/veh				11.9	0.0	3.0	0.1	0.4	0.0	0.0	3.5	3.6
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.8	0.0	6.5	7.3	12.1	0.0	0.0	8.9	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				58.3	0.0	46.6	22.9	26.0	0.0	0.0	49.2	49.4
LnGrp LOS				E		D	C	C			D	D
Approach Vol, veh/h					890			1354			627	
Approach Delay, s/veh					55.3			24.2			49.3	
Approach LOS					E			C			D	
Timer - Assigned Phs	2			6			8					
Phs Duration (G+Y+Rc), s	60.3			30.5			29.3					
Change Period (Y+Rc), s	5.8			5.8			4.7					
Max Green Setting (Gmax), s	43.2			34.2			26.3					
Max Q Clear Time (g_c+I1), s	30.2			21.9			23.3					
Green Ext Time (p_c), s	5.3			2.8			1.3					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	39.3											
HCM 6th LOS	D											

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/04/2024

					
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	495	8	675	770	473
Future Volume (vph)	495	8	675	770	473
Turn Type	Perm	NA	Split	NA	NA
Protected Phases		8	2	2	6
Permitted Phases	8				
Detector Phase	8	8	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.7	14.7	22.8	22.8	22.8
Total Split (s)	25.0	25.0	57.0	57.0	38.0
Total Split (%)	20.8%	20.8%	47.5%	47.5%	31.7%
Yellow Time (s)	3.7	3.7	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Min	C-Min	Min
Act Effect Green (s)	19.1	19.1	55.1	55.1	29.5
Actuated g/C Ratio	0.16	0.16	0.46	0.46	0.25
v/c Ratio	0.76	0.63	0.64	0.63	0.86
Control Delay (s/veh)	57.5	43.1	31.1	28.0	47.3
Queue Delay	0.0	0.0	4.0	2.4	4.1
Total Delay (s/veh)	57.5	43.1	35.2	30.5	51.5
LOS	E	D	D	C	D
Approach Delay (s/veh)		53.0		32.1	51.6
Approach LOS		D		C	D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay (s/veh): 41.9

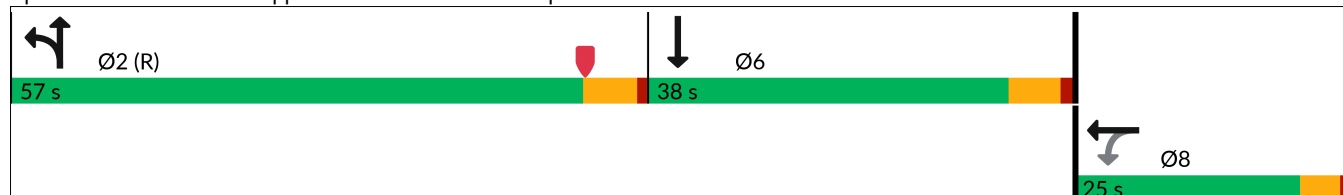
Intersection LOS: D

Intersection Capacity Utilization 109.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	495	8	120	675	770	0	0	473	300
Future Volume (veh/h)	0	0	0	495	8	120	675	770	0	0	473	300
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				454	87	78	497	1073	0	0	488	160
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				533	136	122	910	1912	0	0	572	186
Arrive On Green				0.15	0.15	0.15	0.50	0.50	0.00	0.00	0.21	0.21
Sat Flow, veh/h				3619	923	828	1810	3800	0	0	2771	872
Grp Volume(v), veh/h				454	0	165	497	1073	0	0	328	320
Grp Sat Flow(s),veh/h/ln				1810	0	1751	1810	1900	0	0	1805	1743
Q Serve(g_s), s				14.7	0.0	10.6	22.6	23.5	0.0	0.0	21.0	21.2
Cycle Q Clear(g_c), s				14.7	0.0	10.6	22.6	23.5	0.0	0.0	21.0	21.2
Prop In Lane				1.00		0.47	1.00		0.00	0.00		0.50
Lane Grp Cap(c), veh/h				533	0	258	910	1912	0	0	386	373
V/C Ratio(X)				0.85	0.00	0.64	0.55	0.56	0.00	0.00	0.85	0.86
Avail Cap(c_a), veh/h				612	0	296	910	1912	0	0	484	468
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	0.09	0.09	0.00	0.00	0.69	0.69
Uniform Delay (d), s/veh				49.9	0.0	48.2	20.4	20.6	0.0	0.0	45.3	45.4
Incr Delay (d2), s/veh				10.0	0.0	3.7	0.2	0.1	0.0	0.0	8.1	8.9
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				7.4	0.0	4.9	9.0	9.8	0.0	0.0	9.9	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				59.9	0.0	51.9	20.6	20.8	0.0	0.0	53.4	54.4
LnGrp LOS				E		D	C	C			D	D
Approach Vol, veh/h					619			1570			648	
Approach Delay, s/veh					57.7			20.7			53.9	
Approach LOS					E			C			D	
Timer - Assigned Phs	2			6			8					
Phs Duration (G+Y+Rc), s	66.2			31.5			22.4					
Change Period (Y+Rc), s	5.8			5.8			4.7					
Max Green Setting (Gmax), s	51.2			32.2			20.3					
Max Q Clear Time (g_c+I1), s	25.5			23.2			16.7					
Green Ext Time (p_c), s	9.9			2.4			1.0					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	36.4											
HCM 6th LOS	D											

APPENDIX 7.1: HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Timings
2: Pepper Av. & Highland Av.

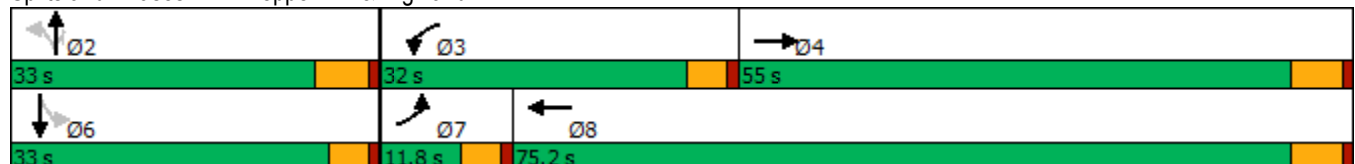
HY NP AM
11/20/2023

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Configurations								
Traffic Volume (vph)	1	161	561	243	306	37	307	51
Future Volume (vph)	1	161	561	243	306	37	307	51
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases					2		2	
Detector Phase	7	4	3	8	2	2	2	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	39.8	9.6	15.8	15.8	15.8	15.8	14.6
Total Split (s)	11.8	55.0	32.0	75.2	33.0	33.0	33.0	33.0
Total Split (%)	9.8%	45.8%	26.7%	62.7%	27.5%	27.5%	27.5%	27.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	4.8	4.8	3.6
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	5.8	4.6	5.8	5.8	5.8	5.8	4.6
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	5.0	11.4	27.4	41.6	27.2	27.2	27.2	28.4
Actuated g/C Ratio	0.06	0.14	0.33	0.51	0.33	0.33	0.33	0.35
v/c Ratio	0.01	0.66	1.07	0.14	0.78	0.06	0.44	0.09
Control Delay	38.0	17.3	87.5	11.7	40.0	19.9	4.7	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.0	17.3	87.5	11.7	40.0	19.9	4.7	19.1
LOS	D	B	F	B	D	B	A	B
Approach Delay		17.4		64.6		22.2		19.1
Approach LOS		B		E		C		B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 82.2
 Natural Cycle: 120
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 38.7
 Intersection LOS: D
 Intersection Capacity Utilization 83.9%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

HY NP AM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	161	266	561	243	0	306	37	307	0	51	2
Future Volume (veh/h)	1	161	266	561	243	0	306	37	307	0	51	2
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	1	175	252	610	264	0	333	40	232	0	55	1
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	2	362	323	539	1855	0	442	568	481	0	556	10
Arrive On Green	0.00	0.20	0.20	0.31	0.51	0.00	0.30	0.30	0.30	0.00	0.30	0.30
Sat Flow, veh/h	1714	1805	1610	1714	3705	0	1297	1900	1610	0	1860	34
Grp Volume(v), veh/h	1	175	252	610	264	0	333	40	232	0	0	56
Grp Sat Flow(s),veh/h/ln	1714	1805	1610	1714	1805	0	1297	1900	1610	0	0	1894
Q Serve(g_s), s	0.1	7.5	12.9	27.4	3.3	0.0	21.7	1.3	10.3	0.0	0.0	1.9
Cycle Q Clear(g_c), s	0.1	7.5	12.9	27.4	3.3	0.0	23.6	1.3	10.3	0.0	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.02
Lane Grp Cap(c), veh/h	2	362	323	539	1855	0	442	568	481	0	0	566
V/C Ratio(X)	0.43	0.48	0.78	1.13	0.14	0.00	0.75	0.07	0.48	0.00	0.00	0.10
Avail Cap(c_a), veh/h	142	1020	910	539	2877	0	460	593	503	0	0	618
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	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.4	30.8	33.0	29.8	11.1	0.0	30.6	21.9	25.0	0.0	0.0	22.1
Incr Delay (d2), s/veh	39.4	1.0	4.1	80.1	0.0	0.0	6.6	0.1	0.8	0.0	0.0	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	0.0	3.2	5.1	22.2	1.2	0.0	7.1	0.6	3.7	0.0	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.8	31.8	37.1	110.0	11.1	0.0	37.2	21.9	25.8	0.0	0.0	22.1
LnGrp LOS	F	C	D	F	B	A	D	C	C	A	A	C
Approach Vol, veh/h	428				874				605			
Approach Delay, s/veh	35.0				80.1				31.8			
Approach LOS	D				F				C			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	31.8		32.0	23.3		31.8		4.7	50.5			
Change Period (Y+Rc), s	5.8		4.6	5.8		* 5.8		4.6	5.8			
Max Green Setting (Gmax), s	27.2		27.4	49.2		* 28		7.2	69.4			
Max Q Clear Time (g_c+I1), s	25.6		29.4	14.9		3.9		2.1	5.3			
Green Ext Time (p_c), s	0.4		0.0	2.6		0.2		0.0	1.7			
Intersection Summary												
HCM 6th Ctrl Delay	53.7											
HCM 6th LOS	D											
Notes												

Timings 3: Pepper Av. & SR-210 WB Ramps

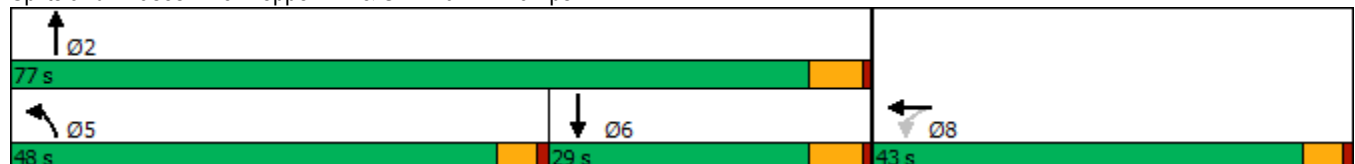
HY NP AM
11/20/2023

	↙	←	↖	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↗	↖	↑↑	↑↗
Traffic Volume (vph)	762	3	791	521	567
Future Volume (vph)	762	3	791	521	567
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	43.0	43.0	48.0	77.0	29.0
Total Split (%)	35.8%	35.8%	40.0%	64.2%	24.2%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	38.3	38.3	43.4	71.2	23.2
Actuated g/C Ratio	0.32	0.32	0.36	0.59	0.19
v/c Ratio	1.44	0.23	1.32	0.26	1.33
Control Delay	239.1	6.1	187.2	12.2	192.3
Queue Delay	0.0	0.0	1.4	0.0	0.0
Total Delay	239.1	6.1	188.6	12.2	192.3
LOS	F	A	F	B	F
Approach Delay		204.6		118.6	192.3
Approach LOS		F		F	F

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.44	
Intersection Signal Delay: 164.6	Intersection LOS: F
Intersection Capacity Utilization 171.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

