

Draft Memorandum

Date: September 19, 2024
To: 21140 AVALON BLVD, LLC | Vince Manzenberger
From: Miguel Núñez and Dylan Di, Fehr & Peers
Subject: **Carson Triangle Residential Project LOS Analysis**

LB24-0128

Project Description

Project Description

The Project involves the construction of 283 townhome dwelling units and 32 affordable units at 21140 Avalon Boulevard, at the northeast corner of Avalon Boulevard & East 213th Street in the City of Carson. In addition to the 315 dwelling units the project will provide 643 parking spaces (566 spaces in private garages and 77 open parking spaces) and an internal roadway system providing access to designated parking areas. Project access will be provided via three driveways: two on Avalon Boulevard and another on East 213th Street. In addition, there will be a restricted driveway on East 213th Street for emergency vehicle access. The site plan is shown in **Figure 1**. This memorandum summarizes the findings of a traffic operation study for the Carson Triangle Residential Project (the "Project").

Study Scope and Organization

This transportation analysis was prepared per the City of Carson's Transportation Study Guidelines (TSG). The guidelines provide guidance for determination of the study area, data collection, analysis methodologies, and operational deficiency criteria.

The analysis of future conditions compares the "no project" condition against conditions that include project-generated traffic assuming full build-out and occupancy. This approach determines whether the addition of project traffic is expected to worsen delay beyond the City's General Plan level of service (LOS) standard on local roadways. The City of Carson's LOS analysis criteria for intersections are as follows:



- The city will strive to achieve LOS D or better as the minimum operating threshold for intersections.
- Transit priority areas/High quality transit corridors and central/neighborhood business districts where multimodal access and circulation are a critical component of local travel are exempted from the LOS D standard.
- Locations that are currently operating at LOS E/F would be exempt from the LOS D standard.

The following eight study intersections were selected based on the expected number of vehicle trips to be added to nearby intersections. **Figure 2** identifies the study intersections:

1. Avalon Boulevard & I-405 Southbound Ramps (Signalized)
2. Avalon Boulevard & North Driveway (Two-way stop control, TWSC¹)
3. Avalon Boulevard & 213th Street (Signalized)
4. Avalon Boulevard & Carson Street (Signalized)
5. Avalon Boulevard & 220th Street (Signalized)
6. 213th Street & South Driveway (TWSC)
7. Carson Street & I-405 Southbound Ramps (Signalized)
8. Main Street & Carson Street (Signalized)

The following scenarios are analyzed in this memorandum:

- Existing (2024) Conditions – The analysis of existing traffic conditions was based on 2023 intersection traffic counts collected while local schools were in session. An annual growth factor of one-half percent per year was applied to the 2023 traffic counts to reflect the traffic volume in 2024. Existing conditions include uses occupying the site at the time counts were collected. This analysis is intended to provide a basis for the remainder of the study.
- Future Base (2026) Conditions – Future traffic volumes for the anticipated opening year of the project were projected by increasing the Existing (2024) traffic volumes using an annual growth factor of one-half percent per year to account for ambient growth in the area, as well as the inclusion of traffic from specific related development projects. This scenario does not include any project-generated traffic.
- Future plus Project (2026) Conditions – Traffic conditions of existing plus ambient growth and approved and pending development, plus traffic generated by the proposed project.

¹ TWSC: Two-way Stop Control



Existing Conditions

Study Area

Based on the eight study intersections presented above existing conditions information was collected for the study area, including intersection turning movement counts and a review of multimodal infrastructure. This section also describes the level of service (LOS) methodology applied in this study and existing AM and PM peak hour LOS results at the eight study intersections.

Existing Multimodal Infrastructure

Existing Roadway Facilities

The City of Carson is well connected with other jurisdictions in Los Angeles County. State Route 91 (SR-91) and Interstate 405 (I-405) traverse Carson. In addition to adjacent freeways, access to the study area is provided by Avalon Boulevard and a network of major highways and collector streets. The major arterials that serve the proposed Project area include Avalon Boulevard, Carson Street, and Main Street. The collector streets include 213th Street and 220th Street. The following describes the key roadway facilities that serve the project site:

- Avalon Boulevard – Avalon Boulevard is a north/south Major Arterial with two to three lanes in each direction within the City of Carson. Left-turn lanes are provided at major intersections and a raised median is present along much of the corridor. The posted speed limit is 35 mph. On-street parking is permitted on both sides of the street along segments with two travel lanes in each direction.
- Carson Street- Carson Street is an east/west Major Arterial with two to three lanes in each direction within the study area. Left-turn lanes are provided at major intersections and a raised median is present along the corridor. The posted speed limit is 35 mph west of Avalon Boulevard and 40 mph east of Avalon Boulevard. On-street parking is permitted on both sides of the street on segments with two lanes of travel in each direction, where the street width allows.
- Main Street – Main Street is a north/south Major Arterial with two to three lanes in each direction that runs through the City of Carson. Left-turn lanes are provided at major intersections with raised medians along some sections of the corridor. The posted speed limit is 35 mph. On-street parking is permitted on both sides of the street along sections of the corridor with two lanes in each direction.
- 213th Street – 213th Street is an east/west Collector Street for most of the corridor, except for the section between the I-405 Freeway and Avalon Boulevard, which is a Secondary Arterial. The corridor provides one lane in each direction for most of its length, with two lanes in each direction immediately east and west of the intersection with Avalon Boulevard. The posted speed limit is 30 mph. On-street parking is permitted on both sides of the street, except between Fries Avenue and Martin Street.



- 220th Street – 220th Street is an east/west Collector Street with one lane in each direction that runs between Figueroa Street and Lucerne Street. The posted speed limit is 25 mph. On-street parking is permitted on both sides of the street.

Existing Pedestrian and Bicycle Facilities

Existing sidewalks are provided along the Project frontage and provide a continuous and complete pedestrian network surrounding the site and within the study area. Marked crosswalks, curb ramps, and pedestrian signals are provided at the nearest signalized intersections along Avalon Boulevard at 213th Street and Carson Street, which provides direct access to transit stops and surrounding land uses.

The nearest designated bicycle facility is the Class III bike route along Carson Street. According to the Carson 2040 General Plan (the “General Plan”), Avalon Boulevard is proposed as a Class II bike lane between Del Amo Boulevard and 223rd Street, and 213th Street is proposed as a Class III bike route between Main Street and Avalon Boulevard, and a Class II bike lane between Avalon Boulevard and Martin Street.

Existing Public Transit Facilities

The Project site is located within a ½-mile of various bus stops and is served by transit service via The Los Angeles County Metropolitan Transportation Authority (LA Metro), Long Beach Transit (LB Transit), and Torrance Transit. Carson Circuit operated by LB Transit, also serves is the ½-mile radius of the Project site.

Existing Traffic Volumes

Weekday intersection turning movement vehicle counts were conducted during the AM (7:00 to 9:00 AM) and PM (4:00 to 6:00 PM) peak periods at all study intersections in March 2023. All counts were conducted while schools were in session and are included in **Appendix A**. Signal timing was implemented based on signal timing sheets provided by the City of Carson in April 2023 and by Caltrans in March 2024. Existing counts were grown by one-half percent to represent existing 2024 conditions. The Existing (2024) volumes can be found in **Figure 3**.

Level of Service Analysis Methodology

Level of service (LOS) is a qualitative measure used to describe the condition of traffic flow, ranging from excellent, nearly free-flow conditions at LOS A to overloaded, stop-and-go conditions at LOS F. As identified in the General Plan, the City of Carson will strive to achieve LOS D or better as the minimum operating threshold for intersections, with exceptions for locations that are currently operating at LOS E/F identified in the General Plan Circulation Element. Level of service definitions for signalized and unsignalized intersections can be found in **Table 1**.



All study intersections were analyzed using the Highway Capacity Manual (HCM) (Transportation Research Board, 2022) 7th Edition calculation methodology. For signalized intersections, the HCM method of intersection capacity analysis determines the intersection delay and corresponding LOS for turning movements and intersection characteristics. For stop-controlled intersections, the HCM method of intersection capacity analysis determines the average stopped delay experienced per vehicle (i.e., delay resulting from initial deceleration, queue move-up time, time actually stopped, and final acceleration). At two-way stop-controlled (TWSC) intersections, delay is evaluated separately for each individual movement, and the reported delay is the worst-case delay experienced at the intersection across an entire hour. LOS worksheets for the study intersections are included in **Appendix B**.

Table 1. LOS Thresholds for Signalized and Unsignalized Intersections

LOS	Signalized Intersection Average Control Delay (sec/veh)	Unsignalized Intersection Average Control Delay (sec/veh)	General Description
A	≤ 10	≤ 10	Little to no congestion or delays.
B	> 10 to 20	> 10 to 15	Limited congestion. Short delays.
C	> 20 to 35	> 15 to 25	Some congestion with average delays.
D	> 35 to 55	> 25 to 35	Significant congestion and delays.
E	> 55 to 80	> 35 to 50	Severe congestion and delays.
F	> 80	> 50	Total breakdown with extreme delays.

Source: *Highway Capacity Manual, 7th Edition*, Transportation Research Board, 2022.

Existing (2024) LOS Analysis

Existing intersection traffic volumes, lane configurations, and signal timings were used to calculate LOS for the study intersections during the AM and PM peak hours. The results of the LOS analysis are presented in **Table 2**. Avalon Boulevard & Carson Street operates at LOS E during the PM Peak hour in existing conditions.



Table 2. Existing (2024) Conditions Peak Hour Intersections Operation Results

#	Study Intersection	Control	Peak Hour	Existing	
				Delay	LOS
1	Avalon Blvd & I-405 SB Ramps	Signal	AM	13.8	B
			PM	13.9	B
2	Avalon Blvd & E Driveway	TWSC	AM	14.4	B
			PM	0	A
3	Avalon Blvd & 213th St	Signal	AM	22.9	C
			PM	29.7	C
4	Avalon Blvd & Carson St	Signal	AM	42.0	D
			PM	56.5	E
5	Avalon Blvd & 220th St	Signal	AM	15.7	B
			PM	12.1	B
6	S Driveway & 213th St	TWSC	AM	14.2	B
			PM	17.9	C
7	I-405 SB Ramps & Carson St	Signal	AM	6.4	A
			PM	5.5	A
8	Main St & Carson St	Signal	AM	41.7	D
			PM	44.5	D

Source: Fehr & Peers, 2024

Notes:

[1] Intersections are analyzed with Highway Capacity Manual, 7th Edition, Transportation Research Board, 2022

Future Traffic Projections & LOS Analysis

Per the city's TSG, if it appears that the project's generated traffic alone or together with other projects in the area could worsen the LOS of an intersection or roadway, a "before" and "after" LOS analysis is necessary. The following scenarios have been selected and analyzed per the TSG.

Future Base (2026) Conditions

To evaluate the potential effects of the proposed Project on the local street system, it was necessary to develop estimates of Opening Year traffic conditions both with and without the Project. Opening Year traffic volumes without the Project are first estimated, representing the Opening Year conditions. The traffic generated by the proposed Project is then estimated and separately assigned to the surrounding street system. The sum of the Opening Year and Project-generated traffic represents Opening Year Plus Project traffic conditions.



Under this scenario, the lane configurations of the street network remain unchanged compared to the Existing (2023) Conditions. Existing signal timings were used for this analysis. The Future Base traffic projections reflect growth in traffic from two primary sources: background or ambient growth in the existing traffic volumes to reflect the effects of overall regional growth both in and outside of the study area, and traffic generated by specific projects in, or in the vicinity of the study area.

Background or Ambient Growth

Based on historic trends, it was estimated that an ambient growth factor of 0.5% per year should be applied to adjust the existing base year traffic volumes to reflect the effects of regional growth and development by year 2026. This growth factor was applied to the 2024 traffic volume data to reflect the effect of ambient growth by the year 2026.

Related Project Traffic Generation and Assignment

Future Base traffic volume forecasts include the effects of known specific projects, called related projects, expected to be implemented in the vicinity of the proposed Project site prior to the buildout date of the proposed Project. The list of related projects was prepared based on data from the City of Carson. A total of 42 related projects were identified in the study area. These projects are listed and illustrated in **Appendix C**. The related project volumes can be found in **Figure 4**.

Trip Generation

Trip generation estimates for the related projects were calculated using a combination of previous study findings, publicly available environmental documentation, and trip generation rates contained in *Trip Generation, 11th Edition*. **Appendix C** presents the resulting trip generation estimates for related projects.

Trip Distribution

The geographic distribution of traffic generated by the related projects depends on several factors. These include the type and density of the proposed land uses, the geographic distribution of population from which employees and potential patrons of proposed commercial developments may be drawn, and the location of the related projects in relation to the surrounding street system.

The Future Base (2026) volumes can be found in **Figure 5**. The results of the Future Base (2026) LOS analysis are presented in **Table 3**. Corresponding LOS calculation sheets are included in **Appendix B**. The results of the LOS calculations indicate that all study intersections operate at LOS D or better during the weekday AM and PM peak hours, except for Avalon Boulevard & Carson Street and Main Street & Carson Street, which operate at LOS E under existing conditions.



Table 3. Future Base (2026) Peak Hour Intersections Operation Results

#	Study Intersection	Control	Peak Hour	Future Base	
				Delay	LOS
1	Avalon Blvd & I-405 SB Ramps	Signal	AM	14.8	B
			PM	16.4	B
2	Avalon Blvd & E Driveway	TWSC	AM	20.7	C
			PM	0	A
3	Avalon Blvd & 213th St	Signal	AM	26.8	C
			PM	34.9	C
4	Avalon Blvd & Carson St	Signal	AM	50.5	D
			PM	73.8	E
5	Avalon Blvd & 220th St	Signal	AM	17.0	B
			PM	14.0	B
6	S Driveway & 213th St	TWSC ¹	AM	17.6	C
			PM	22.1	C
7	I-405 SB Ramps & Carson St	Signal	AM	7.9	A
			PM	6.3	A
8	Main St & Carson St	Signal	AM	49.6	D
			PM	64.8	E

Source: Fehr & Peers, 2024

Notes:

[1] Intersections are analyzed with Highway Capacity Manual, 7th Edition, Transportation Research Board, 2022



Project Traffic

Project Traffic Generation

Trip generation was developed by applying information from *Trip Generation, 11th Edition* (Institute of Transportation Engineers [ITE], 2021) to estimate the number of trips associated with the Project and are presented in **Table 4**. The Project is estimated to generate approximately 2,350 daily trips, 158 trips (40 inbound/118 outbound) during the AM peak hour, and 185 trips (109 inbound/76 outbound) during the PM peak hour. No trip credits were applied to the trip generation estimate for existing uses or potential walk/bike/transit trips.



Table 4. Project Daily & Peak Hour Vehicle Trip Generation Estimates

Land Use	ITE Land Use Code	Size		Trip Generation Rates [a]							Estimated Trip Generation						
				Daily	AM Peak Hour		PM Peak Hour			Daily	AM Peak Hour Trips			PM Peak Hour Trips			
					Curve Equation	In%	Out%	Curve Equation	In%		Out%	In	Out	Total	In	Out	Total
PROPOSED PROJECT																	
Single-Family Attached Housing	215	315	du	T = 7.62(X) - 50.48	T = 0.52(X) - 5.70	25%	75%	T = 0.60(X) - 3.93	59%	41%	2,350	40	118	158	109	76	185
TOTAL PROJECT EXTERNAL TRIPS											2,350	40	118	158	109	76	185
NET NEW TRIPS											2,350	40	118	158	109	76	185

Source:
Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE), 2021.



Project Traffic Distribution

The geographic distribution of traffic generated by the proposed Project depends on several factors. These include the type and density of the proposed land uses, the geographic distribution of population and employment centers from which the patrons, employees and residents of the Project may be drawn, and the location of the Project's access points in relation to the surrounding street system. Considering these factors, trip distribution patterns were developed according to the nature of the land uses and the corresponding percentage of traffic likely to be regionally oriented and using the freeway or the local street system. **Figure 6** illustrates the distribution pattern for the project.

Project Traffic Assignment

The traffic expected to be generated by the proposed Project was assigned to the street network using the distribution patterns in **Figure 6**. The assignment of Project-only traffic volumes for the AM and PM peak hours at the eight analyzed intersections can be found in **Figure 7-A** with a right-in/right-out access scheme on the driveway along 213th Street, and **Figure 7-B** with a full access driveway along 213th Street.

Future plus Project (2026) Projections & LOS Analysis

Future plus Project (2026) Conditions

This section describes the analysis of potential effects on the roadway system due to future increases in traffic plus traffic generated by the project. The Opening Year (2026) Plus Project roadway network, reflects the same network assumed under the Opening Year (2026) scenario, except for the following changes at study intersections:

- Intersection #2 Avalon Boulevard & East Driveway: the control type would change from a side street stop control to a signalized intersection

Existing signal timings were used for this analysis in both access scenarios. Two access scenarios were analyzed in this report. The driveway located on Avalon Boulevard will be signalized and was analyzed as a full access driveway in both with project scenarios. The project driveway on 213th Street was analyzed as an unsignalized intersection with a right-in/right-out access scheme. Given the volumes at this location, intersection LOS, and the surrounding street network, an unsignalized driveway along 213th street was also analyzed with a full access driveway. The Future plus Project (2026) volumes can be found in **Figure 8-A** for the scenario with the right-in/right-out access scheme on the driveway along 213th Street, and **Figure 8-B** for the scenario with a full access driveway along 213th Street. The results indicate that the driveway along 213th Street would operate with LOS C or better in both with project access scenario.



Future plus Project (2026) LOS Analysis Results

This section describes the analysis of potential effects on the roadway system due to future increases in traffic plus traffic generated by the project.

Table 5 presents the LOS results for each of the study intersections under Future Base and Future plus Project Conditions with the Project driveway on 213th Street with a right-in/right-out access scheme. **Table 6** presents the LOS results for each of the study intersections under Future Base and Future plus Project Conditions with the Project driveway on 213th Street as an unsignalized full access driveway.

As shown in **Table 5** and **Table 6**, Avalon Boulevard & Carson Street and Main Street & Carson Street operate at LOS E during the PM Peak hour under both access scenarios analyzed, both with and without the project. The delay increase attributable to the project at any intersection studied in either scenario would not be greater than three seconds of delay. Therefore, the Project would not be expected to result in an operational deficiency at any of the study intersections.

Table 5, which displays results for the right-in/right-out access 213th Street driveway scenario, shows a reduction in delay at both driveways. The reduction in delay at the Avalon Boulevard driveway is due to signalization of this location. The reduction of delay shown for the driveway along 213th Street is attributable to the right-in/right-out access scheme which reduces delay associated with left-turns in and out of the project driveway. **Table 6**, which displays results for the full access 213th Street driveway scenario, shows a reduction in delay at the Avalon Boulevard driveway, which is due to signalization of this location.

The results of the Future plus Project (2026) LOS analysis are presented in **Table 5** and **Table 6**. Corresponding LOS calculation sheets are included in **Appendix B**. The results of the LOS analysis indicate that all study intersections operate at LOS D or better during the weekday AM and PM peak hours with the exception of the intersection of Avalon Boulevard & Carson Street and Avalon Boulevard & Main Street, which are projected to operate at LOS E in the PM peak hour in all analysis scenarios, including existing conditions.



Table 5. Future Base (2023) and Future plus Project (2026) Conditions Peak Hour Intersections Operation Results (The Project Driveway on 213th Street with A Right-In/Right-Out Access Scheme)

#	Study Intersection	Control	Peak Hour	Future Base		Future plus Project		Delay Change Between Future Base and Future plus Project	Operational Deficiency?
				Delay	LOS	Delay	LOS		
1	Avalon Blvd & I-405 SB Ramps	Signal	AM	14.8	B	15.0	B	0.2	No
			PM	16.4	B	16.5	B	0.1	No
2	Avalon Blvd & E Driveway	TWSC (Future Base)	AM	20.7	C	12.6	B	-8.1	No
		Signal (Future plus Project)	PM	0	A	2.4	A	2.4	No
3	Avalon Blvd & 213th St	Signal	AM	26.8	C	29.8	C	3.0	No
			PM	34.9	C	33.4	C	-1.5	No
4	Avalon Blvd & Carson St	Signal	AM	50.5	D	53.4	D	2.9	No
			PM	73.8	E	76.7	E	2.9	No
5	Avalon Blvd & 220th St	Signal	AM	17.0	B	17.1	B	0.1	No
			PM	14.0	B	14.1	B	0.1	No
6	S Driveway & 213th St	TWSC	AM	17.6	C	17.6	C	0.0	No
			PM	22.1	C	11.5	B	-10.6	No
7	I-405 SB Ramps & Carson St	Signal	AM	7.9	A	7.9	A	0.0	No
			PM	6.3	A	6.3	A	0;0	No
8	Main St & Carson St	Signal	AM	49.6	D	49.7	D	0.1	No
			PM	64.8	E	65.5	E	0.7	No

Source: Fehr & Peers, 2024

Notes:

[1] Intersections are analyzed with Highway Capacity Manual, 7th Edition, Transportation Research Board, 2022



Table 6. Future Base (2023) and Future plus Project (2026) Conditions Peak Hour Intersections Operation Results (The Project Driveway on 213th Street as A Full Access Driveway)

#	Study Intersection	Control	Peak Hour	Future Base		Future plus Project		Delay Change Between Future Base and Future plus Project	Operational Deficiency?
				Delay	LOS	Delay	LOS		
1	Avalon Blvd & I-405 SB Ramps	Signal	AM	14.8	B	15.0	B	0.2	No
			PM	16.4	B	16.5	B	0.1	No
2	Avalon Blvd & E Driveway	TWSC (Future Base)	AM	20.7	C	12.2	B	-8.5	No
		Signal (Future plus Project)	PM	0	A	2.4	A	2.4	No
3	Avalon Blvd & 213th St	Signal	AM	26.8	C	29.5	C	2.7	No
			PM	34.9	C	32.9	C	-2.0	No
4	Avalon Blvd & Carson St	Signal	AM	50.5	D	52.9	D	2.4	No
			PM	73.8	E	75.8	E	2.0	No
5	Avalon Blvd & 220th St	Signal	AM	17.0	B	17.1	B	0.1	No
			PM	14.0	B	14.1	B	0.1	No
6	S Driveway & 213th St	TWSC	AM	17.6	C	18.8	C	1.2	No
			PM	22.1	C	24.7	C	2.6	No
7	I-405 SB Ramps & Carson St	Signal	AM	7.9	A	7.9	A	0.0	No
			PM	6.3	A	6.3	A	0.0	No
8	Main St & Carson St	Signal	AM	49.6	D	49.7	D	0.1	No
			PM	64.8	E	65.5	E	0.7	No

Source: Fehr & Peers, 2024

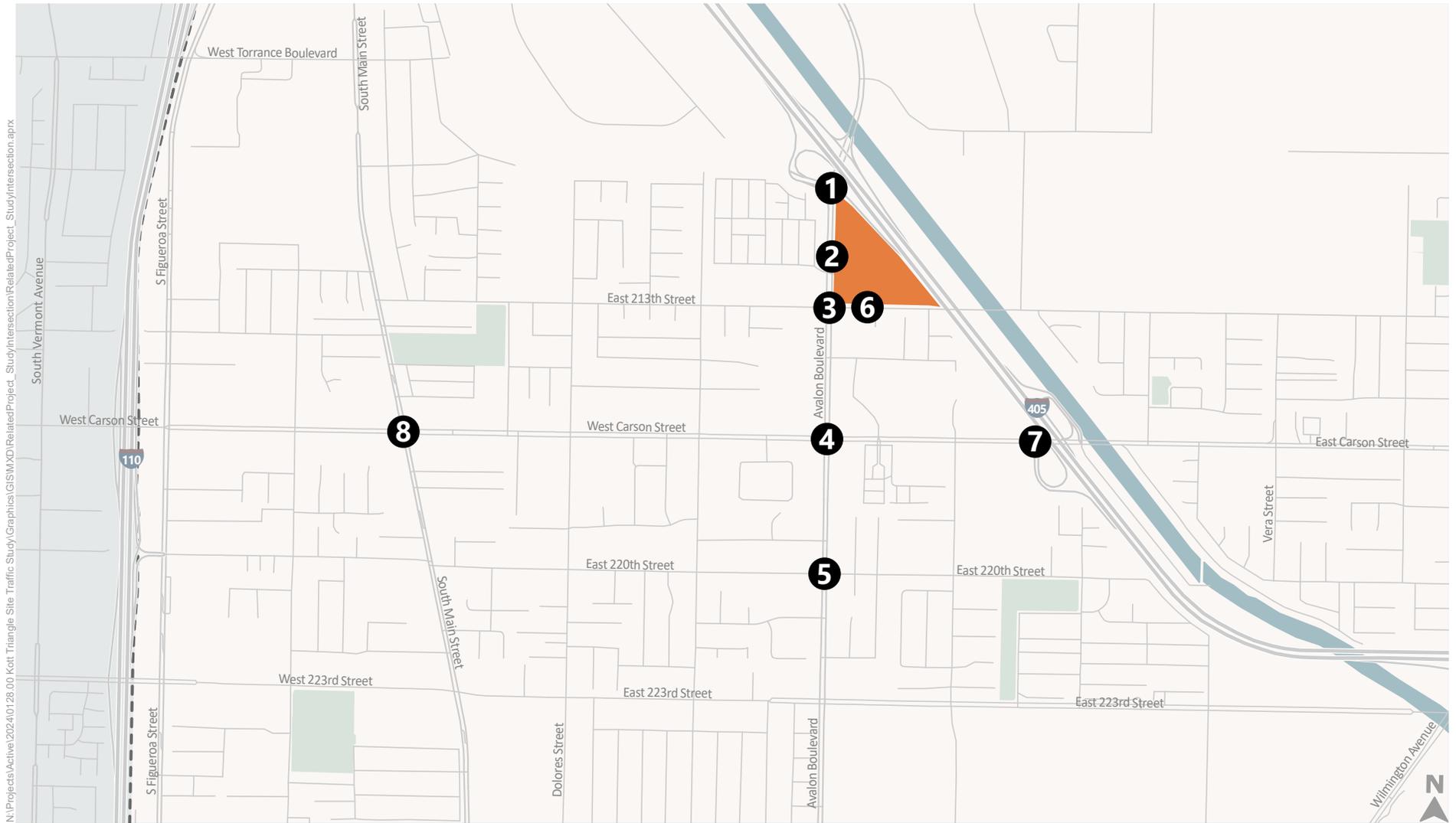
Notes:

[1] Intersections are analyzed with Highway Capacity Manual, 7th Edition, Transportation Research Board, 2022



LOS Analysis Conclusion

The purpose of the operational analysis is to determine whether the vehicle trips generated by the Project would substantially increase delay that would result in an operational deficiency on the city road network or be incompatible with the City's Carson 2040 General Plan. The analysis indicates that the Project would not worsen any location operating from LOS D or better to LOS E or F, and that project related delay increases would not exceed three seconds at any analyzed intersection, therefore no operational deficiencies or General Plan conflicts were identified through this analysis.



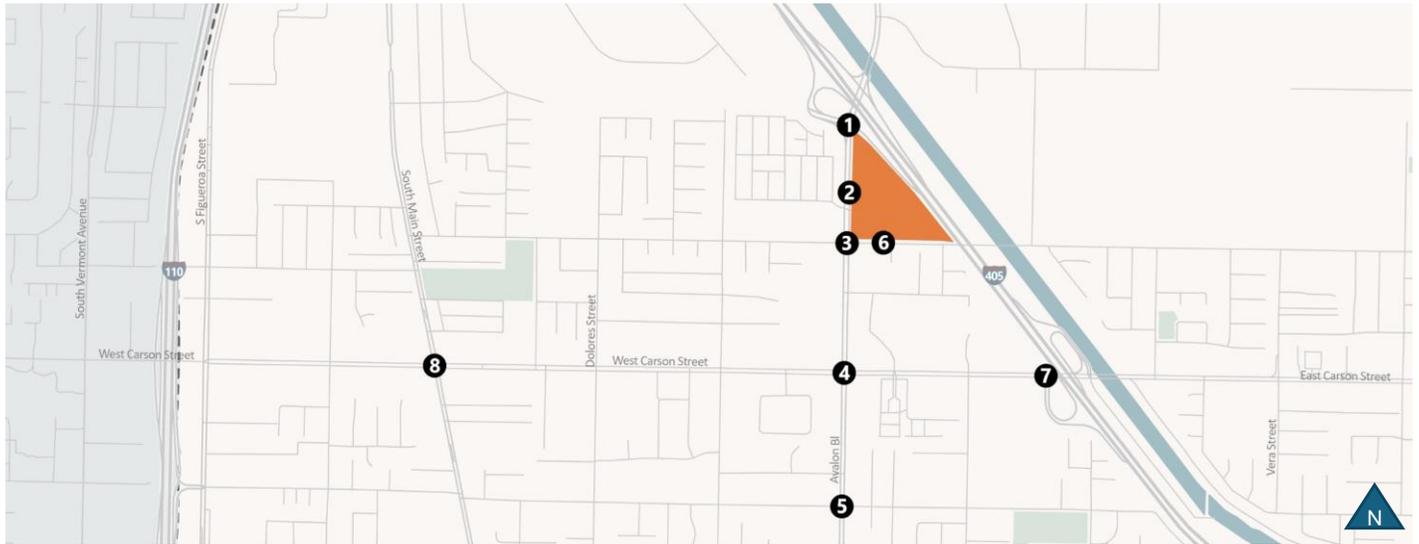
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- # Study Intersections
- Cities
- Project Site



Figure 2

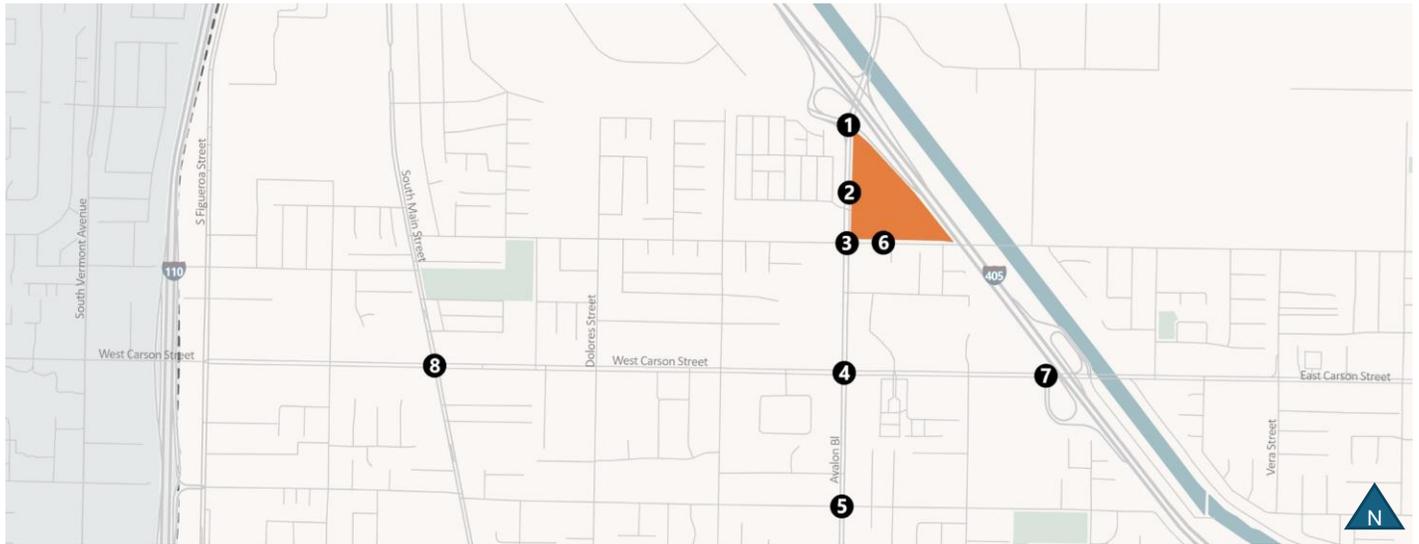
Study Intersections



1. Avalon Blvd/I-405 SB Ramps	2. Avalon Blvd/E Driveway	3. Avalon Blvd/213th St	4. Avalon Blvd/Carson St
<p>Avalon Blvd</p> <p>I-405 SB Ramps</p> <p>194 (439) 479 (878)</p> <p>402 (231) 5 (271) 401 (355)</p> <p>999 (912) 65 (128)</p>	<p>Avalon Blvd</p> <p>871 (1,228) 6 (0)</p> <p>3 (0) 0 (0)</p> <p>1,065 (1,041) 2 (0)</p>	<p>Avalon Blvd</p> <p>213th St</p> <p>124 (184) 711 (830) 58 (137)</p> <p>149 (125) 95 (104)</p> <p>159 (203) 121 (365) 77 (98)</p> <p>75 (92) 734 (795) 141 (213)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>112 (178) 548 (720) 152 (225)</p> <p>91 (97) 676 (534) 233 (245)</p> <p>138 (190) 540 (825) 68 (86)</p> <p>85 (96) 688 (719) 358 (519)</p>
5. Avalon Blvd/220th St	6. S Driveway/213th St	7. I-405 SB Ramps/Carson St	8. Main St/Carson St
<p>Avalon Blvd</p> <p>220th St</p> <p>36 (62) 676 (866) 100 (74)</p> <p>121 (54) 72 (43) 79 (37)</p> <p>68 (76) 87 (105) 36 (48)</p> <p>34 (33) 919 (1,098) 68 (49)</p>	<p>S Driveway</p> <p>213th St</p> <p>4 (6) 0 (0) 9 (10)</p> <p>10 (7) 409 (266) 5 (12)</p> <p>15 (7) 261 (651) 7 (18)</p> <p>2 (8) 0 (0) 0 (6)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>Gas Station Driveway</p> <p>4 (11) 1,026 (800) 50 (63)</p> <p>6 (4) 625 (1,052) 505 (911)</p> <p>61 (39) 191 (67)</p>	<p>Main St</p> <p>Carson St</p> <p>136 (124) 661 (703) 91 (193)</p> <p>135 (110) 670 (525) 148 (137)</p> <p>101 (111) 385 (827) 84 (99)</p> <p>152 (169) 691 (445) 190 (198)</p>

Figure 3
Carson Triangle Residential Project
Peak Hour Traffic Volumes and Lane Configurations
Existing (2024)