HY NP AM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	762	3	130	791	521	0	0	567	317
Future Volume (veh/h)	0	0	0	762	3	130	791	521	0	0	567	317
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				828	3	102	860	566	0	0	616	300
Peak Hour Factor				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
Cap, veh/h				578	15	501	654	2142	0	0	455	221
Arrive On Green				0.32	0.32	0.32	0.36	0.59	0.00	0.00	0.19	0.19
Sat Flow, veh/h				1810	46	1571	1810	3705	0	0	2448	1146
Grp Volume(v), veh/h				828	0	105	860	566	0	0	472	444
Grp Sat Flow(s),veh/h/ln				1810	0	1617	1810	1805	0	0	1805	1694
Q Serve(g_s), s				38.3	0.0	5.7	43.4	9.1	0.0	0.0	23.2	23.2
Cycle Q Clear(g_c), s				38.3	0.0	5.7	43.4	9.1	0.0	0.0	23.2	23.2
Prop In Lane				1.00		0.97	1.00		0.00	0.00		0.68
Lane Grp Cap(c), veh/h				578	0	516	654	2142	0	0	349	327
V/C Ratio(X)				1.43	0.00	0.20	1.31	0.26	0.00	0.00	1.35	1.35
Avail Cap(c_a), veh/h				578	0	516	654	2142	0	0	349	327
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				40.8	0.0	29.7	38.3	11.8	0.0	0.0	48.4	48.4
Incr Delay (d2), s/veh				205.0	0.0	0.2	152.0	0.1	0.0	0.0	177.0	178.3
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				49.7	0.0	2.3	45.8	3.4	0.0	0.0	27.2	25.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				245.8	0.0	29.9	190.3	11.8	0.0	0.0	225.4	226.7
LnGrp LOS				F	A	C	F	B	A	A	F	F
Approach Vol, veh/h				933				1426				916
Approach Delay, s/veh				221.5				119.5				226.0
Approach LOS				F				F				F
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	77.0			48.0			29.0			43.0		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	71.2			43.4			23.2			38.3		
Max Q Clear Time (g_c+I1), s	11.1			45.4			25.2			40.3		
Green Ext Time (p_c), s	3.8			0.0			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	178.4											
HCM 6th LOS	F											

Timings

HY NP AM

11/20/2023

4: Pepper Av. & SR-210 EB Ramps



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	186	2	1127	116	1211
Future Volume (vph)	186	2	1127	116	1211
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	46.0	46.0	56.4	17.6	74.0
Total Split (%)	38.3%	38.3%	47.0%	14.7%	61.7%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	41.3	41.3	50.6	11.3	66.6
Actuated g/C Ratio	0.35	0.35	0.43	0.10	0.56
v/c Ratio	0.32	1.43	1.21	0.73	0.65
Control Delay	30.4	233.5	130.8	76.1	19.7
Queue Delay	0.0	0.0	0.0	0.0	9.5
Total Delay	30.4	233.5	130.8	76.1	29.1
LOS	C	F	F	E	C
Approach Delay		194.5	130.8		33.2
Approach LOS		F	F		C

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 118.4	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.43	
Intersection Signal Delay: 113.8	Intersection LOS: F
Intersection Capacity Utilization 171.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps

Ø1	Ø2	Ø4
17.6 s	56.4 s	46 s
Ø6		
74 s		

HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

HY NP AM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	186	2	781	0	0	0	0	1127	559	116	1211	0
Future Volume (veh/h)	186	2	781	0	0	0	0	1127	559	116	1211	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	202	2	441				0	1225	418	126	1316	0
Peak Hour Factor	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
Cap, veh/h	556	2	493				0	1245	413	154	2151	0
Arrive On Green	0.31	0.31	0.31				0.00	0.47	0.47	0.09	0.60	0.00
Sat Flow, veh/h	1810	7	1604				0	2757	884	1810	3705	0
Grp Volume(v), veh/h	202	0	443				0	820	823	126	1316	0
Grp Sat Flow(s),veh/h/ln	1810	0	1611				0	1805	1741	1810	1805	0
Q Serve(g_s), s	9.4	0.0	28.4				0.0	47.9	50.6	7.4	25.1	0.0
Cycle Q Clear(g_c), s	9.4	0.0	28.4				0.0	47.9	50.6	7.4	25.1	0.0
Prop In Lane	1.00		1.00				0.00		0.51	1.00		0.00
Lane Grp Cap(c), veh/h	556	0	495				0	844	814	154	2151	0
V/C Ratio(X)	0.36	0.00	0.89				0.00	0.97	1.01	0.82	0.61	0.00
Avail Cap(c_a), veh/h	691	0	615				0	844	814	217	2276	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	29.2	0.0	35.8				0.0	28.1	28.8	48.6	13.9	0.0
Incr Delay (d2), s/veh	0.4	0.0	13.5				0.0	23.9	34.3	10.4	0.4	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	4.1	0.0	12.8				0.0	24.3	26.8	3.7	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.6	0.0	49.3				0.0	52.0	63.0	59.0	14.4	0.0
LnGrp LOS	C	A	D				A	D	F	E	B	A
Approach Vol, veh/h	645						1643			1442		
Approach Delay, s/veh	43.1						57.5			18.3		
Approach LOS	D						E			B		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	13.8	56.4	37.9		70.2							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	13.0	50.6	* 41		68.2							
Max Q Clear Time (g_c+I1), s	9.4	52.6	30.4		27.1							
Green Ext Time (p_c), s	0.0	0.0	2.8		11.9							
Intersection Summary												
HCM 6th Ctrl Delay			39.9									
HCM 6th LOS			D									
Notes												

Timings
5: State St. & Highland Av.

HY NP AM
11/20/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	91	237	190	339	320	371	454	131	62	410	117
Future Volume (vph)	91	237	190	339	320	371	454	131	62	410	117
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	9.6	44.4	44.4	13.0	47.8	16.0	48.4	48.4	14.2	46.6	46.6
Total Split (%)	8.0%	37.0%	37.0%	10.8%	39.8%	13.3%	40.3%	40.3%	11.8%	38.8%	38.8%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.0	11.2	11.2	8.4	14.6	11.5	20.5	20.5	7.1	14.0	14.0
Actuated g/C Ratio	0.08	0.17	0.17	0.13	0.22	0.18	0.31	0.31	0.11	0.21	0.21
v/c Ratio	0.76	0.42	0.46	0.91	0.49	1.35	0.30	0.24	0.36	0.58	0.28
Control Delay	68.4	26.9	8.0	59.3	24.1	203.8	18.9	5.2	33.6	26.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.4	26.9	8.0	59.3	24.1	203.8	18.9	5.2	33.6	26.2	6.5
LOS	E	C	A	E	C	F	B	A	C	C	A
Approach Delay		27.3			41.2		88.8			23.1	
Approach LOS		C			D		F			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 65.3

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.35

Intersection Signal Delay: 51.2

Intersection LOS: D

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.

			
Ø1	Ø2	Ø3	Ø4
14.2 s	48.4 s	13 s	44.4 s
			
Ø5	Ø6	Ø7	Ø8
16 s	46.6 s	9.6 s	47.8 s

HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

HY NP AM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	237	190	339	320	39	371	454	131	62	410	117
Future Volume (veh/h)	91	237	190	339	320	39	371	454	131	62	410	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1700	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	99	258	133	368	348	31	403	493	100	67	446	78
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	125	592	264	423	757	67	313	1681	522	94	709	316
Arrive On Green	0.07	0.16	0.16	0.13	0.23	0.23	0.18	0.32	0.32	0.06	0.20	0.20
Sat Flow, veh/h	1714	3610	1610	3141	3354	297	1714	5187	1610	1714	3610	1610
Grp Volume(v), veh/h	99	258	133	368	186	193	403	493	100	67	446	78
Grp Sat Flow(s),veh/h/ln	1714	1805	1610	1570	1805	1846	1714	1729	1610	1714	1805	1610
Q Serve(g_s), s	3.5	4.0	4.7	7.2	5.6	5.6	11.4	4.4	2.8	2.4	7.1	2.6
Cycle Q Clear(g_c), s	3.5	4.0	4.7	7.2	5.6	5.6	11.4	4.4	2.8	2.4	7.1	2.6
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	125	592	264	423	408	417	313	1681	522	94	709	316
V/C Ratio(X)	0.79	0.44	0.50	0.87	0.46	0.46	1.29	0.29	0.19	0.71	0.63	0.25
Avail Cap(c_a), veh/h	137	2233	996	423	1215	1243	313	3600	1117	264	2401	1071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	23.5	23.8	26.5	20.9	20.9	25.5	15.7	15.2	29.0	23.0	21.2
Incr Delay (d2), s/veh	21.7	0.5	1.5	16.9	0.8	0.8	151.0	0.1	0.2	3.6	0.9	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	2.1	1.6	1.7	3.4	2.1	2.2	17.3	1.5	0.9	1.0	2.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.1	24.0	25.2	43.3	21.7	21.7	176.5	15.8	15.4	32.6	23.9	21.6
LnGrp LOS	D	C	C	D	C	C	F	B	B	C	C	C
Approach Vol, veh/h		490			747			996			591	
Approach Delay, s/veh		29.6			32.3			80.8			24.6	
Approach LOS		C			C			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	25.3	13.0	16.0	16.0	17.4	9.1	19.9				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	9.6	43.3	8.4	38.6	11.4	41.5	5.0	42.0				
Max Q Clear Time (g_c+I1), s	4.4	6.4	9.2	6.7	13.4	9.1	5.5	7.6				
Green Ext Time (p_c), s	0.0	3.7	0.0	2.0	0.0	3.2	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay				47.3								
HCM 6th LOS				D								

Timings
2: Pepper Av. & Highland Av.

HY NP PM
11/20/2023

	→	↖	←	↙	↑	↗	↓	
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBT	Ø7
Lane Configurations	↑↑	↖	↑↑	↖	↑	↗	↕	
Traffic Volume (vph)	334	440	319	249	4	611	3	
Future Volume (vph)	334	440	319	249	4	611	3	
Turn Type	NA	Prot	NA	Perm	NA	Perm	NA	
Protected Phases	4	3	8		2		6	7
Permitted Phases				2		2		
Detector Phase	4	3	8	2	2	2	6	
Switch Phase								
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	39.8	9.6	15.8	15.8	15.8	15.8	14.6	9.6
Total Split (s)	57.8	26.0	74.2	36.2	36.2	36.2	36.2	9.6
Total Split (%)	48.2%	21.7%	61.8%	30.2%	30.2%	30.2%	30.2%	8%
Yellow Time (s)	4.8	3.6	4.8	4.8	4.8	4.8	3.6	3.6
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	
Total Lost Time (s)	5.8	4.6	5.8	5.8	5.8	5.8	4.6	
Lead/Lag	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	None	None	None	Min	Min	Min	Min	None
Act Effect Green (s)	15.9	21.8	42.4	21.5	21.5	21.5	22.8	
Actuated g/C Ratio	0.21	0.29	0.56	0.28	0.28	0.28	0.30	
v/c Ratio	0.67	0.93	0.16	0.67	0.01	0.74	0.01	
Control Delay	26.6	58.0	9.1	33.6	19.8	9.9	17.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.6	58.0	9.1	33.6	19.8	9.9	17.2	
LOS	C	E	A	C	B	A	B	
Approach Delay	26.6		37.5		16.8		17.3	
Approach LOS	C		D		B		B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 75.7
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 26.5
 Intersection LOS: C
 Intersection Capacity Utilization 75.6%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.

↑ Ø2	↖ Ø3	→ Ø4
36.2 s	26 s	57.8 s
↓ Ø6	↗ Ø7	← Ø8
36.2 s	9.6 s	74.2 s

HCM 6th Signalized Intersection Summary

2: Pepper Av. & Highland Av.