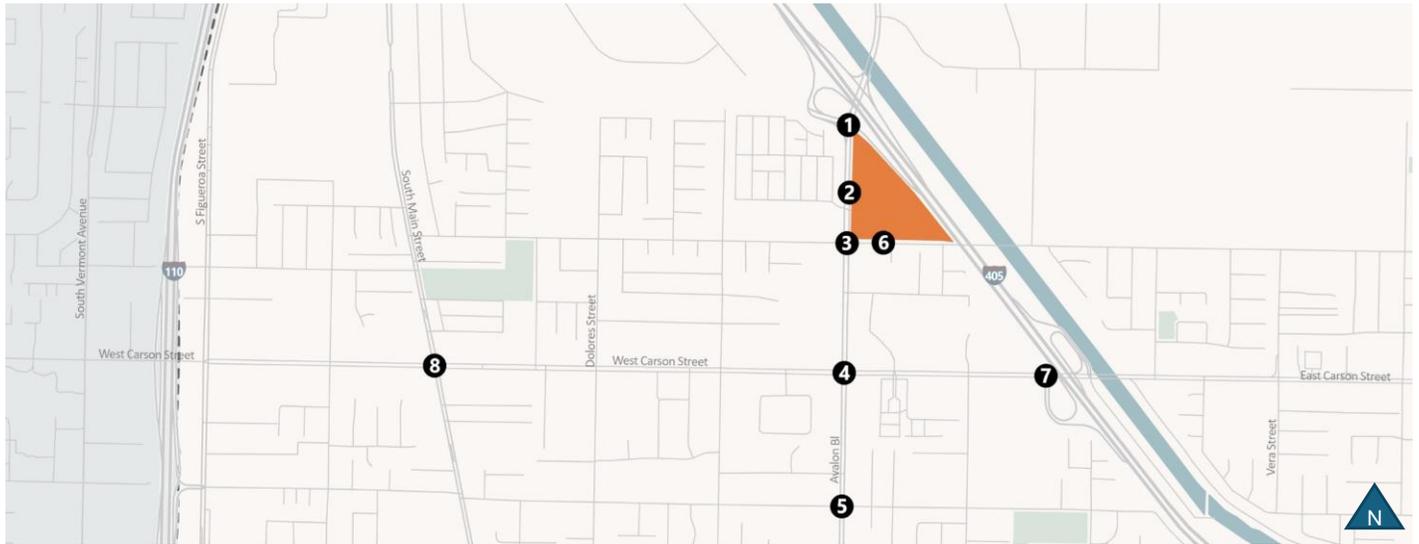




1. Avalon Blvd/I-405 SB Ramps	2. Avalon Blvd/E Driveway	3. Avalon Blvd/213th St	4. Avalon Blvd/Carson St
<p>Avalon Blvd</p> <p>I-405 SB Ramps</p> <p>44 (52) 182 (196)</p> <p>27 (32) 0 (0) 56 (36)</p> <p>202 (215) 42 (38)</p>	<p>Avalon Blvd</p> <p>180 (188) 0 (0) 0 (0)</p> <p>0 (0) 0 (0)</p> <p>200 (202) 0 (0)</p>	<p>Avalon Blvd</p> <p>213th St</p> <p>20 (21) 178 (177) 16 (16)</p> <p>55 (35) 30 (19)</p> <p>15 (13) 66 (44) 22 (17)</p> <p>32 (18) 182 (180) 36 (36)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>26 (17) 140 (150) 23 (16)</p> <p>15 (9) 52 (94) 9 (8)</p> <p>18 (8) 86 (80) 17 (18)</p> <p>21 (11) 144 (151) 32 (36)</p>
5. Avalon Blvd/220th St	6. S Driveway/213th St	7. I-405 SB Ramps/Carson St	8. Main St/Carson St
<p>Avalon Blvd</p> <p>220th St</p> <p>4 (16) 126 (142) 3 (2)</p> <p>2 (7) 8 (10) 2 (4)</p> <p>5 (9) 36 (34) 10 (6)</p> <p>6 (2) 130 (138) 4 (4)</p>	<p>S Driveway</p> <p>213th St</p> <p>0 (0) 0 (0) 0 (0)</p> <p>1 (0) 115 (88) 0 (0)</p> <p>0 (0) 89 (98) 0 (0)</p> <p>0 (0) 0 (0) 0 (0)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>Gas Station Driveway</p> <p>0 (0) 44 (65) 18 (13)</p> <p>1 (0) 55 (81) 32 (44)</p> <p>20 (22) 26 (28)</p>	<p>Main St</p> <p>Carson St</p> <p>11 (8) 89 (111) 6 (7)</p> <p>8 (10) 65 (41) 12 (10)</p> <p>6 (4) 88 (105) 12 (6)</p> <p>12 (14) 98 (84) 20 (12)</p>

Figure 4
Carson Triangle Residential Project
Peak Hour Traffic Volumes and Lane Configurations
Related Projects

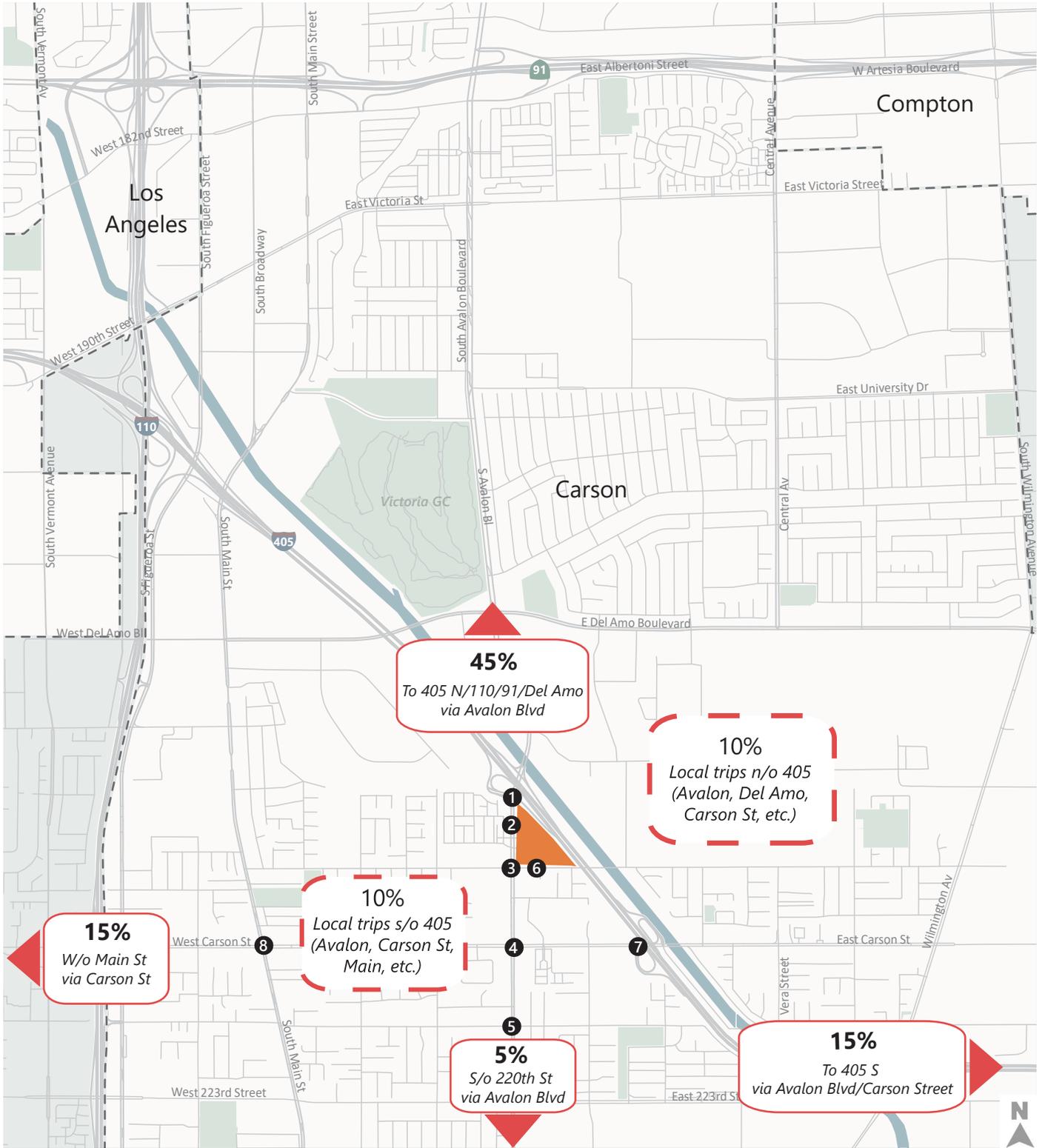




1. Avalon Blvd/I-405 SB Ramps	2. Avalon Blvd/E Driveway	3. Avalon Blvd/213th St	4. Avalon Blvd/Carson St
<p>Avalon Blvd</p> <p>I-405 SB Ramps</p> <p>240 (495) 666 (1,083)</p> <p>434 (265) 5 (274) 462 (395)</p> <p>1,211 (1,136) 107 (167)</p>	<p>Avalon Blvd</p> <p>1,060 (1,428) 6 (0)</p> <p>3 (0) 0 (0)</p> <p>1,275 (1,253) 2 (0)</p>	<p>Avalon Blvd</p> <p>213th St</p> <p>145 (207) 896 (1,116) 74 (155)</p> <p>206 (161) 126 (124)</p> <p>176 (218) 188 (413) 100 (116)</p> <p>108 (111) 924 (983) 179 (251)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>139 (197) 694 (877) 177 (243)</p> <p>107 (107) 735 (634) 244 (255)</p> <p>158 (200) 632 (913) 86 (105)</p> <p>107 (108) 819 (877) 394 (560)</p>
5. Avalon Blvd/220th St	6. S Driveway/213th St	7. I-405 SB Ramps/Carson St	8. Main St/Carson St
<p>Avalon Blvd</p> <p>220th St</p> <p>40 (78) 809 (1,016) 104 (77)</p> <p>124 (61) 81 (53) 82 (41)</p> <p>74 (86) 124 (140) 46 (54)</p> <p>40 (35) 1,058 (1,247) 73 (63)</p>	<p>S Driveway</p> <p>213th St</p> <p>4 (6) 0 (0) 9 (10)</p> <p>11 (7) 528 (356) 5 (12)</p> <p>15 (7) 352 (755) 7 (18)</p> <p>2 (8) 0 (0) 0 (6)</p>	<p>Gas Station Driveway</p> <p>Carson St</p> <p>4 (11) 1,080 (873) 68 (76)</p> <p>7 (4) 686 (1,143) 542 (964)</p> <p>81 (61) 219 (95)</p>	<p>Main St</p> <p>Carson St</p> <p>149 (133) 756 (821) 98 (202)</p> <p>145 (121) 742 (571) 162 (149)</p> <p>108 (116) 477 (940) 97 (106)</p> <p>166 (185) 796 (533) 212 (212)</p>

Figure 5
Carson Triangle Residential Project
Peak Hour Traffic Volumes and Lane Configurations
Future Base (2026)



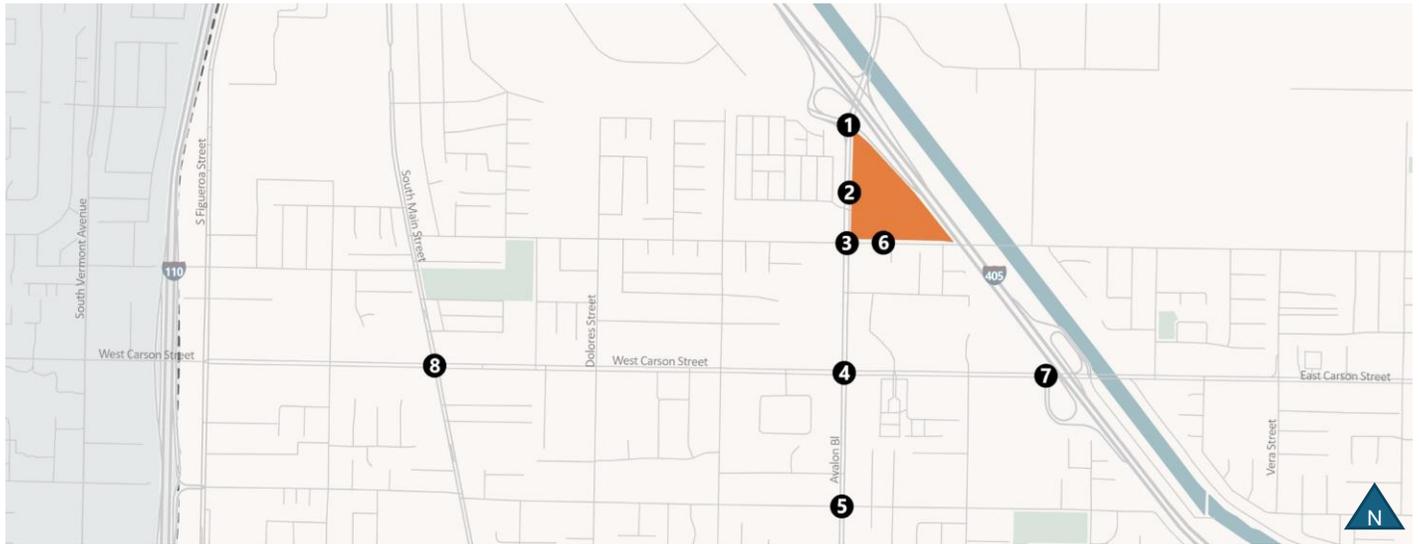


- Study Intersections
- Proposed Project Site
- Cities
- ▭# Local Trip Distribution
- ▭# Trip Distribution

Figure 6

Trip Distribution



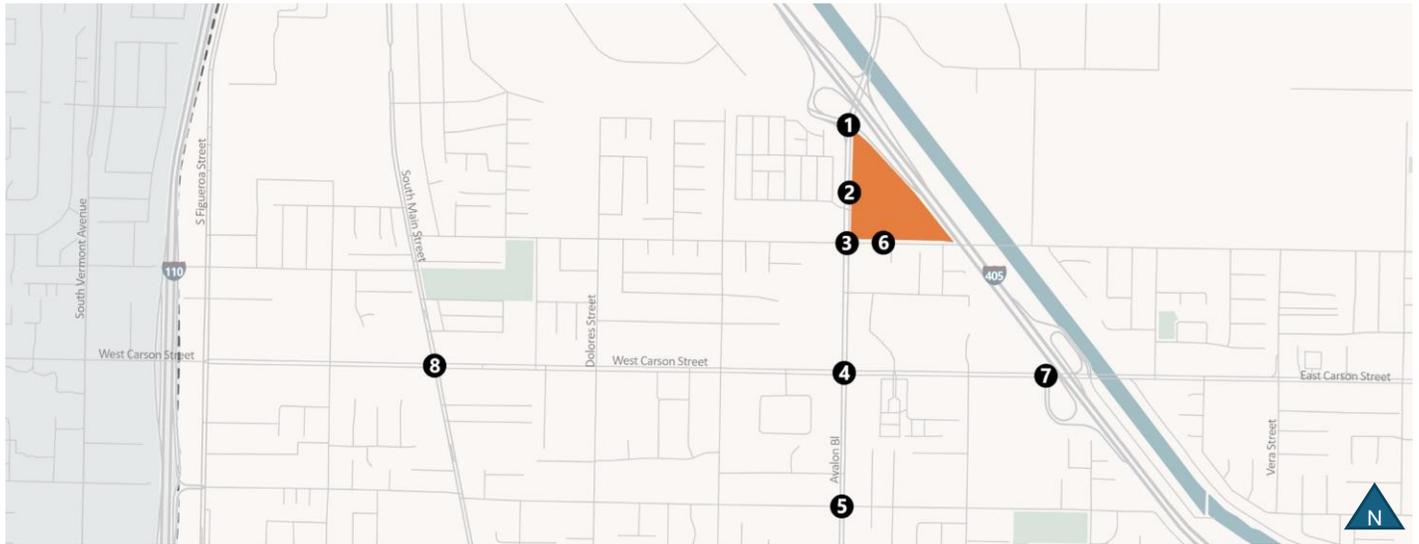


1. Avalon Blvd/I-405 SB Ramps	2. Avalon Blvd/E Driveway	3. Avalon Blvd/213th St	4. Avalon Blvd/Carson St
5. Avalon Blvd/220th St	6. S Driveway/213th St	7. I-405 SB Ramps/Carson St	8. Main St/Carson St

Figure 7-A

Carson Triangle Residential Project
 Peak Hour Traffic Volumes and Lane Configurations
 Project Only with Right-in/Right-Out Driveway Restriction (2026)

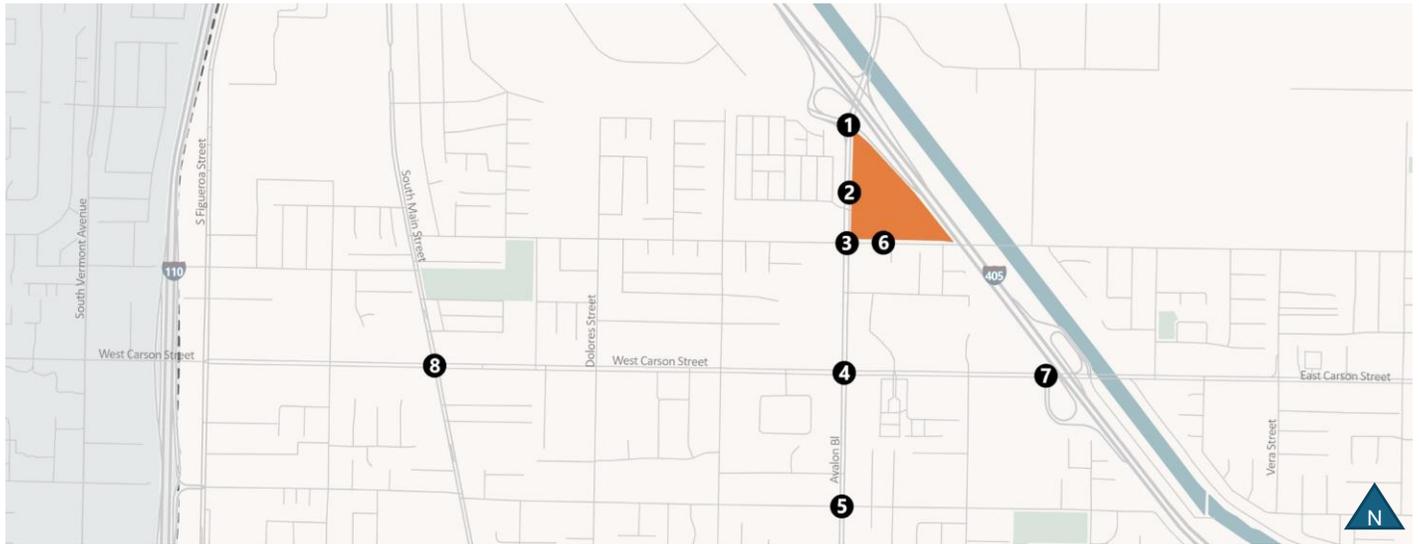




1. Avalon Blvd/I-405 SB Ramps	2. Avalon Blvd/E Driveway	3. Avalon Blvd/213th St	4. Avalon Blvd/Carson St								
<p> I-405 SB Ramps 0 (0) 5 (12) 0 (0) 0 (0) 16 (44) 51 (34) 9 (6) </p>	<p> 0 (0) 21 (56) 60 (39) 26 (17) 0 (0) 9 (23) </p>	<p> 213th St 1 (0) 26 (16) 0 (0) 2 (1) 26 (16) 0 (1) 1 (2) 0 (0) 0 (0) 9 (23) 9 (23) </p>	<p> Carson St 23 (14) 11 (7) 18 (11) 6 (16) 0 (0) 0 (0) 8 (20) 0 (0) 0 (0) 0 (0) 0 (0) 4 (0) 0 (0) </p>	5. Avalon Blvd/220th St	6. S Driveway/Newkirk Ave/213th St	7. Gas Station Driveway/I-405 SB Ramps/Cars	8. Main St/Carson St	<p> 220th St 5 (3) 6 (4) 0 (0) 0 (0) 2 (4) 0 (0) 0 (0) 0 (0) 0 (0) 2 (5) 0 (0) </p>	<p> 213th St 28 (17) 0 (0) 5 (3) 2 (4) 0 (0) 0 (0) 9 (25) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) </p>	<p> Carson St 0 (0) 9 (6) 9 (6) 0 (0) 3 (8) 0 (0) </p>	<p> Carson St 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) 6 (16) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) </p>
5. Avalon Blvd/220th St	6. S Driveway/Newkirk Ave/213th St	7. Gas Station Driveway/I-405 SB Ramps/Cars	8. Main St/Carson St								
<p> 220th St 5 (3) 6 (4) 0 (0) 0 (0) 2 (4) 0 (0) 0 (0) 0 (0) 0 (0) 2 (5) 0 (0) </p>	<p> 213th St 28 (17) 0 (0) 5 (3) 2 (4) 0 (0) 0 (0) 9 (25) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) </p>	<p> Carson St 0 (0) 9 (6) 9 (6) 0 (0) 3 (8) 0 (0) </p>	<p> Carson St 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) 6 (16) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) 0 (0) </p>								