HY NP PM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	334	186	440	319	0	249	4	611	0	3	1
Future Volume (veh/h)	0	334	186	440	319	0	249	4	611	0	3	1
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	0	348	165	458	332	0	259	4	469	0	3	1
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	2	484	225	463	1916	0	527	613	519	0	440	147
Arrive On Green	0.00	0.20	0.20	0.27	0.53	0.00	0.32	0.32	0.32	0.00	0.32	0.32
Sat Flow, veh/h	1714	2391	1114	1714	3705	0	1359	1900	1610	0	1364	455
Grp Volume(v), veh/h	0	261	252	458	332	0	259	4	469	0	0	4
Grp Sat Flow(s),veh/h/ln	1714	1805	1700	1714	1805	0	1359	1900	1610	0	0	1818
Q Serve(g_s), s	0.0	10.7	11.0	21.1	3.8	0.0	12.7	0.1	22.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	10.7	11.0	21.1	3.8	0.0	12.8	0.1	22.0	0.0	0.0	0.1
Prop In Lane	1.00		0.66	1.00		0.00	1.00		1.00	0.00		0.25
Lane Grp Cap(c), veh/h	2	365	344	463	1916	0	527	613	519	0	0	587
V/C Ratio(X)	0.00	0.71	0.73	0.99	0.17	0.00	0.49	0.01	0.90	0.00	0.00	0.01
Avail Cap(c_a), veh/h	108	1185	1116	463	3119	0	611	730	618	0	0	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	29.4	29.6	28.8	9.6	0.0	22.5	18.2	25.6	0.0	0.0	18.2
Incr Delay (d2), s/veh	0.0	2.6	3.0	38.6	0.0	0.0	0.7	0.0	14.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.5	4.4	12.8	1.2	0.0	3.7	0.0	9.6	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	32.0	32.6	67.4	9.6	0.0	23.2	18.2	40.5	0.0	0.0	18.2
LnGrp LOS	A	C	C	E	A	A	C	B	D	A	A	B
Approach Vol, veh/h	513		790			732			4			
Approach Delay, s/veh	32.3		43.1			34.3			18.2			
Approach LOS	C		D			C			B			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	31.3		26.0		21.8		31.3		0.0		47.8	
Change Period (Y+Rc), s	5.8		4.6		5.8		* 5.8		4.6		5.8	
Max Green Setting (Gmax), s	30.4		21.4		52.0		* 32		5.0		68.4	
Max Q Clear Time (g_c+I1), s	24.0		23.1		13.0		2.1		0.0		5.8	
Green Ext Time (p_c), s	1.5		0.0		3.0		0.0		0.0		2.1	
Intersection Summary												
HCM 6th Ctrl Delay			37.2									
HCM 6th LOS			D									
Notes												

Timings 3: Pepper Av. & SR-210 WB Ramps

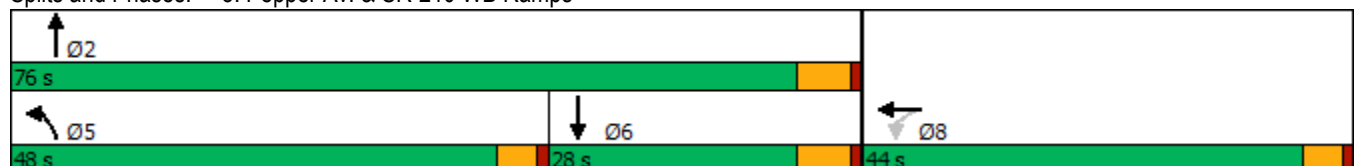
HY NP PM
11/20/2023

	↙	←	↖	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↖	↖	↑↑	↑↑
Traffic Volume (vph)	545	8	742	779	396
Future Volume (vph)	545	8	742	779	396
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	44.0	44.0	48.0	76.0	28.0
Total Split (%)	36.7%	36.7%	40.0%	63.3%	23.3%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	38.3	38.3	43.4	69.7	21.7
Actuated g/C Ratio	0.32	0.32	0.37	0.59	0.18
v/c Ratio	0.96	0.16	1.16	0.38	0.93
Control Delay	69.3	7.7	122.9	13.7	62.5
Queue Delay	0.0	0.0	1.5	0.8	0.0
Total Delay	69.3	7.7	124.5	14.5	62.5
LOS	E	A	F	B	E
Approach Delay		60.3		68.2	62.5
Approach LOS		E		E	E

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 118.6
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 65.1
Intersection LOS: E
Intersection Capacity Utilization 114.8%
ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

HY NP PM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	545	8	85	742	779	0	0	396	226
Future Volume (veh/h)	0	0	0	545	8	85	742	779	0	0	396	226
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				562	8	59	765	803	0	0	408	164
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				587	64	469	664	2118	0	0	456	181
Arrive On Green				0.32	0.32	0.32	0.37	0.59	0.00	0.00	0.18	0.18
Sat Flow, veh/h				1810	196	1444	1810	3705	0	0	2617	1002
Grp Volume(v), veh/h				562	0	67	765	803	0	0	291	281
Grp Sat Flow(s),veh/h/ln				1810	0	1640	1810	1805	0	0	1805	1720
Q Serve(g_s), s				36.0	0.0	3.4	43.4	14.0	0.0	0.0	18.6	19.0
Cycle Q Clear(g_c), s				36.0	0.0	3.4	43.4	14.0	0.0	0.0	18.6	19.0
Prop In Lane				1.00		0.88	1.00		0.00	0.00		0.58
Lane Grp Cap(c), veh/h				587	0	532	664	2118	0	0	326	311
V/C Ratio(X)				0.96	0.00	0.13	1.15	0.38	0.00	0.00	0.89	0.91
Avail Cap(c_a), veh/h				601	0	545	664	2143	0	0	339	323
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				39.1	0.0	28.1	37.4	13.0	0.0	0.0	47.3	47.4
Incr Delay (d2), s/veh				26.1	0.0	0.1	84.9	0.1	0.0	0.0	23.6	27.0
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				20.0	0.0	1.4	33.7	5.2	0.0	0.0	10.2	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				65.2	0.0	28.2	122.3	13.1	0.0	0.0	70.8	74.4
LnGrp LOS				E	A	C	F	B	A	A	E	E
Approach Vol, veh/h					629			1568			572	
Approach Delay, s/veh					61.3			66.4			72.6	
Approach LOS					E			E			E	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	75.2			48.0			27.2			43.1		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	70.2			43.4			22.2			39.3		
Max Q Clear Time (g_c+I1), s	16.0			45.4			21.0			38.0		
Green Ext Time (p_c), s	5.9			0.0			0.4			0.4		
Intersection Summary												
HCM 6th Ctrl Delay				66.5								
HCM 6th LOS				E								

Timings

HY NP PM

11/20/2023

4: Pepper Av. & SR-210 EB Ramps



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	353	0	1163	48	904
Future Volume (vph)	353	0	1163	48	904
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	54.0	54.0	54.0	12.0	66.0
Total Split (%)	45.0%	45.0%	45.0%	10.0%	55.0%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	49.4	49.4	48.3	6.7	57.5
Actuated g/C Ratio	0.42	0.42	0.41	0.06	0.49
v/c Ratio	0.49	1.11	1.25	0.50	0.54
Control Delay	28.2	98.7	147.3	71.3	22.0
Queue Delay	0.0	0.0	0.0	0.0	1.8
Total Delay	28.2	98.7	147.3	71.3	23.8
LOS	C	F	F	E	C
Approach Delay		76.6	147.3		26.2
Approach LOS		E	F		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.4

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 96.1

Intersection LOS: F

Intersection Capacity Utilization 114.8%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps

12 s	54 s	54 s
66 s		

HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

HY NP PM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	353	0	771	0	0	0	0	1163	566	48	904	0
Future Volume (veh/h)	353	0	771	0	0	0	0	1163	566	48	904	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	372	0	523				0	1224	412	51	952	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	662	0	589				0	1215	398	66	1931	0
Arrive On Green	0.37	0.00	0.37				0.00	0.45	0.45	0.04	0.53	0.00
Sat Flow, veh/h	1810	0	1610				0	2767	876	1810	3705	0
Grp Volume(v), veh/h	372	0	523				0	816	820	51	952	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1805	1742	1810	1805	0
Q Serve(g_s), s	17.4	0.0	32.3				0.0	47.7	48.2	3.0	17.7	0.0
Cycle Q Clear(g_c), s	17.4	0.0	32.3				0.0	47.7	48.2	3.0	17.7	0.0
Prop In Lane	1.00		1.00				0.00		0.50	1.00		0.00
Lane Grp Cap(c), veh/h	662	0	589				0	821	793	66	1931	0
V/C Ratio(X)	0.56	0.00	0.89				0.00	0.99	1.03	0.77	0.49	0.00
Avail Cap(c_a), veh/h	842	0	749				0	821	793	126	2051	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	26.8	0.0	31.5				0.0	28.7	28.9	50.6	15.6	0.0
Incr Delay (d2), s/veh	0.7	0.0	10.5				0.0	29.9	41.1	6.8	0.2	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	7.5	0.0	13.9				0.0	25.4	27.2	1.4	6.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	42.1				0.0	58.7	70.0	57.4	15.8	0.0
LnGrp LOS	C	A	D				A	E	F	E	B	A
Approach Vol, veh/h	895						1636			1003		
Approach Delay, s/veh	36.0						64.3			17.9		
Approach LOS	D						E			B		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	8.5	54.0	43.5		62.5							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	7.4	48.2	* 49		60.2							
Max Q Clear Time (g_c+I1), s	5.0	50.2	34.3		19.7							
Green Ext Time (p_c), s	0.0	0.0	4.5		7.3							
Intersection Summary												
HCM 6th Ctrl Delay			44.0									
HCM 6th LOS			D									
Notes												

Timings
5: State St. & Highland Av.

HY NP PM
11/20/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	198	330	201	342	449	292	590	267	93	405	162
Future Volume (vph)	198	330	201	342	449	292	590	267	93	405	162
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	11.0	43.8	43.8	15.0	47.8	18.0	45.6	45.6	15.6	43.2	43.2
Total Split (%)	9.2%	36.5%	36.5%	12.5%	39.8%	15.0%	38.0%	38.0%	13.0%	36.0%	36.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.5	13.8	13.8	10.5	17.8	13.5	22.0	22.0	8.6	14.7	14.7
Actuated g/C Ratio	0.09	0.19	0.19	0.14	0.24	0.19	0.30	0.30	0.12	0.20	0.20
v/c Ratio	1.36	0.50	0.44	0.79	0.66	0.96	0.39	0.41	0.48	0.58	0.37
Control Delay	231.2	29.4	7.5	46.3	27.8	75.6	22.8	5.4	39.9	30.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	231.2	29.4	7.5	46.3	27.8	75.6	22.8	5.4	39.9	30.0	7.0
LOS	F	C	A	D	C	E	C	A	D	C	A
Approach Delay		78.1			34.9		32.1			25.7	
Approach LOS		E			C		C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 72.8

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 41.4

Intersection LOS: D

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.

			
Ø1	Ø2	Ø3	Ø4
15.6 s	45.6 s	15 s	43.8 s
			
Ø5	Ø6	Ø7	Ø8
18 s	43.2 s	11 s	47.8 s

HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

HY NP PM
11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	198	330	201	342	449	105	292	590	267	93	405	162
Future Volume (veh/h)	198	330	201	342	449	105	292	590	267	93	405	162
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		0.98	1.00		0.99	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	1700	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	206	344	150	356	468	77	304	615	152	97	422	129
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	158	685	301	439	733	120	332	1600	490	123	675	301
Arrive On Green	0.09	0.19	0.19	0.14	0.24	0.24	0.19	0.31	0.31	0.07	0.19	0.19
Sat Flow, veh/h	1714	3610	1587	3141	3094	506	1714	5187	1588	1714	3610	1610
Grp Volume(v), veh/h	206	344	150	356	272	273	304	615	152	97	422	129
Grp Sat Flow(s),veh/h/ln	1714	1805	1587	1570	1805	1795	1714	1729	1588	1714	1805	1610
Q Serve(g_s), s	6.4	5.9	5.9	7.6	9.4	9.5	12.0	6.4	5.1	3.9	7.5	4.9
Cycle Q Clear(g_c), s	6.4	5.9	5.9	7.6	9.4	9.5	12.0	6.4	5.1	3.9	7.5	4.9
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	685	301	439	428	425	332	1600	490	123	675	301
V/C Ratio(X)	1.30	0.50	0.50	0.81	0.64	0.64	0.92	0.38	0.31	0.79	0.63	0.43
Avail Cap(c_a), veh/h	158	1980	871	472	1094	1088	332	3032	928	272	1985	886
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	25.1	25.1	28.9	23.7	23.8	27.4	18.8	18.3	31.6	25.9	24.9
Incr Delay (d2), s/veh	173.7	0.6	1.3	8.8	1.6	1.6	28.7	0.2	0.4	4.1	1.0	1.0
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	10.1	2.3	2.1	3.1	3.7	3.8	7.2	2.4	1.7	1.7	3.1	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	205.1	25.7	26.4	37.7	25.3	25.4	56.1	18.9	18.7	35.7	26.9	25.9
LnGrp LOS	F	C	C	D	C	C	E	B	B	D	C	C
Approach Vol, veh/h		700			901			1071			648	
Approach Delay, s/veh		78.6			30.2			29.4			28.0	
Approach LOS		E			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	26.5	14.3	18.9	18.0	18.1	11.0	22.2				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	11.0	40.5	10.4	38.0	13.4	38.1	6.4	42.0				
Max Q Clear Time (g_c+I1), s	5.9	8.4	9.6	7.9	14.0	9.5	8.4	11.5				
Green Ext Time (p_c), s	0.0	5.1	0.1	2.6	0.0	3.3	0.0	3.1				
Intersection Summary												
HCM 6th Ctrl Delay			39.8									
HCM 6th LOS			D									