Figure 7-B
 Carson Triangle Residential Project
 Peak Hour Traffic Volumes and Lane Configurations
 Project Only with Full Driveway Access Scenario (2026)



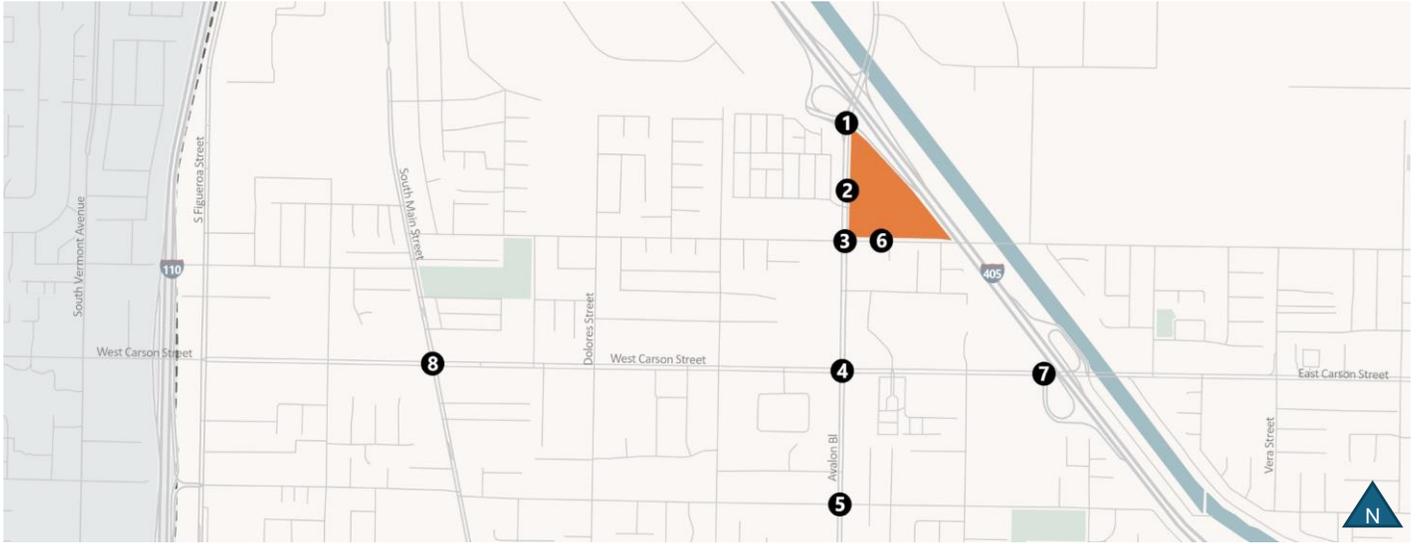


1. Avalon Blvd/I-405 SB Ramps	2. Avalon Blvd/E Driveway	3. Avalon Blvd/213th St	4. Avalon Blvd/Carson St
<p>Avalon Blvd</p> <p>I-405 SB Ramps</p> <p>240 (495) 671 (1,096)</p> <p>434 (265) 5 (274) 478 (439)</p> <p>1,262 (1,171) 116 (173)</p>	<p>Avalon Blvd</p> <p>1,060 (1,428) 27 (57)</p> <p>63 (40) 31 (18)</p> <p>1,275 (1,253) 12 (27)</p>	<p>Avalon Blvd</p> <p>213th St</p> <p>146 (207) 922 (1,133) 79 (155)</p> <p>208 (162) 152 (141)</p> <p>176 (219) 189 (415) 100 (116)</p> <p>108 (111) 956 (1,035) 163 (242)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>162 (211) 705 (884) 195 (256)</p> <p>112 (120) 735 (634) 244 (255)</p> <p>166 (220) 632 (913) 86 (105)</p> <p>107 (108) 823 (886) 394 (560)</p>
5. Avalon Blvd/220th St	6. S Driveway/213th St	7. I-405 SB Ramps/Carson St	8. Main St/Carson St
<p>Avalon Blvd</p> <p>220th St</p> <p>45 (81) 815 (1,020) 104 (77)</p> <p>124 (61) 81 (53) 82 (41)</p> <p>76 (90) 124 (140) 46 (54)</p> <p>40 (85) 1,060 (1,252) 73 (63)</p>	<p>S Driveway</p> <p>213th St</p> <p>41 (34)</p> <p>13 (10) 530 (359)</p> <p>357 (755) 7 (18)</p> <p>2 (8) 0 (0) 0 (6)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>Gas Station Driveway</p> <p>4 (11) 1,082 (878) 68 (76)</p> <p>7 (4) 695 (1,150) 551 (970)</p> <p>84 (89) 219 (95)</p>	<p>Main St</p> <p>Carson St</p> <p>149 (133) 756 (821) 98 (202)</p> <p>145 (121) 760 (582) 162 (149)</p> <p>108 (116) 483 (956) 97 (106)</p> <p>166 (185) 796 (533) 212 (212)</p>

Figure 8-A

Carson Triangle Residential Project
 Peak Hour Traffic Volumes and Lane Configurations
 Future plus Project with Right-in/Right-Out Driveway Restriction (2026)





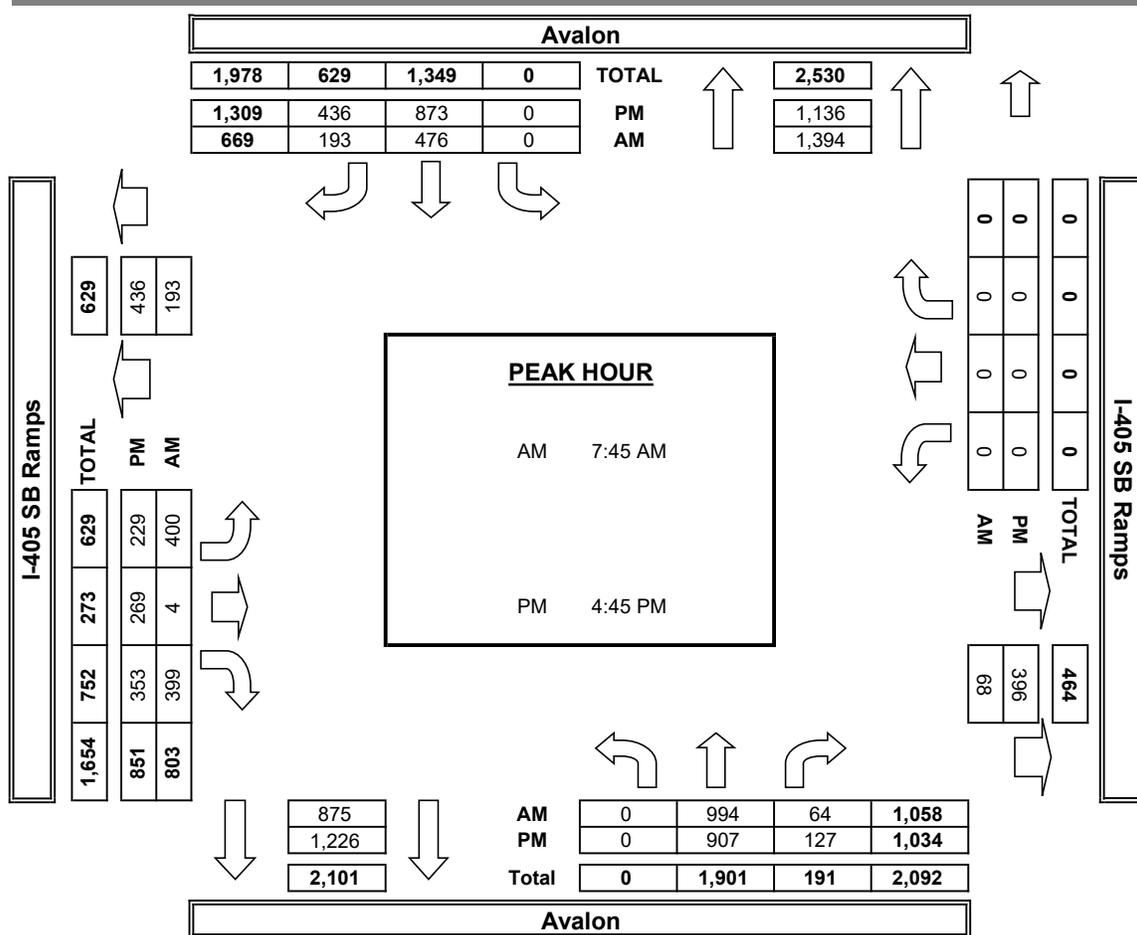
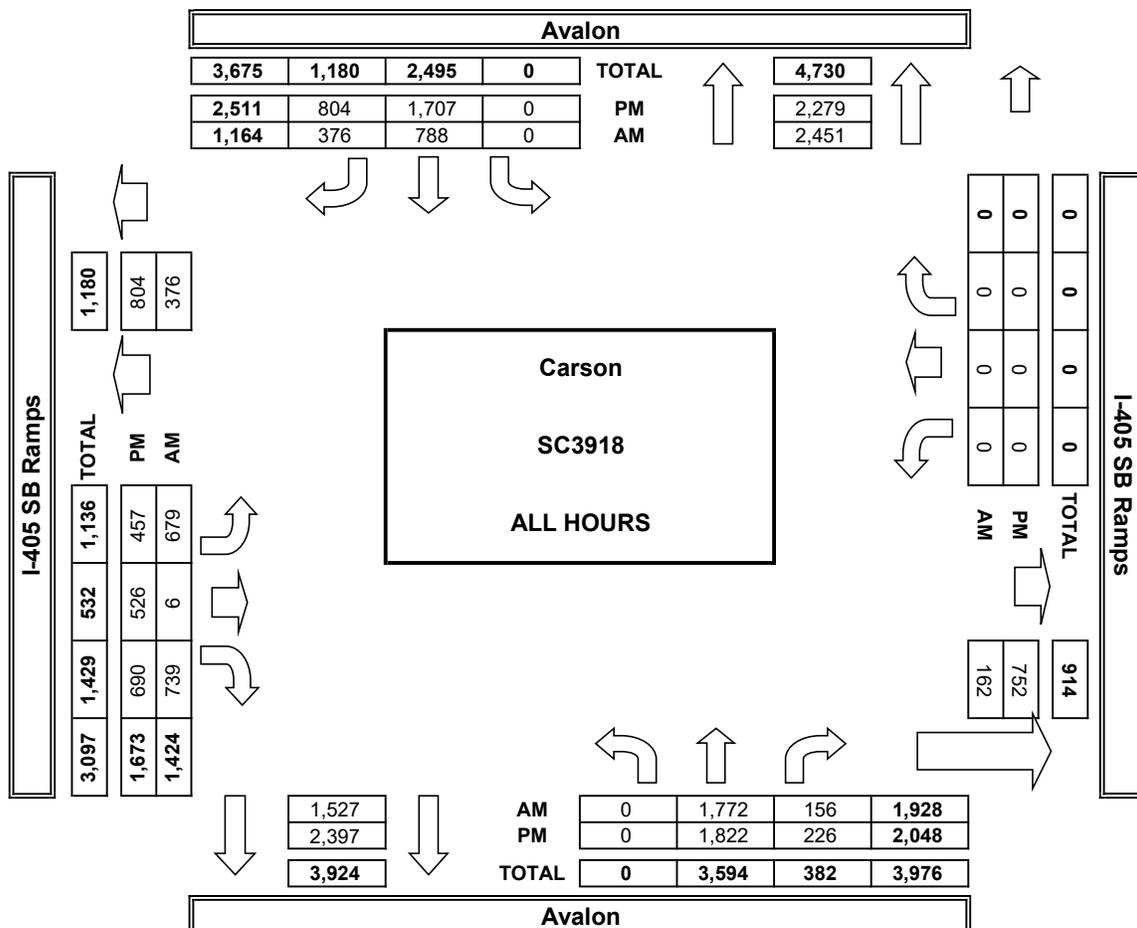
1. Avalon Blvd/I-405 SB Ramps	2. Avalon Blvd/E Driveway	3. Avalon Blvd/213th St	4. Avalon Blvd/Carson St
<p>Avalon Blvd</p> <p>I-405 SB Ramps</p> <p>240 (495) 671 (1,095)</p> <p>434 (265) 5 (274) 478 (439)</p> <p>1,262 (1,170) 116 (173)</p>	<p>Avalon Blvd</p> <p>1,060 (1,428) 27 (56)</p> <p>63 (39) 26 (17)</p> <p>1,275 (1,253) 11 (23)</p>	<p>Avalon Blvd</p> <p>213th St</p> <p>146 (207) 922 (1,132) 74 (155)</p> <p>208 (162) 152 (140)</p> <p>176 (219) 189 (415) 100 (116)</p> <p>108 (111) 933 (1,006) 188 (274)</p>	<p>Avalon Blvd</p> <p>Carson St</p> <p>162 (211) 705 (884) 195 (254)</p> <p>113 (123) 735 (634) 244 (255)</p> <p>166 (220) 632 (913) 86 (105)</p> <p>107 (108) 823 (886) 394 (560)</p>
5. Avalon Blvd/220th St	6. S Driveway/Newkirk Ave/213th St	7. Gas Station Driveway/I-405 SB Ramps/Cars	8. Main St/Carson St
<p>Avalon Blvd</p> <p>220th St</p> <p>45 (81) 815 (1,020) 104 (77)</p> <p>124 (61) 81 (53) 82 (41)</p> <p>76 (90) 124 (140) 46 (54)</p> <p>40 (85) 1,060 (1,252) 73 (63)</p>	<p>S Driveway</p> <p>213th St</p> <p>32 (23) 0 (0) 14 (13)</p> <p>13 (11) 528 (356) 5 (12)</p> <p>24 (32) 352 (755) 7 (18)</p> <p>2 (8) 0 (0) 0 (6)</p>	<p>Gas Station Driveway</p> <p>Carson St</p> <p>4 (11) 1,083 (881) 68 (76)</p> <p>7 (4) 695 (1,149) 551 (970)</p> <p>84 (89) 219 (95)</p>	<p>Main St</p> <p>Carson St</p> <p>149 (133) 756 (821) 98 (202)</p> <p>145 (121) 760 (582) 162 (149)</p> <p>108 (116) 483 (956) 97 (106)</p> <p>166 (185) 796 (533) 212 (212)</p>

Figure 8-B
 Carson Triangle Residential Project
 Peak Hour Traffic Volumes and Lane Configurations
 Future plus Project with Full Driveway Access Scenario (2026)

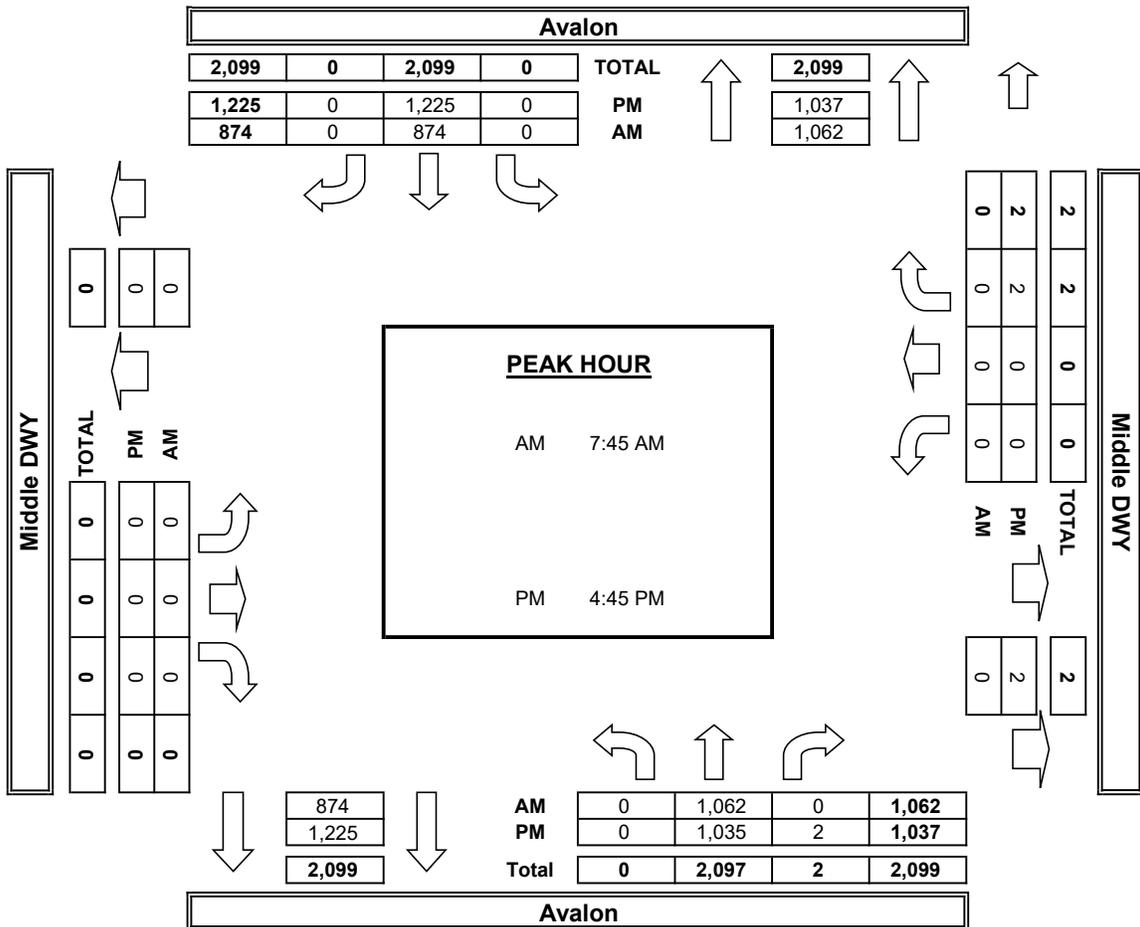
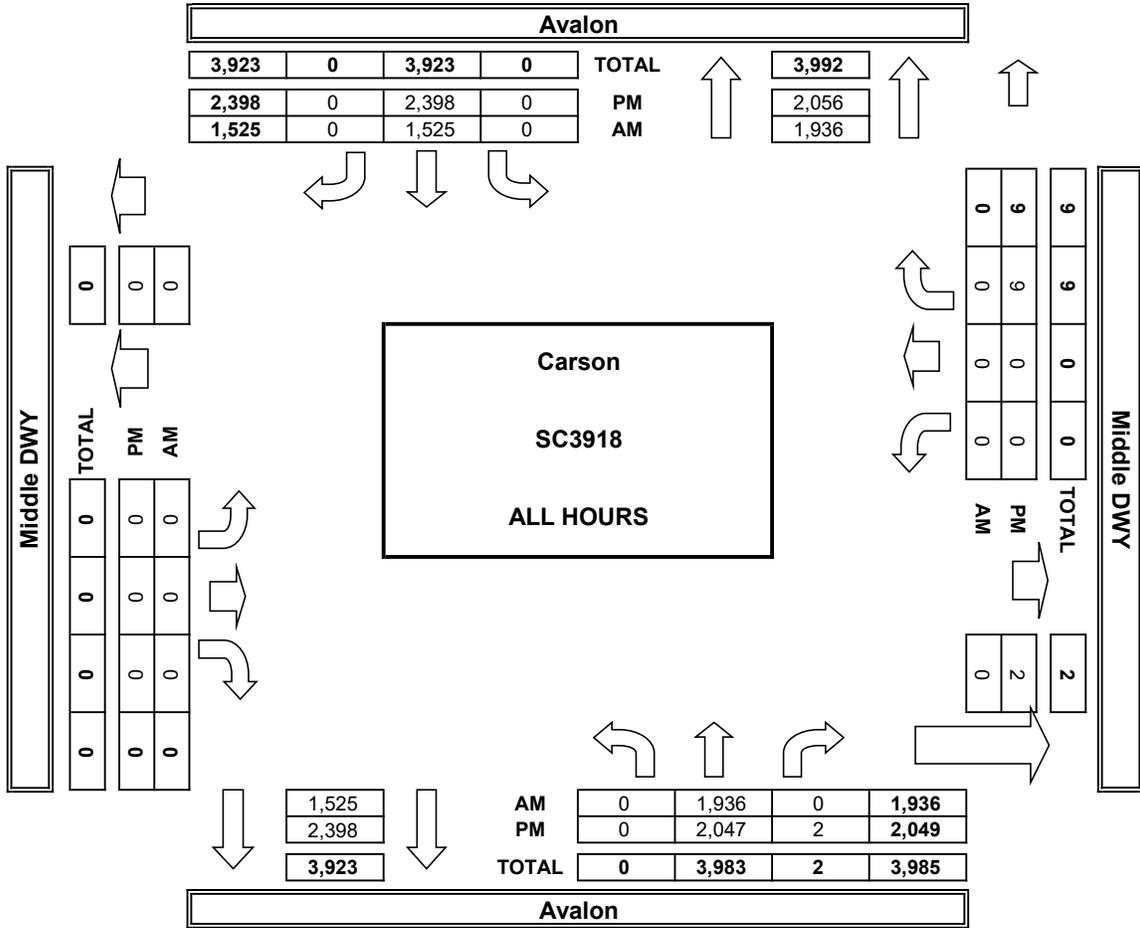


Appendix A: Traffic Counts

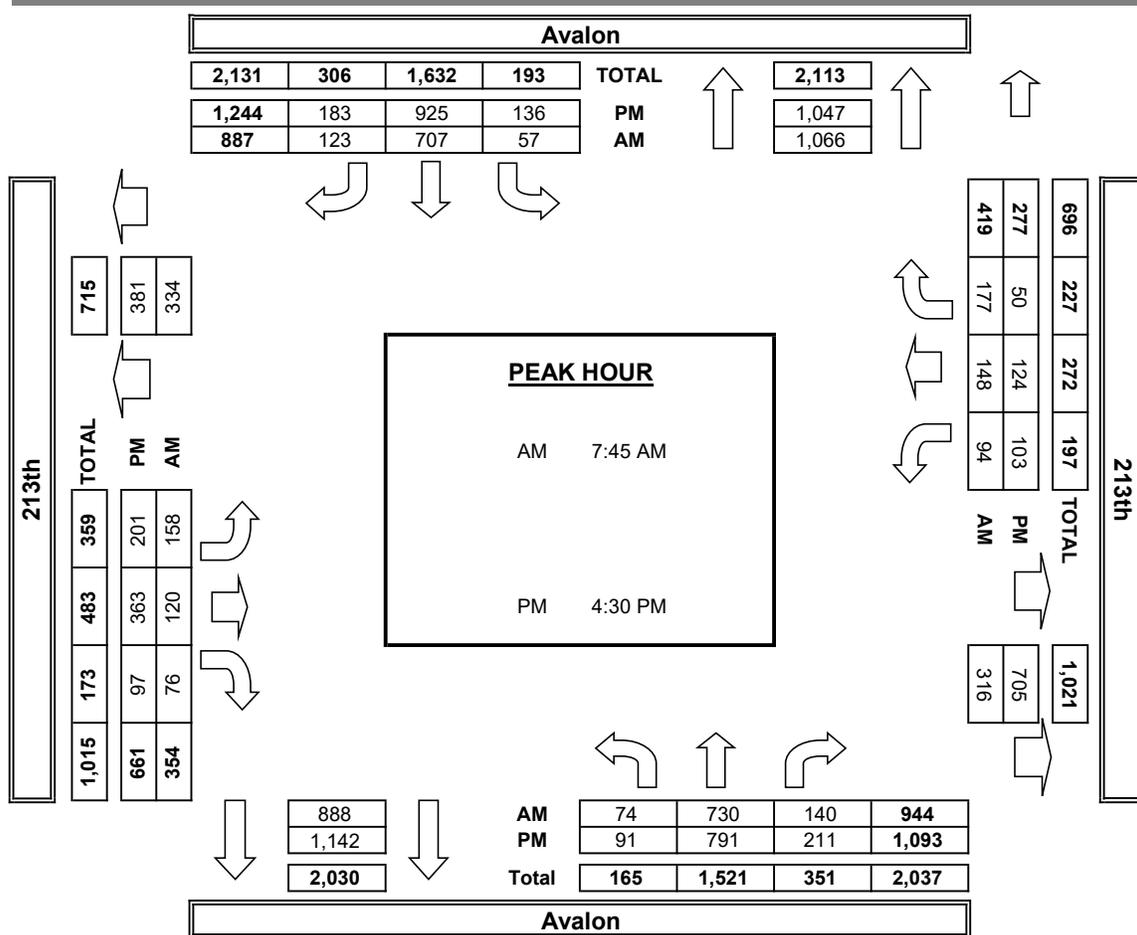
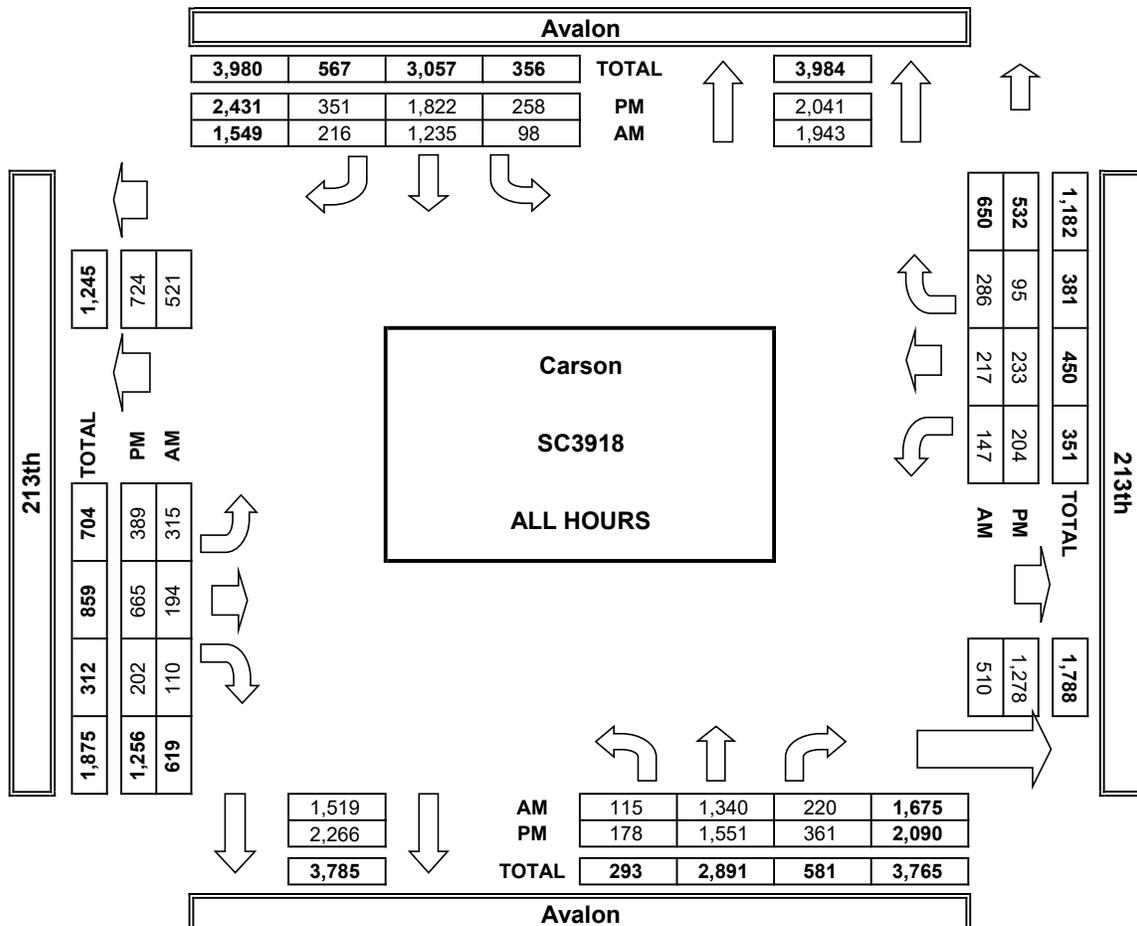
AimTD LLC
TURNING MOVEMENT COUNTS



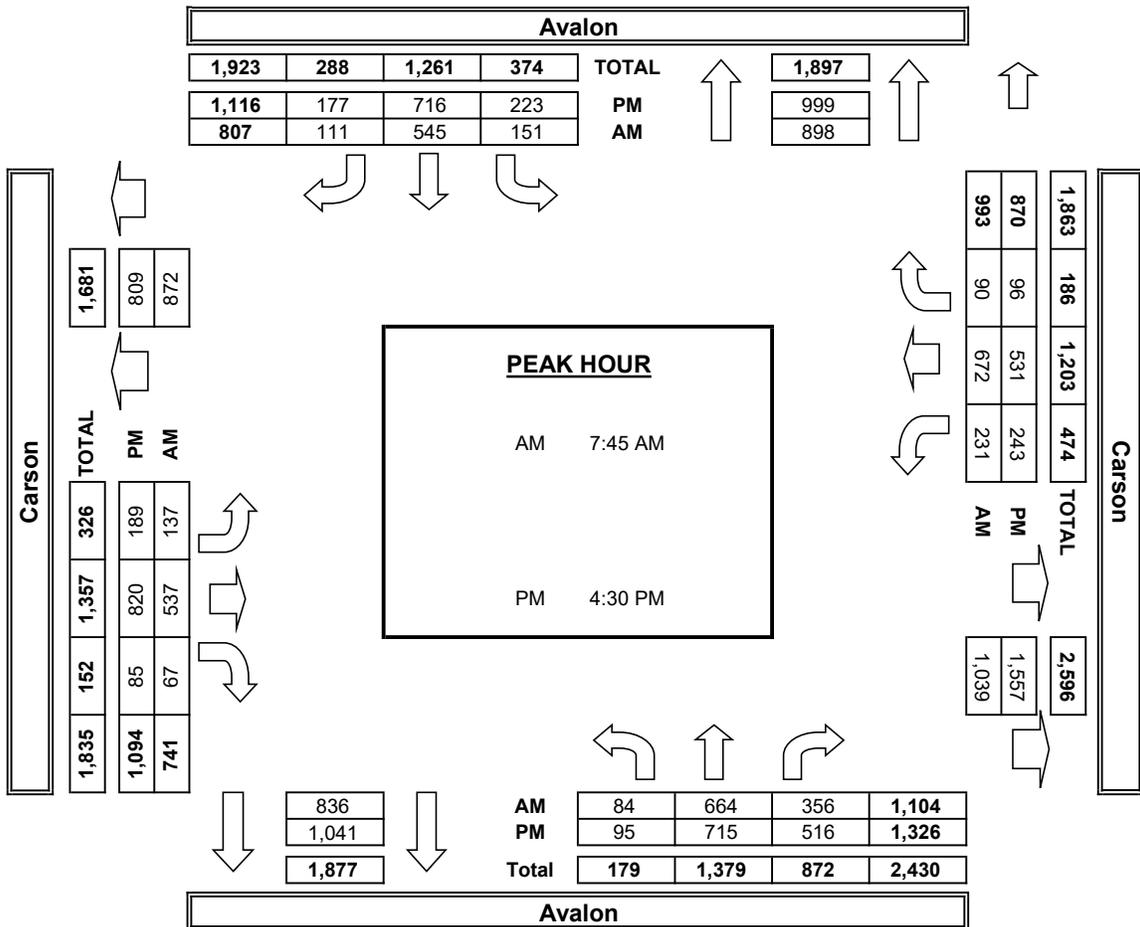
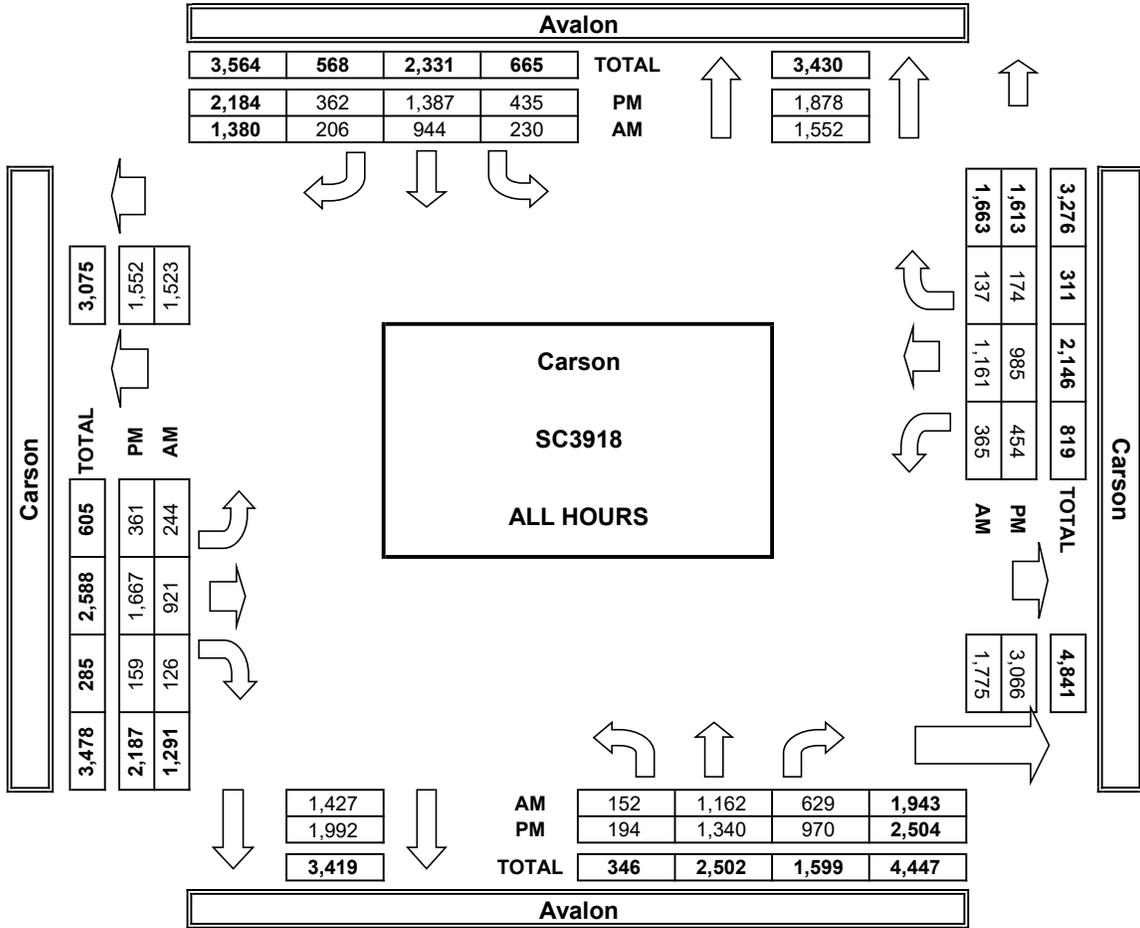
AimTD LLC
TURNING MOVEMENT COUNTS