APPENDIX 7.2: HORIZON YEAR (2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	430	552	69	16	1
Future Vol, veh/h	4	430	552	69	16	1
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	4	467	600	75	17	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	675	0	880
Stage 1	-	-	638
Stage 2	-	-	242
Critical Hdwy	4.1	-	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	926	-	290
Stage 1	-	-	494
Stage 2	-	-	782
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	926	-	289
Mov Cap-2 Maneuver	-	-	395
Stage 1	-	-	492
Stage 2	-	-	782

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	926	-	-	-	405
HCM Lane V/C Ratio	0.005	-	-	-	0.046
HCM Control Delay (s)	8.9	-	-	-	14.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	4	163	561	250	367	65	307	2	24	3
Future Volume (vph)	4	163	561	250	367	65	307	2	24	3
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases					2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	39.8	9.6	15.8	15.8	15.8	15.8	14.6	14.6	14.6
Total Split (s)	10.8	51.0	31.0	71.2	38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	9.0%	42.5%	25.8%	59.3%	31.7%	31.7%	31.7%	31.7%	31.7%	31.7%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	4.8	4.8	3.6	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	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	5.8	4.6	5.8	5.8	5.8	5.8	4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	Min	Min	Min	Min	Min	Min
Act Effect Green (s)	5.1	11.7	26.4	40.9	32.2	32.2	32.2	33.4	33.4	33.4
Actuated g/C Ratio	0.06	0.14	0.30	0.47	0.37	0.37	0.37	0.39	0.39	0.39
v/c Ratio	0.04	0.68	1.17	0.16	0.81	0.10	0.41	0.00	0.04	0.00
Control Delay	40.5	18.1	125.6	13.8	39.6	19.0	4.1	17.5	17.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	40.5	18.1	125.6	13.8	39.6	19.0	4.3	17.5	17.7	0.0
LOS	D	B	F	B	D	B	A	B	B	A
Approach Delay		18.3		90.5		23.1			15.9	
Approach LOS		B		F		C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 86.6

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 49.1

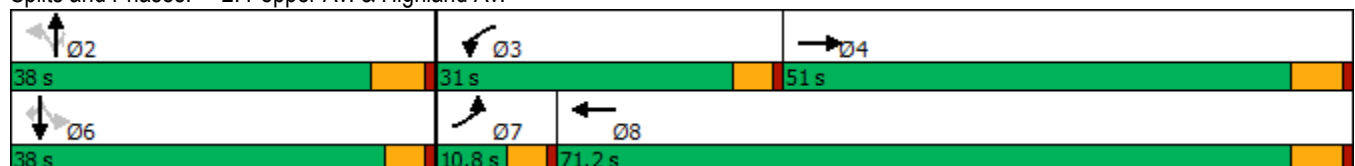
Intersection LOS: D

Intersection Capacity Utilization 88.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.



HCM 6th Signalized Intersection Summary 2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	163	281	561	250	7	367	65	307	2	24	3
Future Volume (veh/h)	4	163	281	561	250	7	367	65	307	2	24	3
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	4	177	196	610	272	8	399	71	232	2	26	2
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	9	297	265	531	1680	49	519	638	540	405	638	540
Arrive On Green	0.01	0.16	0.16	0.31	0.47	0.47	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1714	1805	1610	1714	3581	105	1330	1900	1610	1036	1900	1610
Grp Volume(v), veh/h	4	177	196	610	137	143	399	71	232	2	26	2
Grp Sat Flow(s),veh/h/ln	1714	1805	1610	1714	1805	1881	1330	1900	1610	1036	1900	1610
Q Serve(g_s), s	0.2	7.7	9.9	26.4	3.7	3.7	24.6	2.2	9.5	0.1	0.8	0.1
Cycle Q Clear(g_c), s	0.2	7.7	9.9	26.4	3.7	3.7	25.4	2.2	9.5	2.3	0.8	0.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	9	297	265	531	847	882	519	638	540	405	638	540
V/C Ratio(X)	0.44	0.60	0.74	1.15	0.16	0.16	0.77	0.11	0.43	0.00	0.04	0.00
Avail Cap(c_a), veh/h	125	957	854	531	1385	1444	575	718	608	464	745	631
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	42.3	33.0	33.9	29.4	13.0	13.0	27.6	19.5	22.0	20.3	19.1	18.8
Incr Delay (d2), s/veh	11.9	1.9	4.0	87.0	0.1	0.1	5.7	0.1	0.5	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.3	3.9	22.7	1.4	1.4	7.9	0.9	3.4	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	34.9	37.9	116.4	13.1	13.1	33.3	19.6	22.5	20.3	19.1	18.8
LnGrp LOS	D	C	D	F	B	B	C	B	C	C	B	B
Approach Vol, veh/h	377				890				702			
Approach Delay, s/veh	36.7				83.9				28.4			
Approach LOS	D				F				C			
Timer - Assigned Phs	2			3		4		6		7		8
Phs Duration (G+Y+Rc), s	34.4			31.0		19.8		34.4		5.1		45.8
Change Period (Y+Rc), s	5.8			4.6		5.8		* 5.8		4.6		5.8
Max Green Setting (Gmax), s	32.2			26.4		45.2		* 33		6.2		65.4
Max Q Clear Time (g_c+I1), s	27.4			28.4		11.9		4.3		2.2		5.7
Green Ext Time (p_c), s	1.2			0.0		2.2		0.1		0.0		1.5

Intersection Summary

HCM 6th Ctrl Delay 54.5

HCM 6th LOS D

Notes

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

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

	↖	←	↗	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↗	↖	↑↑	↑↗
Traffic Volume (vph)	762	3	791	573	568
Future Volume (vph)	762	3	791	573	568
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	43.0	43.0	51.0	77.0	26.0
Total Split (%)	35.8%	35.8%	42.5%	64.2%	21.7%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	38.3	38.3	46.4	71.2	20.2
Actuated g/C Ratio	0.32	0.32	0.39	0.59	0.17
v/c Ratio	1.44	0.29	1.23	0.29	1.49
Control Delay	239.1	5.7	150.8	12.4	262.6
Queue Delay	0.0	0.0	1.5	0.6	0.0
Total Delay	239.1	5.7	152.3	13.0	262.6
LOS	F	A	F	B	F
Approach Delay		196.5		93.8	262.6
Approach LOS		F		F	F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.49

Intersection Signal Delay: 170.4

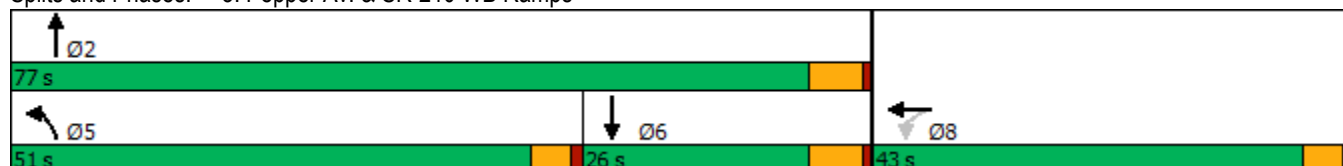
Intersection LOS: F

Intersection Capacity Utilization 172.1%

ICU Level of Service H

Analysis Period (min) 15

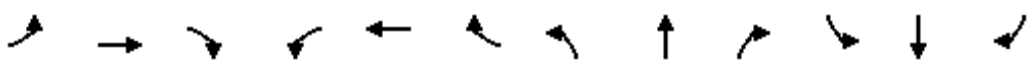
Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	762	3	167	791	573	0	0	568	304
Future Volume (veh/h)	0	0	0	762	3	167	791	573	0	0	568	304
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				828	3	143	860	623	0	0	617	285
Peak Hour Factor				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
Cap, veh/h				578	11	505	700	2142	0	0	404	186
Arrive On Green				0.32	0.32	0.32	0.39	0.59	0.00	0.00	0.17	0.17
Sat Flow, veh/h				1810	33	1582	1810	3705	0	0	2493	1107
Grp Volume(v), veh/h				828	0	146	860	623	0	0	464	438
Grp Sat Flow(s),veh/h/ln				1810	0	1615	1810	1805	0	0	1805	1701
Q Serve(g_s), s				38.3	0.0	8.1	46.4	10.2	0.0	0.0	20.2	20.2
Cycle Q Clear(g_c), s				38.3	0.0	8.1	46.4	10.2	0.0	0.0	20.2	20.2
Prop In Lane				1.00		0.98	1.00		0.00	0.00		0.65
Lane Grp Cap(c), veh/h				578	0	516	700	2142	0	0	304	286
V/C Ratio(X)				1.43	0.00	0.28	1.23	0.29	0.00	0.00	1.53	1.53
Avail Cap(c_a), veh/h				578	0	516	700	2142	0	0	304	286
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				40.8	0.0	30.6	36.8	12.0	0.0	0.0	49.9	49.9
Incr Delay (d2), s/veh				205.0	0.0	0.3	115.4	0.1	0.0	0.0	253.7	255.0
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				49.7	0.0	3.2	41.7	3.8	0.0	0.0	30.2	28.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				245.8	0.0	30.9	152.2	12.1	0.0	0.0	303.6	304.9
LnGrp LOS				F	A	C	F	B	A	A	F	F
Approach Vol, veh/h					974			1483			902	
Approach Delay, s/veh					213.6			93.4			304.2	
Approach LOS					F			F			F	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.0			51.0	26.0		43.0				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		71.2			46.4	20.2		38.3				
Max Q Clear Time (g_c+I1), s		12.2			48.4	22.2		40.3				
Green Ext Time (p_c), s		4.3			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				184.8								
HCM 6th LOS				F								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

11/21/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	216	2	1149	111	1216
Future Volume (vph)	216	2	1149	111	1216
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	46.0	46.0	56.4	17.6	74.0
Total Split (%)	38.3%	38.3%	47.0%	14.7%	61.7%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	41.3	41.3	50.6	11.1	66.4
Actuated g/C Ratio	0.35	0.35	0.43	0.09	0.56
v/c Ratio	0.37	1.43	1.22	0.72	0.65
Control Delay	31.3	232.4	136.6	74.9	19.8
Queue Delay	0.0	0.0	0.0	0.0	9.1
Total Delay	31.3	232.4	136.6	74.9	28.9
LOS	C	F	F	E	C
Approach Delay		188.9	136.6		32.7
Approach LOS		F	F		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 118.2

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.43

Intersection Signal Delay: 115.4

Intersection LOS: F

Intersection Capacity Utilization 172.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps



HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	2	781	0	0	0	0	1149	559	111	1216	0
Future Volume (veh/h)	216	2	781	0	0	0	0	1149	559	111	1216	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	235	2	441				0	1249	418	121	1322	0
Peak Hour Factor	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
Cap, veh/h	557	2	494				0	1257	409	149	2146	0
Arrive On Green	0.31	0.31	0.31				0.00	0.47	0.47	0.08	0.59	0.00
Sat Flow, veh/h	1810	7	1604				0	2773	871	1810	3705	0
Grp Volume(v), veh/h	235	0	443				0	830	837	121	1322	0
Grp Sat Flow(s),veh/h/ln	1810	0	1611				0	1805	1743	1810	1805	0
Q Serve(g_s), s	11.1	0.0	28.3				0.0	48.7	50.6	7.1	25.3	0.0
Cycle Q Clear(g_c), s	11.1	0.0	28.3				0.0	48.7	50.6	7.1	25.3	0.0
Prop In Lane	1.00		1.00				0.00		0.50	1.00		0.00
Lane Grp Cap(c), veh/h	557	0	496				0	847	818	149	2146	0
V/C Ratio(X)	0.42	0.00	0.89				0.00	0.98	1.02	0.81	0.62	0.00
Avail Cap(c_a), veh/h	693	0	617				0	847	818	218	2284	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	29.7	0.0	35.6				0.0	28.1	28.6	48.6	14.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	13.2				0.0	25.9	37.3	8.5	0.5	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	4.9	0.0	12.7				0.0	25.1	27.5	3.5	9.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	0.0	48.8				0.0	54.0	65.9	57.1	14.4	0.0
LnGrp LOS	C	A	D				A	D	F	E	B	A
Approach Vol, veh/h	678						1667			1443		
Approach Delay, s/veh	42.3						60.0			18.0		
Approach LOS	D						E			B		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	13.5	56.4	37.9		69.9							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	13.0	50.6	* 41		68.2							
Max Q Clear Time (g_c+I1), s	9.1	52.6	30.3		27.3							
Green Ext Time (p_c), s	0.0	0.0	2.9		12.0							
Intersection Summary												
HCM 6th Ctrl Delay			40.8									
HCM 6th LOS			D									
Notes												

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	92	239	191	339	329	374	454	131	62	410	120
Future Volume (vph)	92	239	191	339	329	374	454	131	62	410	120
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	9.6	44.4	44.4	13.0	47.8	16.0	48.4	48.4	14.2	46.6	46.6
Total Split (%)	8.0%	37.0%	37.0%	10.8%	39.8%	13.3%	40.3%	40.3%	11.8%	38.8%	38.8%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	5.0	11.2	11.2	8.4	14.6	11.5	20.5	20.5	7.1	14.0	14.0
Actuated g/C Ratio	0.08	0.17	0.17	0.13	0.22	0.18	0.31	0.31	0.11	0.21	0.21
v/c Ratio	0.76	0.42	0.46	0.91	0.50	1.36	0.30	0.24	0.36	0.58	0.29
Control Delay	69.4	26.9	8.0	59.3	24.4	209.3	18.9	5.2	33.6	26.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.4	26.9	8.0	59.3	24.4	209.3	18.9	5.2	33.6	26.2	6.5
LOS	E	C	A	E	C	F	B	A	C	C	A
Approach Delay		27.5			41.1		91.4			23.0	
Approach LOS		C			D		F			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 65.3

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 52.0

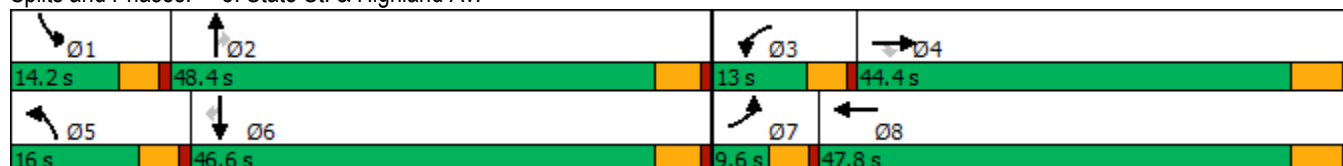
Intersection LOS: D

Intersection Capacity Utilization 69.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.



HCM 6th Signalized Intersection Summary
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	239	191	339	329	39	374	454	131	62	410	120
Future Volume (veh/h)	92	239	191	339	329	39	374	454	131	62	410	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1700	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	100	260	134	368	358	31	407	493	100	67	446	81
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	126	592	264	423	757	65	313	1682	522	94	710	316
Arrive On Green	0.07	0.16	0.16	0.13	0.23	0.23	0.18	0.32	0.32	0.06	0.20	0.20
Sat Flow, veh/h	1714	3610	1610	3141	3363	290	1714	5187	1610	1714	3610	1610
Grp Volume(v), veh/h	100	260	134	368	191	198	407	493	100	67	446	81
Grp Sat Flow(s),veh/h/ln	1714	1805	1610	1570	1805	1847	1714	1729	1610	1714	1805	1610
Q Serve(g_s), s	3.6	4.0	4.7	7.2	5.7	5.8	11.4	4.4	2.8	2.4	7.1	2.7
Cycle Q Clear(g_c), s	3.6	4.0	4.7	7.2	5.7	5.8	11.4	4.4	2.8	2.4	7.1	2.7
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	592	264	423	406	416	313	1682	522	94	710	316
V/C Ratio(X)	0.79	0.44	0.51	0.87	0.47	0.48	1.30	0.29	0.19	0.71	0.63	0.26
Avail Cap(c_a), veh/h	137	2233	996	423	1215	1243	313	3599	1117	264	2401	1071
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	23.5	23.8	26.5	21.0	21.0	25.5	15.7	15.2	29.0	23.0	21.2
Incr Delay (d2), s/veh	22.0	0.5	1.5	16.9	0.8	0.8	156.3	0.1	0.2	3.6	0.9	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	2.1	1.6	1.7	3.4	2.2	2.3	17.7	1.5	0.9	1.0	2.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	24.0	25.3	43.4	21.8	21.8	181.8	15.8	15.4	32.6	23.9	21.6
LnGrp LOS	D	C	C	D	C	C	F	B	B	C	C	C
Approach Vol, veh/h		494			757			1000			594	
Approach Delay, s/veh		29.7			32.3			83.4			24.6	
Approach LOS		C			C			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	25.3	13.0	16.0	16.0	17.4	9.2	19.8				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	9.6	43.3	8.4	38.6	11.4	41.5	5.0	42.0				
Max Q Clear Time (g_c+I1), s	4.4	6.4	9.2	6.7	13.4	9.1	5.6	7.8				
Green Ext Time (p_c), s	0.0	3.7	0.0	2.0	0.0	3.2	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay			48.2									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	509	564	35	88	6
Future Vol, veh/h	2	509	564	35	88	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	2	553	613	38	96	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	651	0	0	913	326
Stage 1	-	-	-	632	-
Stage 2	-	-	-	281	-
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	945	-	-	277	676
Stage 1	-	-	-	497	-
Stage 2	-	-	-	747	-
Platoon blocked, %	-	-	-		
Mov Cap-1 Maneuver	945	-	-	276	676
Mov Cap-2 Maneuver	-	-	-	389	-
Stage 1	-	-	-	496	-
Stage 2	-	-	-	747	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	945	-	-	-	400
HCM Lane V/C Ratio	0.002	-	-	-	0.255
HCM Control Delay (s)	8.8	-	-	-	17.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1

Timings
2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	1	335	440	318	276	78	611	9	131	5
Future Volume (vph)	1	335	440	318	276	78	611	9	131	5
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases					2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	39.8	9.6	15.8	15.8	15.8	15.8	14.6	14.6	14.6
Total Split (s)	9.6	39.8	38.0	68.2	42.2	42.2	42.2	42.2	42.2	42.2
Total Split (%)	8.0%	33.2%	31.7%	56.8%	35.2%	35.2%	35.2%	35.2%	35.2%	35.2%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	4.8	4.8	3.6	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	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	5.8	4.6	5.8	5.8	5.8	5.8	4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	Min	Min	Min	Min	Min	Min
Act Effect Green (s)	5.1	20.4	31.6	55.0	31.1	31.1	31.1	32.4	32.4	32.4
Actuated g/C Ratio	0.05	0.20	0.32	0.55	0.31	0.31	0.31	0.32	0.32	0.32
v/c Ratio	0.01	0.76	0.85	0.17	0.80	0.14	0.68	0.02	0.22	0.01
Control Delay	52.0	34.2	49.9	12.3	50.2	27.0	7.2	25.4	26.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	52.0	34.2	49.9	12.3	50.2	27.0	7.6	25.4	26.9	0.0
LOS	D	C	D	B	D	C	A	C	C	A
Approach Delay		34.3		34.0		21.4			25.9	
Approach LOS		C		C		C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 99.7

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 28.7

Intersection LOS: C

Intersection Capacity Utilization 85.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Pepper Av. & Highland Av.

		
42.2 s	38 s	39.8 s
		
42.2 s	9.6 s	68.2 s

HCM 6th Signalized Intersection Summary

2: Pepper Av. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	335	261	440	318	4	276	78	611	9	131	5
Future Volume (veh/h)	1	335	261	440	318	4	276	78	611	9	131	5
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	1	349	257	458	331	4	288	81	469	9	136	5
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	2	442	320	490	1847	22	402	616	522	318	616	522
Arrive On Green	0.00	0.22	0.22	0.29	0.51	0.51	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1714	1999	1446	1714	3653	44	1201	1900	1610	825	1900	1610
Grp Volume(v), veh/h	1	315	291	458	163	172	288	81	469	9	136	5
Grp Sat Flow(s),veh/h/ln	1714	1805	1640	1714	1805	1892	1201	1900	1610	825	1900	1610
Q Serve(g_s), s	0.1	15.8	16.1	25.0	4.7	4.7	22.0	2.9	26.7	0.7	5.0	0.2
Cycle Q Clear(g_c), s	0.1	15.8	16.1	25.0	4.7	4.7	27.0	2.9	26.7	3.6	5.0	0.2
Prop In Lane	1.00		0.88	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	2	399	363	490	913	957	402	616	522	318	616	522
V/C Ratio(X)	0.43	0.79	0.80	0.94	0.18	0.18	0.72	0.13	0.90	0.03	0.22	0.01
Avail Cap(c_a), veh/h	89	640	581	597	1174	1231	468	721	611	374	745	631
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	47.9	35.2	35.4	33.4	12.9	12.9	33.4	22.9	30.9	24.2	23.6	22.0
Incr Delay (d2), s/veh	39.5	3.5	4.2	18.5	0.1	0.1	4.4	0.1	14.7	0.0	0.2	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.9	6.5	12.2	1.7	1.8	6.5	1.2	11.7	0.2	2.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.4	38.7	39.6	51.9	13.0	13.0	37.8	23.0	45.6	24.2	23.8	22.0
LnGrp LOS	F	D	D	D	B	B	D	C	D	C	C	C
Approach Vol, veh/h	607			793			838			150		
Approach Delay, s/veh	39.2			35.5			40.8			23.8		
Approach LOS	D			D			D			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	36.9			32.0			27.0			36.9		
Change Period (Y+Rc), s	5.8			4.6			5.8			* 5.8		
Max Green Setting (Gmax), s	36.4			33.4			34.0			* 38		
Max Q Clear Time (g_c+I1), s	29.0			27.0			18.1			7.0		
Green Ext Time (p_c), s	2.1			0.4			3.1			0.9		

Intersection Summary

HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

Notes

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

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	545	8	742	841	506
Future Volume (vph)	545	8	742	841	506
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	44.0	44.0	48.0	76.0	28.0
Total Split (%)	36.7%	36.7%	40.0%	63.3%	23.3%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Min	Min
Act Effect Green (s)	38.5	38.5	43.4	70.2	22.2
Actuated g/C Ratio	0.32	0.32	0.36	0.59	0.19
v/c Ratio	0.97	0.22	1.16	0.41	1.19
Control Delay	69.9	6.7	125.4	14.1	135.5
Queue Delay	0.0	0.0	1.6	1.1	0.0
Total Delay	69.9	6.7	127.0	15.1	135.5
LOS	E	A	F	B	F
Approach Delay		57.7		67.6	135.5
Approach LOS		E		E	F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 119.2