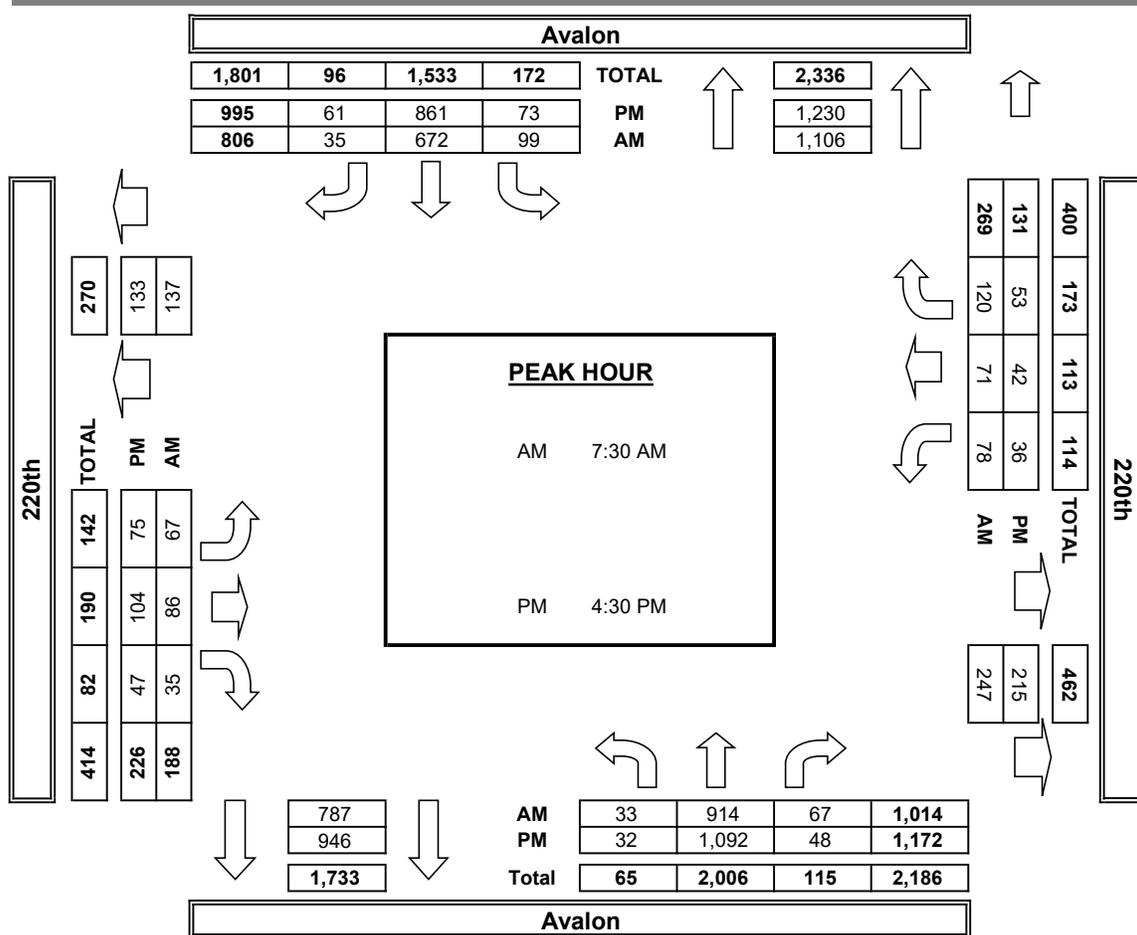
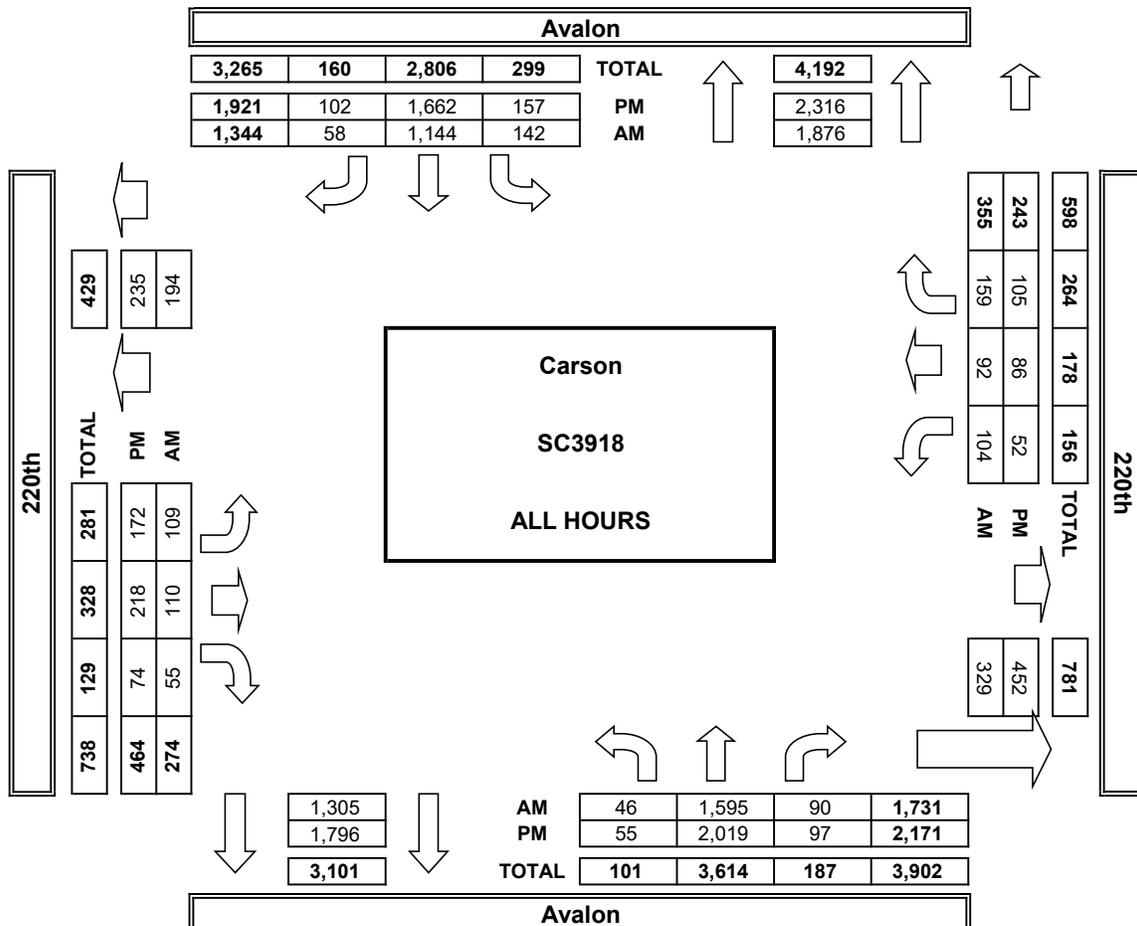
AimTD LLC
TURNING MOVEMENT COUNTS



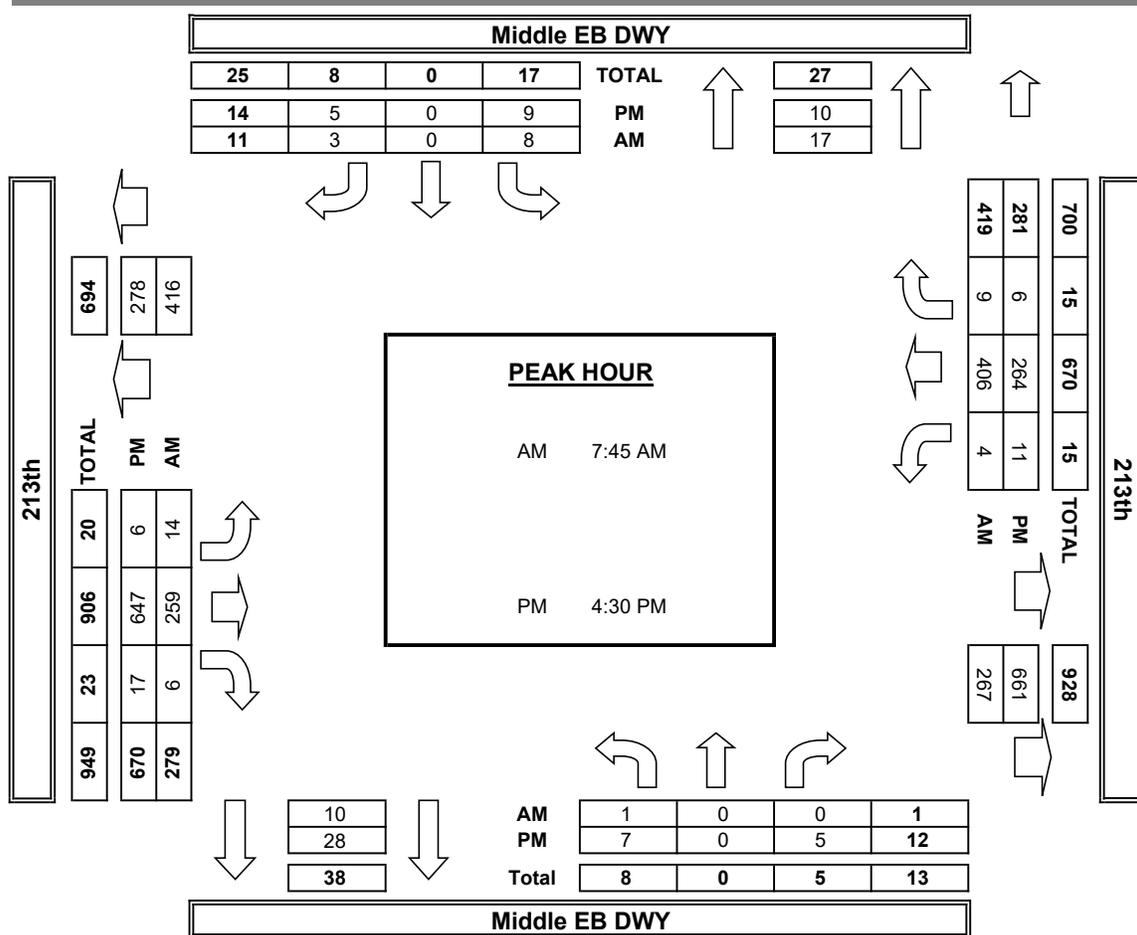
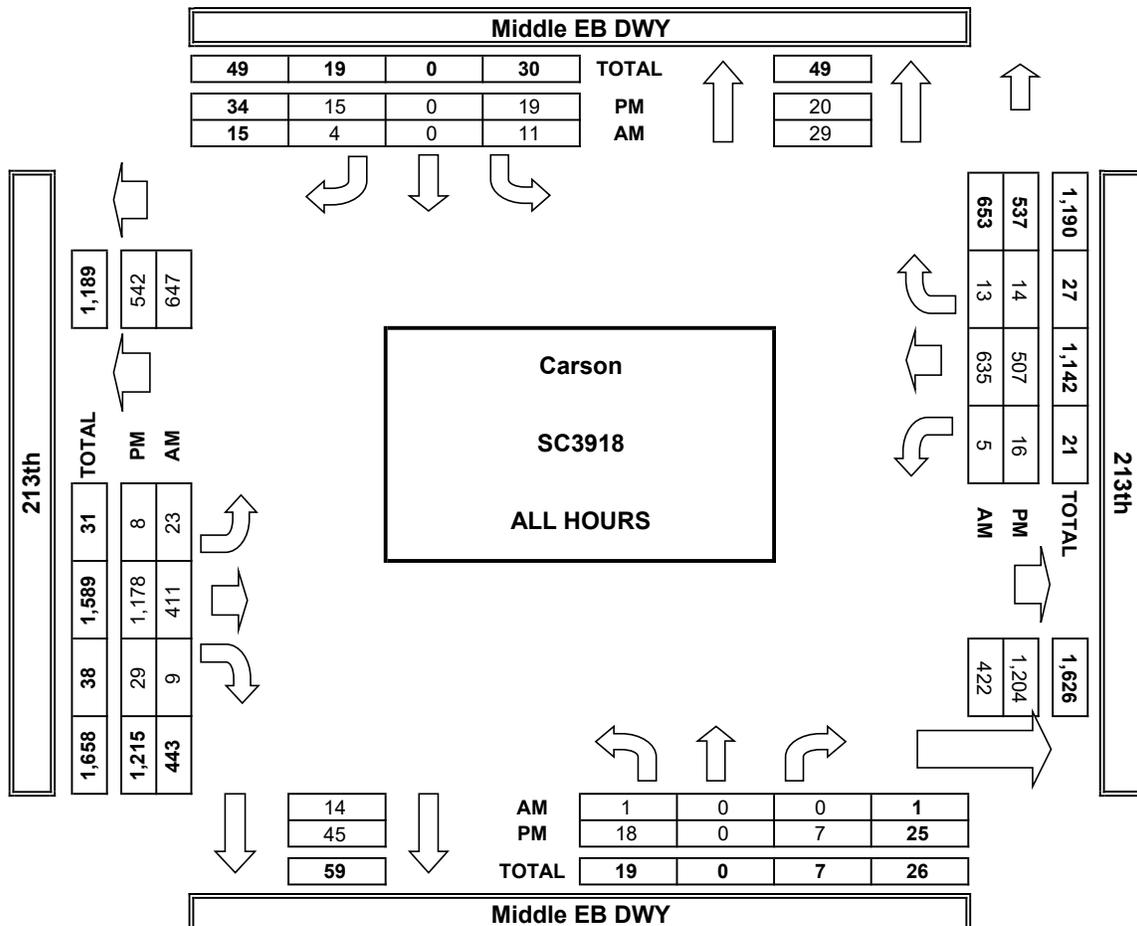
AimTD LLC
TURNING MOVEMENT COUNTS



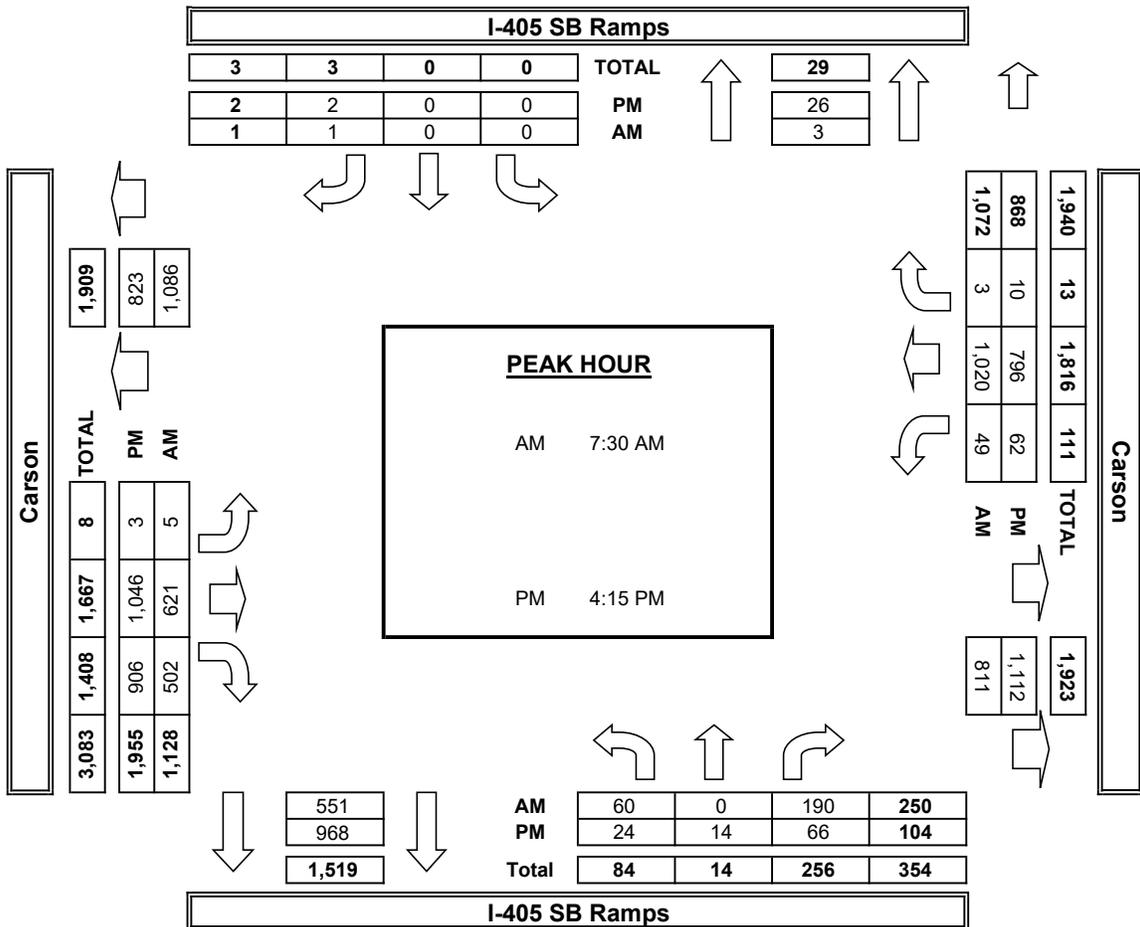
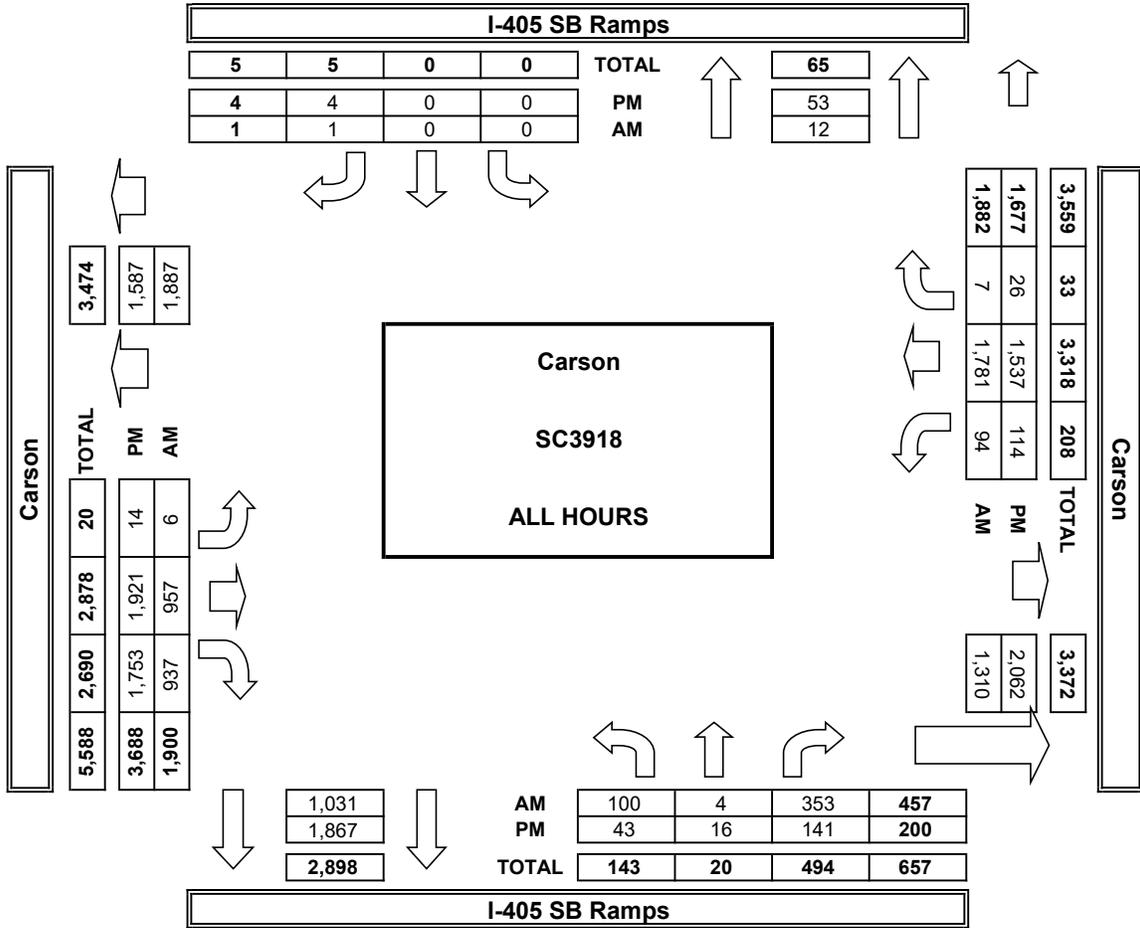
AimTD LLC
TURNING MOVEMENT COUNTS