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 83.6

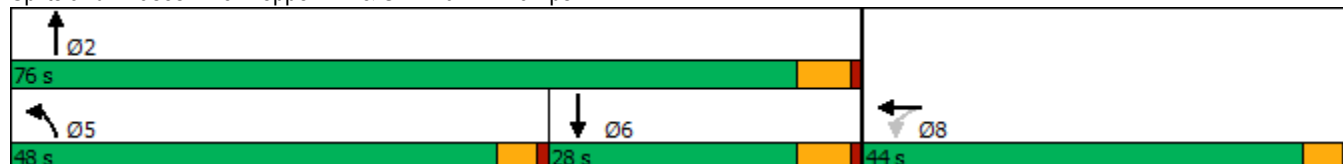
Intersection LOS: F

Intersection Capacity Utilization 118.0%

ICU Level of Service H

Analysis Period (min) 15

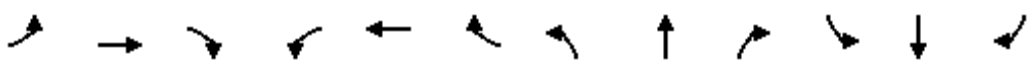
Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	545	8	123	742	841	0	0	506	320
Future Volume (veh/h)	0	0	0	545	8	123	742	841	0	0	506	320
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				562	8	98	765	867	0	0	522	261
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				586	40	488	658	2123	0	0	434	216
Arrive On Green				0.32	0.32	0.32	0.36	0.59	0.00	0.00	0.19	0.19
Sat Flow, veh/h				1810	123	1506	1810	3705	0	0	2428	1163
Grp Volume(v), veh/h				562	0	106	765	867	0	0	403	380
Grp Sat Flow(s),veh/h/ln				1810	0	1629	1810	1805	0	0	1805	1691
Q Serve(g_s), s				36.4	0.0	5.6	43.4	15.5	0.0	0.0	22.2	22.2
Cycle Q Clear(g_c), s				36.4	0.0	5.6	43.4	15.5	0.0	0.0	22.2	22.2
Prop In Lane				1.00		0.92	1.00		0.00	0.00		0.69
Lane Grp Cap(c), veh/h				586	0	528	658	2123	0	0	336	314
V/C Ratio(X)				0.96	0.00	0.20	1.16	0.41	0.00	0.00	1.20	1.21
Avail Cap(c_a), veh/h				596	0	536	658	2123	0	0	336	314
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				39.6	0.0	29.2	38.0	13.3	0.0	0.0	48.6	48.6
Incr Delay (d2), s/veh				26.7	0.0	0.2	89.3	0.1	0.0	0.0	115.9	119.2
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				20.3	0.0	2.2	34.4	5.8	0.0	0.0	20.5	19.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				66.3	0.0	29.4	127.3	13.5	0.0	0.0	164.5	167.8
LnGrp LOS				E	A	C	F	B	A	A	F	F
Approach Vol, veh/h					668			1632			783	
Approach Delay, s/veh					60.4			66.8			166.1	
Approach LOS					E			E			F	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		76.0			48.0	28.0		43.4				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		70.2			43.4	22.2		39.3				
Max Q Clear Time (g_c+I1), s		17.5			45.4	24.2		38.4				
Green Ext Time (p_c), s		6.6			0.0	0.0		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				90.6								
HCM 6th LOS				F								

Timings

Pepper 210 Commerce Center TA (JN:14324)

4: Pepper Av. & SR-210 EB Ramps

11/20/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	404	0	1174	129	932
Future Volume (vph)	404	0	1174	129	932
Turn Type	Perm	NA	NA	Prot	NA
Protected Phases		4	2	1	6
Permitted Phases	4				
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	14.7	14.7	22.8	9.6	22.8
Total Split (s)	54.0	54.0	54.0	12.0	66.0
Total Split (%)	45.0%	45.0%	45.0%	10.0%	55.0%
Yellow Time (s)	3.7	3.7	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	4.6	5.8
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	Min	None	Min
Act Effect Green (s)	49.3	49.3	48.2	7.4	60.2
Actuated g/C Ratio	0.41	0.41	0.40	0.06	0.50
v/c Ratio	0.57	1.14	1.28	1.23	0.54
Control Delay	31.0	110.8	164.0	204.6	21.9
Queue Delay	0.0	0.0	0.0	0.0	2.8
Total Delay	31.0	110.8	164.0	204.6	24.6
LOS	C	F	F	F	C
Approach Delay		83.4	164.0		46.5
Approach LOS		F	F		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.28

Intersection Signal Delay: 108.9

Intersection LOS: F

Intersection Capacity Utilization 118.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Pepper Av. & SR-210 EB Ramps

12 s	54 s	54 s
66 s		

HCM 6th Signalized Intersection Summary 4: Pepper Av. & SR-210 EB Ramps

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	404	0	771	0	0	0	0	1174	566	129	932	0
Future Volume (veh/h)	404	0	771	0	0	0	0	1174	566	129	932	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	425	0	449				0	1236	412	136	981	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	586	0	522				0	1235	401	128	2078	0
Arrive On Green	0.32	0.00	0.32				0.00	0.46	0.46	0.07	0.58	0.00
Sat Flow, veh/h	1810	0	1610				0	2774	869	1810	3705	0
Grp Volume(v), veh/h	425	0	449				0	822	826	136	981	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1805	1744	1810	1805	0
Q Serve(g_s), s	21.7	0.0	27.3				0.0	47.1	48.2	7.4	16.6	0.0
Cycle Q Clear(g_c), s	21.7	0.0	27.3				0.0	47.1	48.2	7.4	16.6	0.0
Prop In Lane	1.00		1.00				0.00		0.50	1.00		0.00
Lane Grp Cap(c), veh/h	586	0	522				0	832	804	128	2078	0
V/C Ratio(X)	0.73	0.00	0.86				0.00	0.99	1.03	1.06	0.47	0.00
Avail Cap(c_a), veh/h	853	0	759				0	832	804	128	2078	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	31.2	0.0	33.1				0.0	27.9	28.2	48.6	12.9	0.0
Incr Delay (d2), s/veh	1.7	0.0	6.9				0.0	28.0	39.2	97.1	0.2	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	9.6	0.0	11.4				0.0	24.7	26.8	6.7	5.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.0	0.0	40.1				0.0	55.9	67.4	145.7	13.1	0.0
LnGrp LOS	C	A	D				A	E	F	F	B	A
Approach Vol, veh/h	874						1648			1117		
Approach Delay, s/veh	36.6						61.7			29.2		
Approach LOS	D						E			C		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	12.0	54.0	38.6		66.0							
Change Period (Y+Rc), s	4.6	5.8	* 4.7		5.8							
Max Green Setting (Gmax), s	7.4	48.2	* 49		60.2							
Max Q Clear Time (g_c+I1), s	9.4	50.2	29.3		18.6							
Green Ext Time (p_c), s	0.0	0.0	4.5		7.7							

Intersection Summary

HCM 6th Ctrl Delay	45.7
HCM 6th LOS	D

Notes

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

Timings
5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	202	334	205	342	447	293	590	267	93	405	163
Future Volume (vph)	202	334	205	342	447	293	590	267	93	405	163
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	42.8	42.8	9.6	47.8	9.6	34.1	34.1	9.6	42.1	42.1
Total Split (s)	11.0	43.8	43.8	15.0	47.8	18.0	45.6	45.6	15.6	43.2	43.2
Total Split (%)	9.2%	36.5%	36.5%	12.5%	39.8%	15.0%	38.0%	38.0%	13.0%	36.0%	36.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.1	4.1	3.6	4.1	4.1
All-Red Time (s)	1.0	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	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.1	5.1	4.6	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.5	13.8	13.8	10.5	17.9	13.5	22.1	22.1	8.6	14.9	14.9
Actuated g/C Ratio	0.09	0.19	0.19	0.14	0.25	0.18	0.30	0.30	0.12	0.20	0.20
v/c Ratio	1.39	0.51	0.45	0.79	0.66	0.97	0.39	0.41	0.48	0.57	0.37
Control Delay	243.0	29.6	7.5	46.6	27.9	76.9	22.7	5.4	40.1	29.8	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	243.0	29.6	7.5	46.6	27.9	76.9	22.7	5.4	40.1	29.8	7.0
LOS	F	C	A	D	C	E	C	A	D	C	A
Approach Delay		81.5			35.1		32.5			25.6	
Approach LOS		F			D		C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 73

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.39

Intersection Signal Delay: 42.4

Intersection LOS: D

Intersection Capacity Utilization 76.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: State St. & Highland Av.

Ø1	Ø2	Ø3	Ø4
15.6 s	45.6 s	15 s	43.8 s
Ø5	Ø6	Ø7	Ø8
18 s	43.2 s	11 s	47.8 s

HCM 6th Signalized Intersection Summary 5: State St. & Highland Av.

Pepper 210 Commerce Center TA (JN:14324)

11/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	334	205	342	447	105	293	590	267	93	405	163
Future Volume (veh/h)	202	334	205	342	447	105	293	590	267	93	405	163
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		0.98	1.00		0.99	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	1700	1900	1900	1800	1900	1900	1800	1900	1900
Adj Flow Rate, veh/h	210	348	155	356	466	77	305	615	152	97	422	130
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	158	683	300	439	731	120	332	1601	490	123	675	301
Arrive On Green	0.09	0.19	0.19	0.14	0.24	0.24	0.19	0.31	0.31	0.07	0.19	0.19
Sat Flow, veh/h	1714	3610	1587	3141	3092	508	1714	5187	1588	1714	3610	1610
Grp Volume(v), veh/h	210	348	155	356	271	272	305	615	152	97	422	130
Grp Sat Flow(s),veh/h/ln	1714	1805	1587	1570	1805	1794	1714	1729	1588	1714	1805	1610
Q Serve(g_s), s	6.4	6.0	6.1	7.6	9.3	9.5	12.1	6.4	5.1	3.9	7.4	4.9
Cycle Q Clear(g_c), s	6.4	6.0	6.1	7.6	9.3	9.5	12.1	6.4	5.1	3.9	7.4	4.9
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	683	300	439	427	424	332	1601	490	123	675	301
V/C Ratio(X)	1.33	0.51	0.52	0.81	0.63	0.64	0.92	0.38	0.31	0.79	0.62	0.43
Avail Cap(c_a), veh/h	158	1982	871	472	1095	1089	332	3035	929	272	1987	886
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	25.2	25.2	28.9	23.7	23.8	27.4	18.8	18.3	31.6	25.9	24.9
Incr Delay (d2), s/veh	183.2	0.6	1.4	8.8	1.6	1.6	29.1	0.2	0.4	4.1	1.0	1.0
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	10.5	2.4	2.2	3.1	3.7	3.8	7.3	2.4	1.7	1.7	3.1	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	214.6	25.8	26.6	37.7	25.3	25.4	56.5	18.9	18.6	35.7	26.9	25.9
LnGrp LOS	F	C	C	D	C	C	E	B	B	D	C	C
Approach Vol, veh/h		713			899			1072			649	
Approach Delay, s/veh		81.6			30.2			29.6			28.0	
Approach LOS		F			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	26.5	14.3	18.9	18.0	18.1	11.0	22.2				
Change Period (Y+Rc), s	4.6	5.1	4.6	5.8	4.6	5.1	4.6	5.8				
Max Green Setting (Gmax), s	11.0	40.5	10.4	38.0	13.4	38.1	6.4	42.0				
Max Q Clear Time (g_c+I1), s	5.9	8.4	9.6	8.1	14.1	9.4	8.4	11.5				
Green Ext Time (p_c), s	0.0	5.1	0.1	2.6	0.0	3.3	0.0	3.1				
Intersection Summary												
HCM 6th Ctrl Delay			40.6									
HCM 6th LOS			D									

APPENDIX 7.3: HORIZON YEAR (2040) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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

DIST	CO	RTE	PM	CALC	TRAFFIC CONDITIONS	2045 With Project
Jurisdiction:	<u>County of San Bernardino</u>			CHK	<u>CP</u>	DATE <u>10/30/23</u>
Major Street:	<u>Highland Av.</u>					DATE <u>10/30/23</u>
Minor Street:	<u>Driveway 1</u>				Critical Approach Speed (Major)	<u>45</u> mph
					Critical Approach Speed (Minor)	<u>25</u> mph
Major Street Approach Lanes = <u>2</u> lane				Minor Street Approach Lanes: <u>1</u> lane		
Major Street Future ADT = <u>16,067</u> vpd				Minor Street Future ADT = <u>781</u> 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		XX		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
<u>Satisfied</u>		<u>Not Satisfied</u>	XX				
Number of lanes for moving traffic on each approach		Number of lanes for moving traffic on each approach					
<u>Major Street</u>		<u>Minor Street</u>		<u>Urban</u>	<u>Rural</u>	<u>Urban</u>	<u>Rural</u>
1		1		8,000	5,600	2,400	1,680
2 + 16,067		1 781		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		XX		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
<u>Satisfied</u>		<u>Not Satisfied</u>					
Number of lanes for moving traffic on each approach		Number of lanes for moving traffic on each approach					
<u>Major Street</u>		<u>Minor Street</u>		<u>Urban</u>	<u>Rural</u>	<u>Urban</u>	<u>Rural</u>
1		1		12,000	8,400	1,200	850
2 + 16,067		1 781		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		XX		2 CONDITIONS 80%		2 CONDITIONS 80%	
<u>Satisfied</u>		<u>Not Satisfied</u>					
No one condition satisfied, but following conditions fulfilled 80% of more							
		A	B				
		46%	92%				

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.

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APPENDIX 7.4: HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS OFF-RAMP QUEUEING ANALYSIS WORKSHEETS

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Queues

HY NP AM

11/20/2023

3: Pepper Av. & SR-210 WB Ramps



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	828	144	860	566	961
v/c Ratio	1.44	0.23	1.32	0.26	1.33
Control Delay	239.1	6.1	187.2	12.2	192.3
Queue Delay	0.0	0.0	1.4	0.0	0.0
Total Delay	239.1	6.1	188.6	12.2	192.3
Queue Length 50th (ft)	~870	2	~860	104	~483
Queue Length 95th (ft)	#1112	48	#1105	136	#616
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	576	613	652	2141	724
Starvation Cap Reductn	0	0	113	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.44	0.23	1.60	0.26	1.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Queues

HY NP AM

4: Pepper Av. & SR-210 EB Ramps

11/20/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	202	851	1833	126	1316
v/c Ratio	0.32	1.43	1.21	0.73	0.65
Control Delay	30.4	233.5	130.8	76.1	19.7
Queue Delay	0.0	0.0	0.0	0.0	9.5
Total Delay	30.4	233.5	130.8	76.1	29.1
Queue Length 50th (ft)	115	~876	~900	95	346
Queue Length 95th (ft)	179	#1127	#1044	#171	419
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	630	595	1516	198	2080
Starvation Cap Reductn	0	0	0	0	740
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	1.43	1.21	0.64	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Queues

HY NP PM

3: Pepper Av. & SR-210 WB Ramps

11/20/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	562	96	765	803	641
v/c Ratio	0.96	0.16	1.16	0.38	0.93
Control Delay	69.3	7.7	122.9	13.7	62.5
Queue Delay	0.0	0.0	1.5	0.8	0.0
Total Delay	69.3	7.7	124.5	14.5	62.5
Queue Length 50th (ft)	423	4	~707	165	228
Queue Length 95th (ft)	#649	43	#946	207	#339
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	598	601	660	2138	705
Starvation Cap Reductn	0	0	126	965	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	0.16	1.43	0.68	0.91

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Queues

HY NP PM

4: Pepper Av. & SR-210 EB Ramps

11/20/2023



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	372	812	1820	51	952
v/c Ratio	0.49	1.11	1.25	0.50	0.54
Control Delay	28.2	98.7	147.3	71.3	22.0
Queue Delay	0.0	0.0	0.0	0.0	1.8
Total Delay	28.2	98.7	147.3	71.3	23.8
Queue Length 50th (ft)	211	~692	~922	39	254
Queue Length 95th (ft)	303	#938	#1063	82	314
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	759	730	1460	114	1854
Starvation Cap Reductn	0	0	0	0	695
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	1.11	1.25	0.45	0.82

Intersection Summary

~ Volume exceeds capacity, queue is theoretically 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 WITH IMPROVEMENTS

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Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

11/20/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	828	185	860	623	947
v/c Ratio	1.44	0.29	1.23	0.29	1.49
Control Delay	239.1	5.7	150.8	12.4	262.6
Queue Delay	0.0	0.0	1.5	0.6	0.0
Total Delay	239.1	5.7	152.3	13.0	262.6
Queue Length 50th (ft)	~870	2	~824	117	~512
Queue Length 95th (ft)	#1112	53	#1069	151	#646
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	576	640	697	2141	635
Starvation Cap Reductn	0	0	135	1057	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.44	0.29	1.53	0.57	1.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	235	851	1857	121	1322
v/c Ratio	0.37	1.43	1.22	0.72	0.65
Control Delay	31.3	232.4	136.6	74.9	19.8
Queue Delay	0.0	0.0	0.0	0.0	9.1
Total Delay	31.3	232.4	136.6	74.9	28.9
Queue Length 50th (ft)	135	~873	~916	91	349
Queue Length 95th (ft)	209	#1128	#1065	#158	422
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	631	596	1519	198	2084
Starvation Cap Reductn	0	0	0	0	735
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	1.43	1.22	0.61	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Queues

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

11/20/2023



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	562	135	765	867	852
v/c Ratio	0.97	0.22	1.16	0.41	1.19
Control Delay	69.9	6.7	125.4	14.1	135.5
Queue Delay	0.0	0.0	1.6	1.1	0.0
Total Delay	69.9	6.7	127.0	15.1	135.5
Queue Length 50th (ft)	423	4	~707	182	~385
Queue Length 95th (ft)	#649	49	#946	227	#516
Internal Link Dist (ft)		1259		360	304
Turn Bay Length (ft)			310		
Base Capacity (vph)	595	623	657	2126	717
Starvation Cap Reductn	0	0	126	942	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	0.22	1.44	0.73	1.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	425	812	1832	136	981
v/c Ratio	0.57	1.14	1.28	1.23	0.54
Control Delay	31.0	110.8	164.0	204.6	21.9
Queue Delay	0.0	0.0	0.0	0.0	2.8
Total Delay	31.0	110.8	164.0	204.6	24.6
Queue Length 50th (ft)	250	~699	~933	~130	265
Queue Length 95th (ft)	355	#945	#1074	#260	326
Internal Link Dist (ft)		1380	2296		360
Turn Bay Length (ft)				305	
Base Capacity (vph)	741	711	1427	111	1811
Starvation Cap Reductn	0	0	0	0	687
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.57	1.14	1.28	1.23	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

**APPENDIX 7.6: OPENING YEAR CUMULATIVE (2029) WITH PROJECT
CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
WITH IMPROVEMENTS**

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Timings

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/03/2024

	WBL	WBT	NBL	NBT	SBT
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	762	3	791	573	568
Future Volume (vph)	762	3	791	573	568
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	42.0	42.0	37.0	78.0	41.0
Total Split (%)	35.0%	35.0%	30.8%	65.0%	34.2%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lag		Lead
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Min	C-Min
Act Effect Green (s)	36.6	36.6	31.5	72.9	36.9
Actuated g/C Ratio	0.31	0.31	0.26	0.61	0.31
v/c Ratio	0.93	0.91	0.93	0.28	0.85
Control Delay (s/veh)	65.9	60.7	61.3	11.7	44.7
Queue Delay	0.0	0.0	9.8	0.5	25.8
Total Delay (s/veh)	65.9	60.7	71.1	12.2	70.6
LOS	E	E	E	B	E
Approach Delay (s/veh)		63.4		46.4	70.6
Approach LOS		E		D	E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 80.2 (67%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay (s/veh): 58.1

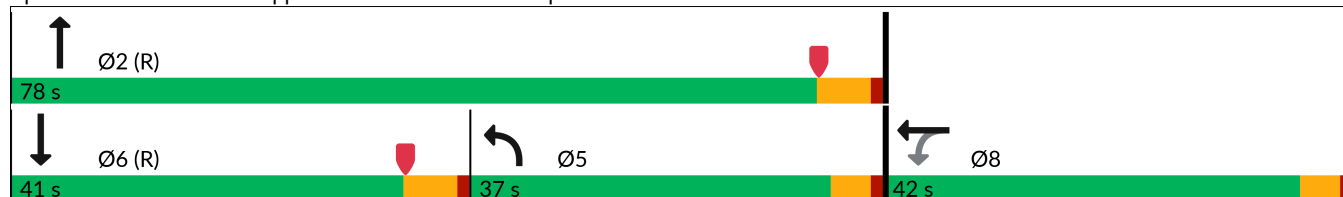
Intersection LOS: E

Intersection Capacity Utilization 156.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	762	3	167	791	573	0	0	568	304
Future Volume (veh/h)	0	0	0	762	3	167	791	573	0	0	568	304
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				934	0	0	860	623	0	0	617	96
Peak Hour Factor				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
Cap, veh/h				1022	537	0	1233	2275	0	0	722	112
Arrive On Green				0.28	0.00	0.00	0.35	0.63	0.00	0.00	0.23	0.23
Sat Flow, veh/h				3619	1900	0	3510	3705	0	0	3226	486
Grp Volume(v), veh/h				934	0	0	860	623	0	0	355	358
Grp Sat Flow(s),veh/h/ln				1810	1900	0	1755	1805	0	0	1805	1812
Q Serve(g_s), s				30.0	0.0	0.0	25.3	9.3	0.0	0.0	22.6	22.7
Cycle Q Clear(g_c), s				30.0	0.0	0.0	25.3	9.3	0.0	0.0	22.6	22.7
Prop In Lane				1.00		0.00	1.00		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				1022	537	0	1233	2275	0	0	416	418
V/C Ratio(X)				0.91	0.00	0.00	0.70	0.27	0.00	0.00	0.85	0.86
Avail Cap(c_a), veh/h				1125	591	0	1233	2275	0	0	529	532
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	0.00	0.09	0.09	0.00	0.00	0.21	0.21
Uniform Delay (d), s/veh				41.6	0.0	0.0	33.4	9.9	0.0	0.0	44.2	44.3
Incr Delay (d2), s/veh				10.7	0.0	0.0	0.1	0.0	0.0	0.0	4.9	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				14.8	0.0	0.0	10.3	3.3	0.0	0.0	10.3	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				52.4	0.0	0.0	33.6	10.0	0.0	0.0	49.2	49.3
LnGrp LOS				D			C	A			D	D
Approach Vol, veh/h					934			1483			713	
Approach Delay, s/veh					52.4			23.7			49.2	
Approach LOS					D			C			D	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	81.4			47.9			33.5			38.6		
Change Period (Y+Rc), s	5.8			5.8			* 5.8			4.7		
Max Green Setting (Gmax), s	72.2			32.4			* 35			37.3		
Max Q Clear Time (g_c+I1), s	11.3			27.3			24.7			32.0		
Green Ext Time (p_c), s	4.3			1.0			2.9			1.9		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				38.0								
HCM 6th LOS				D								
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.												