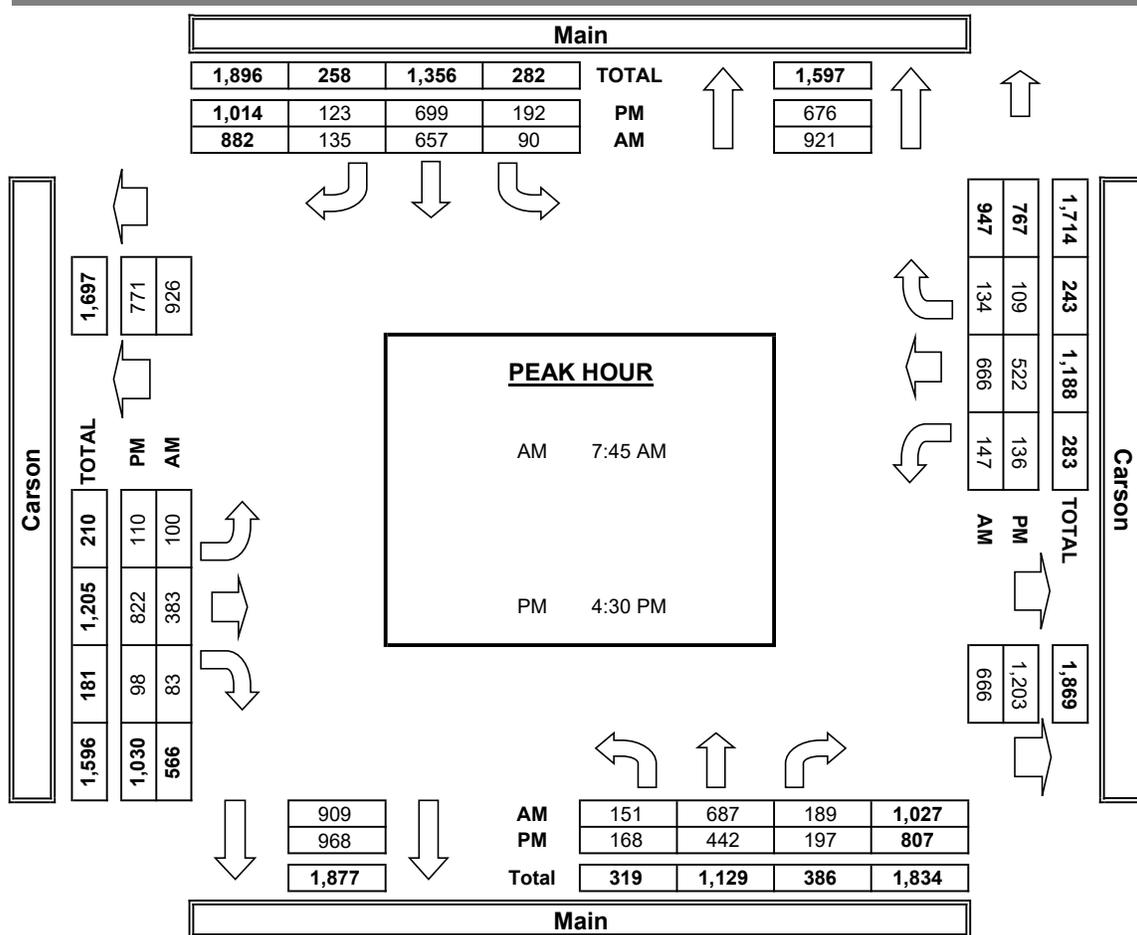
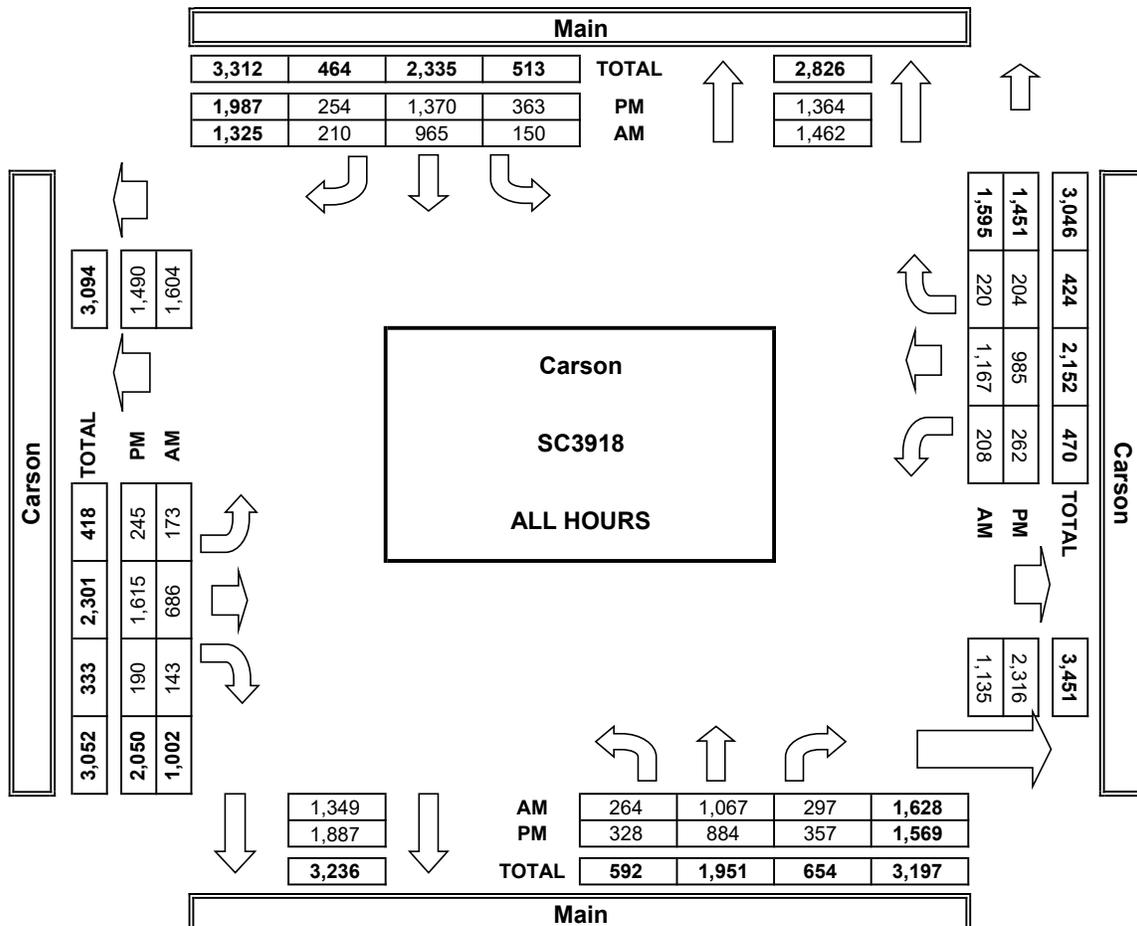
AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



Appendix B: LOS Worksheets

Existing (2024), AM Peak Hour

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Existing - AM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	402	5	401	0	0	0	0	999	65	0	479	194
Future Volume (veh/h)	402	5	401	0	0	0	0	999	65	0	479	194
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	432	5	0				0	1074	64	0	515	91
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	1240	1275					0	1642	98	0	1714	765
Arrive On Green	0.36	0.36	0.00				0.00	0.49	0.49	0.00	0.49	0.49
Sat Flow, veh/h	3428	3526	1572				0	3470	201	0	3618	1572
Grp Volume(v), veh/h	432	5	0				0	560	578	0	515	91
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1816	0	1763	1572
Q Serve(g_s), s	6.4	0.1	0.0				0.0	16.5	16.6	0.0	6.1	2.2
Cycle Q Clear(g_c), s	6.4	0.1	0.0				0.0	16.5	16.6	0.0	6.1	2.2
Prop In Lane	1.00		1.00				0.00		0.11	0.00		1.00
Lane Grp Cap(c), veh/h	1240	1275					0	857	883	0	1714	765
V/C Ratio(X)	0.35	0.00					0.00	0.65	0.65	0.00	0.30	0.12
Avail Cap(c_a), veh/h	2729	2806					0	1786	1840	0	3572	1593
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	14.1	0.0				0.0	13.4	13.4	0.0	10.7	9.7
Incr Delay (d2), s/veh	0.2	0.0	0.0				0.0	1.2	1.2	0.0	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0				0.0	5.8	6.0	0.0	2.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.3	14.1	0.0				0.0	14.6	14.5	0.0	10.8	9.8
LnGrp LOS	B	B						B	B		B	A
Approach Vol, veh/h		437						1138			606	
Approach Delay, s/veh		16.2						14.6			10.7	
Approach LOS		B						B			B	
Timer - Assigned Phs		2		4				6				
Phs Duration (G+Y+Rc), s		39.0		30.1				39.0				
Change Period (Y+Rc), s		5.4		5.1				5.4				
Max Green Setting (Gmax), s		70.0		55.0				70.0				
Max Q Clear Time (g_c+I1), s		18.6		8.4				8.1				
Green Ext Time (p_c), s		15.0		1.7				6.2				

Intersection Summary

HCM 7th Control Delay, s/veh	13.8
HCM 7th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑↑↑		↘	↑↑↑
Traffic Vol, veh/h	0	3	1065	2	6	871
Future Vol, veh/h	0	3	1065	2	6	871
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	3	1183	2	7	968

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1586	594	0	0	1187
Stage 1	1185	-	-	-	-
Stage 2	400	-	-	-	-
Critical Hdwy	5.76	7.16	-	-	5.36
Critical Hdwy Stg 1	6.66	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-
Follow-up Hdwy	3.83	3.93	-	-	3.13
Pot Cap-1 Maneuver	154	382	-	-	315
Stage 1	185	-	-	-	-
Stage 2	588	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	150	382	-	-	315
Mov Cap-2 Maneuver	150	-	-	-	-
Stage 1	184	-	-	-	-
Stage 2	576	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	14.51	0	0.11
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	315
HCM Lane V/C Ratio	-	-	0.009	0.021
HCM Control Delay (s/veh)	-	-	14.5	16.7
HCM Lane LOS	-	-	B	C
HCM 95th %tile Q(veh)	-	-	0	0.1

Carson Triangle Residential Project
3: Avalon Blvd & 213th St

Existing - AM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	121	77	95	149	178	75	734	141	58	711	124
Future Volume (veh/h)	159	121	77	95	149	178	75	734	141	58	711	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	169	129	60	101	159	37	80	781	131	62	756	115
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	263	408	342	251	627	142	123	2555	425	116	2581	389
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.07	0.59	0.59	0.07	0.58	0.58
Sat Flow, veh/h	1174	1856	1554	1182	2852	647	1767	4364	726	1767	4441	670
Grp Volume(v), veh/h	169	129	60	101	97	99	80	603	309	62	573	298
Grp Sat Flow(s),veh/h/ln	1174	1856	1554	1182	1763	1736	1767	1689	1713	1767	1689	1734
Q Serve(g_s), s	16.7	7.0	3.8	9.4	5.4	5.7	5.3	10.8	11.0	4.1	10.3	10.4
Cycle Q Clear(g_c), s	22.4	7.0	3.8	16.4	5.4	5.7	5.3	10.8	11.0	4.1	10.3	10.4
Prop In Lane	1.00		1.00	1.00		0.37	1.00		0.42	1.00		0.39
Lane Grp Cap(c), veh/h	263	408	342	251	388	382	123	1977	1003	116	1963	1008
V/C Ratio(X)	0.64	0.32	0.18	0.40	0.25	0.26	0.65	0.30	0.31	0.54	0.29	0.30
Avail Cap(c_a), veh/h	391	611	511	380	580	571	184	1977	1003	184	1963	1008
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	0.47	0.47	0.47	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	39.2	38.0	46.1	38.6	38.7	54.4	12.6	12.6	54.3	12.7	12.7
Incr Delay (d2), s/veh	2.6	0.4	0.2	1.0	0.3	0.4	1.0	0.2	0.4	1.4	0.4	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	3.3	1.5	2.8	2.4	2.5	2.4	4.0	4.1	1.8	3.8	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.6	39.7	38.2	47.2	39.0	39.1	55.4	12.7	13.0	55.7	13.1	13.5
LnGrp LOS	D	D	D	D	D	D	E	B	B	E	B	B
Approach Vol, veh/h		358			297			992			933	
Approach Delay, s/veh		44.6			41.8			16.2			16.0	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.9	75.2		31.9	12.4	75.8		31.9				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+11), s	7.3	12.4		24.4	6.1	13.0		18.4				
Green Ext Time (p_c), s	0.0	9.7		1.4	0.0	10.3		1.4				
Intersection Summary												
HCM 7th Control Delay, s/veh			23.0									
HCM 7th LOS			C									

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Existing - AM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	138	540	68	233	676	91	85	668	358	152	548	112
Future Volume (veh/h)	138	540	68	233	676	91	85	668	358	152	548	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	148	581	64	251	727	89	91	718	298	163	589	93
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	284	1196	131	308	1202	147	140	893	365	184	1241	193
Arrive On Green	0.08	0.37	0.37	0.09	0.38	0.38	0.08	0.26	0.26	0.14	0.38	0.38
Sat Flow, veh/h	3428	3197	351	3428	3156	386	1767	3472	1419	1767	4401	683
Grp Volume(v), veh/h	148	320	325	251	406	410	91	698	318	163	449	233
Grp Sat Flow(s),veh/h/ln	1714	1763	1786	1714	1763	1779	1767	1689	1515	1767	1689	1707
Q Serve(g_s), s	5.0	16.6	16.7	8.6	22.2	22.3	6.0	23.2	23.7	10.9	12.1	12.5
Cycle Q Clear(g_c), s	5.0	16.6	16.7	8.6	22.2	22.3	6.0	23.2	23.7	10.9	12.1	12.5
Prop In Lane	1.00		0.20	1.00		0.22	1.00		0.94	1.00		0.40
Lane Grp Cap(c), veh/h	284	659	668	308	672	678	140	868	389	184	952	481
V/C Ratio(X)	0.52	0.49	0.49	0.82	0.60	0.61	0.65	0.80	0.82	0.89	0.47	0.48
Avail Cap(c_a), veh/h	443	659	668	443	672	678	184	915	410	184	952	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	52.8	28.7	28.8	53.6	29.9	29.9	53.6	41.7	41.9	51.0	30.7	30.8
Incr Delay (d2), s/veh	0.6	2.5	2.5	5.0	4.0	4.0	1.9	5.4	12.3	34.1	0.5	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	2.1	7.4	7.5	3.9	10.0	10.1	2.7	10.2	10.1	6.3	4.7	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.3	31.3	31.3	58.6	33.9	33.9	55.5	47.1	54.2	85.1	31.2	31.8
LnGrp LOS	D	C	C	E	C	C	E	D	D	F	C	C
Approach Vol, veh/h		793			1067			1107			845	
Approach Delay, s/veh		35.4			39.7			49.9			41.8	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.4	51.2	17.0	36.4	16.3	50.4	14.0	39.3				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	15.5	38.5	12.5	32.5	15.5	38.5	12.5	32.5				
Max Q Clear Time (g_c+1), s	17.0	24.3	12.9	25.7	10.6	18.7	8.0	14.5				
Green Ext Time (p_c), s	0.1	5.8	0.0	4.3	0.1	5.3	0.0	5.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			42.2									
HCM 7th LOS			D									