Timings

Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/03/2024

	WBL	WBT	NBL	NBT	SBT
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	545	8	742	841	509
Future Volume (vph)	545	8	742	841	509
Turn Type	Perm	NA	Prot	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8				
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.7	14.7	9.6	22.8	22.8
Total Split (s)	39.0	39.0	38.0	81.0	43.0
Total Split (%)	32.5%	32.5%	31.7%	67.5%	35.8%
Yellow Time (s)	3.7	3.7	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Min	C-Min
Act Effect Green (s)	29.3	29.3	29.8	80.2	45.8
Actuated g/C Ratio	0.24	0.24	0.25	0.67	0.38
v/c Ratio	0.81	0.77	0.88	0.35	0.62
Control Delay (s/veh)	57.7	50.5	55.5	9.8	29.5
Queue Delay	0.0	0.0	0.8	0.6	1.7
Total Delay (s/veh)	57.7	50.5	56.4	10.4	31.3
LOS	E	D	E	B	C
Approach Delay (s/veh)		54.2		32.1	31.3
Approach LOS		D		C	C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 85.1 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay (s/veh): 36.7

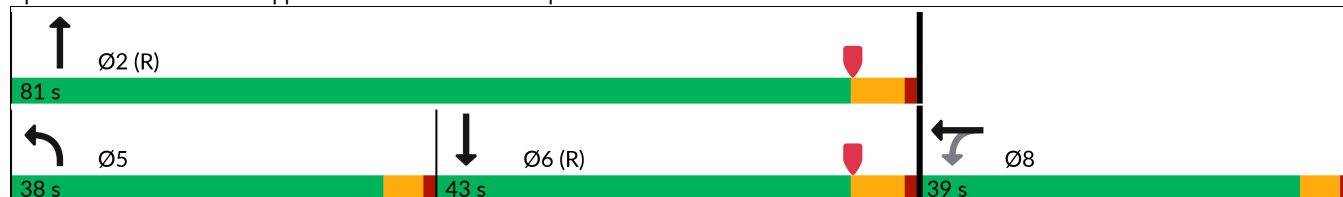
Intersection LOS: D

Intersection Capacity Utilization 118.3%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	545	8	128	742	841	0	0	509	320
Future Volume (veh/h)	0	0	0	545	8	128	742	841	0	0	509	320
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				648	0	0	765	867	0	0	525	181
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				747	392	0	833	2549	0	0	1135	390
Arrive On Green				0.21	0.00	0.00	0.24	0.71	0.00	0.00	0.43	0.43
Sat Flow, veh/h				3619	1900	0	3510	3705	0	0	2732	905
Grp Volume(v), veh/h				648	0	0	765	867	0	0	359	347
Grp Sat Flow(s),veh/h/ln				1810	1900	0	1755	1805	0	0	1805	1737
Q Serve(g_s), s				20.8	0.0	0.0	25.5	11.1	0.0	0.0	16.9	17.1
Cycle Q Clear(g_c), s				20.8	0.0	0.0	25.5	11.1	0.0	0.0	16.9	17.1
Prop In Lane				1.00		0.00	1.00		0.00	0.00		0.52
Lane Grp Cap(c), veh/h				747	392	0	833	2549	0	0	777	748
V/C Ratio(X)				0.87	0.00	0.00	0.92	0.34	0.00	0.00	0.46	0.46
Avail Cap(c_a), veh/h				1034	543	0	977	2549	0	0	777	748
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	0.00	0.09	0.09	0.00	0.00	0.64	0.64
Uniform Delay (d), s/veh				46.0	0.0	0.0	44.6	6.8	0.0	0.0	24.3	24.3
Incr Delay (d2), s/veh				5.9	0.0	0.0	1.3	0.0	0.0	0.0	1.3	1.3
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				9.9	0.0	0.0	10.8	3.6	0.0	0.0	7.2	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				52.0	0.0	0.0	45.9	6.9	0.0	0.0	25.5	25.6
LnGrp LOS				D			D	A			C	C
Approach Vol, veh/h					648			1632			706	
Approach Delay, s/veh					52.0			25.2			25.6	
Approach LOS					D			C			C	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	90.5			33.1			57.5			29.5		
Change Period (Y+Rc), s	5.8			4.6			5.8			4.7		
Max Green Setting (Gmax), s	75.2			33.4			37.2			34.3		
Max Q Clear Time (g_c+I1), s	13.1			27.5			19.1			22.8		
Green Ext Time (p_c), s	6.6			1.0			3.8			2.0		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				31.1								
HCM 6th LOS				C								
Notes												

Timings

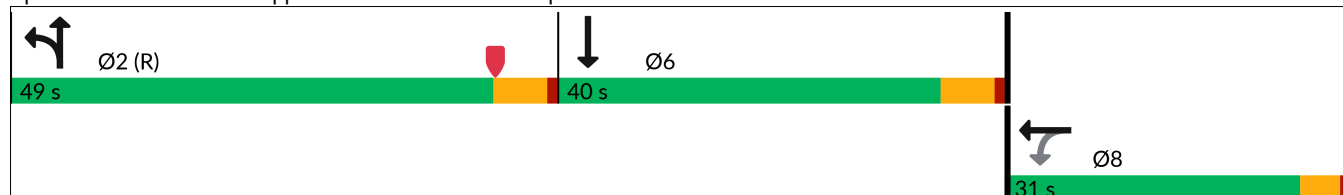
Pepper 210 Commerce Center TA (JN:14324)

3: Pepper Av. & SR-210 WB Ramps

04/03/2024

					
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	762	3	791	573	568
Future Volume (vph)	762	3	791	573	568
Turn Type	Perm	NA	Split	NA	NA
Protected Phases		8	2	2	6
Permitted Phases	8				
Detector Phase	8	8	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.7	14.7	22.8	22.8	22.8
Total Split (s)	31.0	31.0	49.0	49.0	40.0
Total Split (%)	25.8%	25.8%	40.8%	40.8%	33.3%
Yellow Time (s)	3.7	3.7	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Min	C-Min	Min
Act Effct Green (s)	25.9	25.9	44.0	44.0	33.8
Actuated g/C Ratio	0.22	0.22	0.37	0.37	0.28
v/c Ratio	0.88	0.80	0.80	0.80	0.92
Control Delay (s/veh)	59.3	53.6	46.1	40.5	53.6
Queue Delay	0.0	0.0	14.9	16.2	46.3
Total Delay (s/veh)	59.3	53.6	61.1	56.7	99.9
LOS	E	D	E	E	F
Approach Delay (s/veh)		57.5		58.2	100.0
Approach LOS		E		E	F
Intersection Summary					
Cycle Length: 120					
Actuated Cycle Length: 120					
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Yellow					
Natural Cycle: 80					
Control Type: Actuated-Coordinated					
Maximum v/c Ratio: 0.93					
Intersection Signal Delay (s/veh): 69.5				Intersection LOS: E	
Intersection Capacity Utilization 147.4%				ICU Level of Service H	
Analysis Period (min) 15					

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	762	3	167	791	573	0	0	568	304
Future Volume (veh/h)	0	0	0	762	3	167	791	573	0	0	568	304
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				728	143	111	860	623	0	0	617	96
Peak Hour Factor				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
Cap, veh/h				784	215	167	1513	794	0	0	718	112
Arrive On Green				0.22	0.22	0.22	0.42	0.42	0.00	0.00	0.23	0.23
Sat Flow, veh/h				3619	992	770	3619	1900	0	0	3226	486
Grp Volume(v), veh/h				728	0	254	860	623	0	0	355	358
Grp Sat Flow(s),veh/h/ln				1810	0	1761	1810	1900	0	0	1805	1812
Q Serve(g_s), s				23.7	0.0	15.8	21.8	34.1	0.0	0.0	22.7	22.7
Cycle Q Clear(g_c), s				23.7	0.0	15.8	21.8	34.1	0.0	0.0	22.7	22.7
Prop In Lane				1.00		0.44	1.00		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				784	0	382	1513	794	0	0	414	416
V/C Ratio(X)				0.93	0.00	0.67	0.57	0.78	0.00	0.00	0.86	0.86
Avail Cap(c_a), veh/h				793	0	386	1513	794	0	0	514	517
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	0.09	0.09	0.00	0.00	0.21	0.21
Uniform Delay (d), s/veh				46.1	0.0	43.0	26.6	30.2	0.0	0.0	44.4	44.4
Incr Delay (d2), s/veh				17.0	0.0	4.2	0.1	0.7	0.0	0.0	2.7	2.8
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				12.4	0.0	7.3	9.0	14.8	0.0	0.0	10.1	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				63.1	0.0	47.3	26.8	31.0	0.0	0.0	47.1	47.2
LnGrp LOS				E		D	C	C			D	D
Approach Vol, veh/h					982			1483			713	
Approach Delay, s/veh					59.0			28.5			47.1	
Approach LOS					E			C			D	
Timer - Assigned Phs	2			6			8					
Phs Duration (G+Y+Rc), s	56.0			33.3			30.7					
Change Period (Y+Rc), s	5.8			5.8			4.7					
Max Green Setting (Gmax), s	43.2			34.2			26.3					
Max Q Clear Time (g_c+I1), s	36.1			24.7			25.7					
Green Ext Time (p_c), s	4.0			2.8			0.3					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				42.1								
HCM 6th LOS				D								

Notes

User approved volume balancing among the lanes for turning movement.

Timings 3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

					
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	545	8	742	841	509
Future Volume (vph)	545	8	742	841	509
Turn Type	Perm	NA	Split	NA	NA
Protected Phases		8	2	2	6
Permitted Phases	8				
Detector Phase	8	8	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.7	14.7	22.8	22.8	22.8
Total Split (s)	25.0	25.0	57.0	57.0	38.0
Total Split (%)	20.8%	20.8%	47.5%	47.5%	31.7%
Yellow Time (s)	3.7	3.7	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	4.7	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Min	C-Min	Min
Act Effect Green (s)	19.4	19.4	53.3	53.3	31.0
Actuated g/C Ratio	0.16	0.16	0.44	0.44	0.26
v/c Ratio	0.81	0.70	0.72	0.72	0.88
Control Delay (s/veh)	60.8	48.7	35.0	31.4	49.2
Queue Delay	0.0	0.0	9.8	9.0	16.2
Total Delay (s/veh)	60.8	48.7	44.9	40.4	65.5
LOS	E	D	D	D	E
Approach Delay (s/veh)		57.0		41.9	65.5
Approach LOS		E		D	E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay (s/veh): 51.6

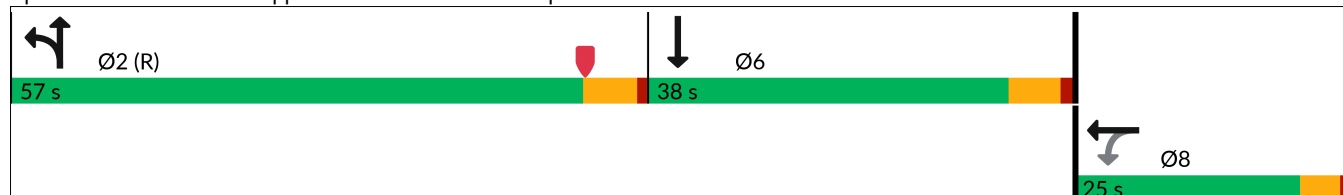
Intersection LOS: D

Intersection Capacity Utilization 118.3%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Pepper Av. & SR-210 WB Ramps



HCM 6th Signalized Intersection Summary

3: Pepper Av. & SR-210 WB Ramps

Pepper 210 Commerce Center TA (JN:14324)

04/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	545	8	128	742	841	0	0	509	320
Future Volume (veh/h)	0	0	0	545	8	128	742	841	0	0	509	320
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				500	95	86	544	1176	0	0	525	181
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				570	145	131	865	1816	0	0	603	207
Arrive On Green				0.16	0.16	0.16	0.48	0.48	0.00	0.00	0.23	0.23
Sat Flow, veh/h				3619	919	832	1810	3800	0	0	2732	905
Grp Volume(v), veh/h				500	0	181	544	1176	0	0	359	347
Grp Sat Flow(s),veh/h/ln				1810	0	1750	1810	1900	0	0	1805	1737
Q Serve(g_s), s				16.2	0.0	11.7	26.9	28.1	0.0	0.0	22.9	23.1
Cycle Q Clear(g_c), s				16.2	0.0	11.7	26.9	28.1	0.0	0.0	22.9	23.1
Prop In Lane				1.00		0.48	1.00		0.00	0.00		0.52
Lane Grp Cap(c), veh/h				570	0	276	865	1816	0	0	413	397
V/C Ratio(X)				0.88	0.00	0.66	0.63	0.65	0.00	0.00	0.87	0.87
Avail Cap(c_a), veh/h				612	0	296	865	1816	0	0	484	466
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	0.09	0.09	0.00	0.00	0.64	0.64
Uniform Delay (d), s/veh				49.4	0.0	47.5	23.4	23.7	0.0	0.0	44.5	44.6
Incr Delay (d2), s/veh				13.0	0.0	4.7	0.3	0.2	0.0	0.0	9.4	10.3
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				8.3	0.0	5.4	10.9	11.8	0.0	0.0	11.0	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				62.4	0.0	52.2	23.7	23.8	0.0	0.0	54.0	54.9
LnGrp LOS				E		D	C	C			D	D
Approach Vol, veh/h					681			1720			706	
Approach Delay, s/veh					59.7			23.8			54.4	
Approach LOS					E			C			D	
Timer - Assigned Phs	2			6			8					
Phs Duration (G+Y+Rc), s	63.1			33.2			23.6					
Change Period (Y+Rc), s	5.8			5.8			4.7					
Max Green Setting (Gmax), s	51.2			32.2			20.3					
Max Q Clear Time (g_c+I1), s	30.1			25.1			18.2					
Green Ext Time (p_c), s	10.2			2.3			0.7					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	38.6											
HCM 6th LOS	D											