Carson Triangle Residential Project
5: Avalon Blvd & 220th St

Existing - AM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	87	36	79	72	121	34	919	68	100	676	36
Future Volume (veh/h)	68	87	36	79	72	121	34	919	68	100	676	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	74	99	26	90	82	132	39	999	74	109	735	39
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	162	278	73	251	125	202	484	2446	1081	359	2446	1091
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	1154	1269	333	1250	573	923	691	3526	1558	521	3526	1572
Grp Volume(v), veh/h	74	0	125	90	0	214	39	999	74	109	735	39
Grp Sat Flow(s),veh/h/ln	1154	0	1602	1250	0	1496	691	1763	1558	521	1763	1572
Q Serve(g_s), s	7.5	0.0	7.9	7.9	0.0	15.6	2.8	14.5	1.8	13.6	9.7	0.9
Cycle Q Clear(g_c), s	23.1	0.0	7.9	15.8	0.0	15.6	12.5	14.5	1.8	28.1	9.7	0.9
Prop In Lane	1.00		0.21	1.00		0.62	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	162	0	351	251	0	327	484	2446	1081	359	2446	1091
V/C Ratio(X)	0.46	0.00	0.36	0.36	0.00	0.65	0.08	0.41	0.07	0.30	0.30	0.04
Avail Cap(c_a), veh/h	232	0	447	326	0	418	484	2446	1081	359	2446	1091
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	0.0	39.7	46.4	0.0	42.7	9.5	7.9	5.9	13.9	7.1	5.8
Incr Delay (d2), s/veh	2.0	0.0	0.6	0.9	0.0	2.4	0.3	0.5	0.1	2.2	0.3	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	2.3	0.0	3.2	2.5	0.0	6.1	0.4	5.1	0.6	1.8	3.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.3	0.0	40.3	47.3	0.0	45.1	9.8	8.4	6.0	16.0	7.4	5.8
LnGrp LOS	E		D	D		D	A	A	A	B	A	A
Approach Vol, veh/h		199			304			1112			883	
Approach Delay, s/veh		45.9			45.8			8.3			8.4	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		88.7		31.3		88.7		31.3				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+1), s		16.5		25.1		30.1		17.8				
Green Ext Time (p_c), s		7.7		0.6		0.0		1.5				

Intersection Summary		
HCM 7th Control Delay, s/veh		15.9
HCM 7th LOS		B

Notes
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	15	261	7	5	409	10	2	0	0	9	0	4
Future Vol, veh/h	15	261	7	5	409	10	2	0	0	9	0	4
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	297	8	5	465	11	2	0	0	10	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	477	0	0	304	0	0	579	822	152	665	821	240
Stage 1	-	-	-	-	-	-	334	334	-	482	482	-
Stage 2	-	-	-	-	-	-	244	488	-	182	338	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	1074	-	-	1246	-	-	396	305	864	344	306	758
Stage 1	-	-	-	-	-	-	650	639	-	531	549	-
Stage 2	-	-	-	-	-	-	735	546	-	799	636	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1073	-	-	1246	-	-	385	298	864	336	299	757
Mov Cap-2 Maneuver	-	-	-	-	-	-	385	298	-	336	299	-
Stage 1	-	-	-	-	-	-	639	628	-	528	546	-
Stage 2	-	-	-	-	-	-	726	542	-	785	625	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.57			0.13			14.41			14.22		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	385	185	-	-	39	-	-	405
HCM Lane V/C Ratio	0.006	0.016	-	-	0.004	-	-	0.036
HCM Control Delay (s/veh)	14.4	8.4	0.1	-	7.9	0	-	14.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Carson Triangle Residential Project
 7: I-405 SB Ramps/Gas Station Driveway & Carson St

Existing - AM Peak Hour
 09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘		↗			
Traffic Volume (veh/h)	6	625	505	50	1026	4	61	0	191	0	0	2
Future Volume (veh/h)	6	625	505	50	1026	4	61	0	191	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	7	679	409	54	1115	4	66	0	10			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	406	2307	1171	145	4110	15	167	0	149			
Arrive On Green	0.65	0.65	0.65	0.08	0.79	0.79	0.09	0.00	0.09			
Sat Flow, veh/h	499	3526	1563	1767	5210	19	1767	0	1572			
Grp Volume(v), veh/h	7	679	409	54	723	396	66	0	10			
Grp Sat Flow(s),veh/h/ln	499	1763	1563	1767	1689	1852	1767	0	1572			
Q Serve(g_s), s	0.4	7.4	8.0	2.6	5.2	5.2	3.2	0.0	0.5			
Cycle Q Clear(g_c), s	0.4	7.4	8.0	2.6	5.2	5.2	3.2	0.0	0.5			
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00			
Lane Grp Cap(c), veh/h	406	2307	1171	145	2664	1461	167	0	149			
V/C Ratio(X)	0.02	0.29	0.35	0.37	0.27	0.27	0.40	0.00	0.07			
Avail Cap(c_a), veh/h	406	2307	1171	320	2664	1461	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.5	6.7	3.8	39.1	2.6	2.6	38.3	0.0	37.1			
Incr Delay (d2), s/veh	0.1	0.3	0.8	1.6	0.3	0.5	1.5	0.0	0.2			
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	0.0	2.3	3.2	1.2	1.0	1.2	1.4	0.0	0.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.5	7.0	4.7	40.7	2.8	3.0	39.8	0.0	37.3			
LnGrp LOS	A	A	A	D	A	A	D		D			
Approach Vol, veh/h		1095			1173			76				
Approach Delay, s/veh		6.1			4.6			39.5				
Approach LOS		A			A			D				
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	12.1	64.3				76.4		13.6				
Change Period (Y+Rc), s	4.7	5.4				5.4		5.1				
Max Green Setting (Gmax), s	16.3	38.6				59.6		19.9				
Max Q Clear Time (g_c+I1), s	4.6	10.0				7.2		5.2				
Green Ext Time (p_c), s	0.1	9.9				13.7		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			6.4									
HCM 7th LOS			A									

Carson Triangle Residential Project
8: Main St & Carson St

Existing - AM Peak Hour
09/13/2024

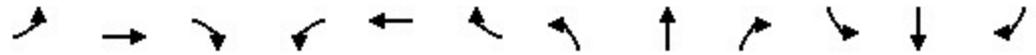


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	385	84	148	670	135	152	691	190	91	661	136
Future Volume (veh/h)	101	385	84	148	670	135	152	691	190	91	661	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	111	423	25	163	736	68	167	759	163	100	726	119
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	136	1308	567	189	1415	615	193	1109	235	142	1038	168
Arrive On Green	0.08	0.37	0.37	0.11	0.40	0.40	0.11	0.27	0.27	0.08	0.24	0.24
Sat Flow, veh/h	1767	3526	1530	1767	3526	1533	1767	4160	883	1767	4372	708
Grp Volume(v), veh/h	111	423	25	163	736	68	167	615	307	100	559	286
Grp Sat Flow(s),veh/h/ln	1767	1763	1530	1767	1763	1533	1767	1689	1667	1767	1689	1703
Q Serve(g_s), s	7.4	10.3	1.3	10.9	19.0	3.3	11.2	19.6	19.9	6.6	18.1	18.5
Cycle Q Clear(g_c), s	7.4	10.3	1.3	10.9	19.0	3.3	11.2	19.6	19.9	6.6	18.1	18.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.53	1.00		0.42
Lane Grp Cap(c), veh/h	136	1308	567	189	1415	615	193	900	444	142	802	404
V/C Ratio(X)	0.82	0.32	0.04	0.86	0.52	0.11	0.86	0.68	0.69	0.70	0.70	0.71
Avail Cap(c_a), veh/h	221	1308	567	221	1415	615	221	971	479	221	971	490
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	54.6	27.0	24.1	52.7	27.2	22.5	52.6	39.5	39.6	53.8	41.8	41.9
Incr Delay (d2), s/veh	4.7	0.7	0.1	22.4	1.4	0.4	23.5	2.1	4.5	2.4	2.1	4.4
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	8.5	4.4	0.5	6.0	8.1	1.3	6.1	8.2	8.5	3.0	7.7	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.3	27.6	24.3	75.1	28.6	22.9	76.1	41.6	44.0	56.2	43.9	46.4
LnGrp LOS	E	C	C	E	C	C	E	D	D	E	D	D
Approach Vol, veh/h		559			967			1089			945	
Approach Delay, s/veh		33.8			36.0			47.5			45.9	
Approach LOS		C			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.9	50.0	14.6	37.5	14.2	53.7	18.1	34.0				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	15.0	34.5	15.0	34.5	15.0	34.5	15.0	34.5				
Max Q Clear Time (g_c+1/2g), s	12.3	12.3	8.6	21.9	9.4	21.0	13.2	20.5				
Green Ext Time (p_c), s	0.0	3.9	0.0	6.0	0.0	5.7	0.0	6.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			41.8									
HCM 7th LOS			D									

Existing (2024), PM Peak Hour

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Existing - PM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	231	271	355	0	0	0	0	912	128	0	878	439
Future Volume (veh/h)	231	271	355	0	0	0	0	912	128	0	878	439
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	248	291	0				0	981	132	0	944	354
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	1252	1287					0	1501	202	0	1698	757
Arrive On Green	0.37	0.37	0.00				0.00	0.48	0.48	0.00	0.48	0.48
Sat Flow, veh/h	3428	3526	1572				0	3209	419	0	3618	1572
Grp Volume(v), veh/h	248	291	0				0	555	558	0	944	354
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1773	0	1763	1572
Q Serve(g_s), s	3.4	3.9	0.0				0.0	16.3	16.3	0.0	13.0	10.3
Cycle Q Clear(g_c), s	3.4	3.9	0.0				0.0	16.3	16.3	0.0	13.0	10.3
Prop In Lane	1.00		1.00				0.00		0.24	0.00		1.00
Lane Grp Cap(c), veh/h	1252	1287					0	849	854	0	1698	757
V/C Ratio(X)	0.20	0.23					0.00	0.65	0.65	0.00	0.56	0.47
Avail Cap(c_a), veh/h	2754	2832					0	1802	1813	0	3604	1608
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	15.0	0.0				0.0	13.4	13.4	0.0	12.6	11.9
Incr Delay (d2), s/veh	0.1	0.1	0.0				0.0	1.2	1.2	0.0	0.4	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
%ile BackOfQ(50%),veh/ln	1.2	1.5	0.0				0.0	5.7	5.8	0.0	4.4	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.0	15.1	0.0				0.0	14.6	14.7	0.0	13.0	12.5
LnGrp LOS	B	B						B	B		B	B
Approach Vol, veh/h		539						1113			1298	
Approach Delay, s/veh		15.0						14.7			12.9	
Approach LOS		B						B			B	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		38.4		30.1		38.4						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		70.0		55.0		70.0						
Max Q Clear Time (g_c+I1), s		18.3		5.9		15.0						
Green Ext Time (p_c), s		14.6		3.0		16.4						

Intersection Summary

HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑↑↑		↘	↑↑↑
Traffic Vol, veh/h	0	0	1041	0	0	1228
Future Vol, veh/h	0	0	1041	0	0	1228
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	1157	0	0	1364

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1703	579	0	0	1158
Stage 1	1158	-	-	-	-
Stage 2	546	-	-	-	-
Critical Hdwy	5.76	7.16	-	-	5.36
Critical Hdwy Stg 1	6.66	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-
Follow-up Hdwy	3.83	3.93	-	-	3.13
Pot Cap-1 Maneuver	133	391	-	-	326
Stage 1	192	-	-	-	-
Stage 2	494	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	133	390	-	-	325
Mov Cap-2 Maneuver	133	-	-	-	-
Stage 1	192	-	-	-	-
Stage 2	494	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	325
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Carson Triangle Residential Project
3: Avalon Blvd & 213th St

Existing - PM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑↑		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	203	365	98	104	125	51	92	795	213	137	930	184
Future Volume (veh/h)	203	365	98	104	125	51	92	795	213	137	930	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	216	388	82	111	133	-98	98	846	208	146	989	179
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	480	586	491	183	1113	9999	127	1853	453	172	2082	376
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.00	0.07	0.46	0.46	0.10	0.48	0.48
Sat Flow, veh/h	1359	1856	1555	915	3618	0	1767	4049	989	1767	4312	779
Grp Volume(v), veh/h	216	388	82	111	35	0	98	705	349	146	774	394
Grp Sat Flow(s),veh/h/ln	1359	1856	1555	915	1763	0	1767	1689	1661	1767	1689	1714
Q Serve(g_s), s	15.7	21.7	4.6	14.3	0.8	0.0	6.5	17.2	17.3	9.8	18.5	18.5
Cycle Q Clear(g_c), s	16.5	21.7	4.6	36.0	0.8	0.0	6.5	17.2	17.3	9.8	18.5	18.5
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.60	1.00		0.45
Lane Grp Cap(c), veh/h	480	586	491	183	1113	0	127	1546	760	172	1631	828
V/C Ratio(X)	0.45	0.66	0.17	0.61	0.03	0.00	0.77	0.46	0.46	0.85	0.47	0.48
Avail Cap(c_a), veh/h	498	611	512	196	1160	0	184	1546	760	184	1631	828
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.19	0.19	0.19	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	35.5	29.7	51.1	28.4	0.0	54.7	22.3	22.3	53.3	20.8	20.8
Incr Delay (d2), s/veh	0.7	2.5	0.2	4.7	0.0	0.0	1.2	0.2	0.4	26.3	1.0	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	10.2	1.7	3.5	0.4	0.0	2.9	6.7	6.7	5.5	7.3	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.7	38.1	29.8	55.8	28.4	0.0	55.9	22.5	22.7	79.6	21.8	22.8
LnGrp LOS	C	D	C	E	C		E	C	C	E	C	C
Approach Vol, veh/h		686			146			1152			1314	
Approach Delay, s/veh		36.0			49.2			25.4			28.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.2	63.4		43.4	16.2	60.4		43.4				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+I1), s	8.5	20.5		23.7	11.8	19.3		38.0				
Green Ext Time (p_c), s	0.0	13.3		3.1	0.0	11.9		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh											29.9	
HCM 7th LOS											C	

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Existing - PM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↓		↔↔	↑↓		↔↔↔	↑↑↑		↔↔↔	↑↑↑	
Traffic Volume (veh/h)	190	825	86	245	534	97	96	719	519	225	720	178
Future Volume (veh/h)	190	825	86	245	534	97	96	719	519	225	720	178
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	204	887	83	263	574	95	103	773	471	242	774	164
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	285	1079	101	320	1032	170	143	915	406	228	1332	279
Arrive On Green	0.08	0.33	0.33	0.09	0.34	0.34	0.08	0.27	0.27	0.17	0.42	0.42
Sat Flow, veh/h	3428	3253	304	3428	3020	498	1767	3377	1499	1767	4171	874
Grp Volume(v), veh/h	204	481	489	263	334	335	103	773	471	242	625	313
Grp Sat Flow(s),veh/h/ln	1714	1763	1794	1714	1763	1756	1767	1689	1499	1767	1689	1668
Q Serve(g_s), s	7.0	30.1	30.1	9.0	18.5	18.6	6.8	26.0	32.5	15.5	17.0	17.2
Cycle Q Clear(g_c), s	7.0	30.1	30.1	9.0	18.5	18.6	6.8	26.0	32.5	15.5	17.0	17.2
Prop In Lane	1.00		0.17	1.00		0.28	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	285	585	595	320	602	600	143	915	406	228	1078	533
V/C Ratio(X)	0.71	0.82	0.82	0.82	0.55	0.56	0.72	0.85	1.16	1.06	0.58	0.59
Avail Cap(c_a), veh/h	471	585	595	471	602	600	228	915	406	228	1078	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	53.6	36.9	36.9	53.4	32.1	32.1	53.9	41.4	43.8	49.7	28.4	28.5
Incr Delay (d2), s/veh	1.3	12.3	12.2	4.6	3.7	3.7	2.6	7.6	96.2	71.7	0.8	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	14.7	14.9	4.1	8.4	8.4	3.1	11.6	22.6	11.0	6.3	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.9	49.2	49.0	58.0	35.7	35.8	56.4	49.0	139.9	121.4	29.2	30.2
LnGrp LOS	D	D	D	E	D	D	E	D	F	F	C	C
Approach Vol, veh/h		1174			932			1347			1180	
Approach Delay, s/veh		50.1			42.0			81.3			48.4	
Approach LOS		D			D			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.5	46.5	20.0	38.0	16.7	45.3	14.2	43.8				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	16.5	34.5	15.5	32.5	16.5	34.5	15.5	32.5				
Max Q Clear Time (g_c+19), s	19.0	20.6	17.5	34.5	11.0	32.1	8.8	19.2				
Green Ext Time (p_c), s	0.1	4.6	0.0	0.0	0.2	1.6	0.0	6.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			57.1									
HCM 7th LOS			E									

Carson Triangle Residential Project
5: Avalon Blvd & 220th St

Existing - PM Peak Hour
09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (veh/h)	76	105	48	37	43	54	33	1098	49	74	866	62
Future Volume (veh/h)	76	105	48	37	43	54	33	1098	49	74	866	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	119	40	42	49	59	38	1193	53	80	941	67
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	184	193	65	144	112	134	425	2644	1169	335	2644	1179
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.75	0.75	0.75	0.75	0.75	0.75
Sat Flow, veh/h	1267	1188	399	1211	686	826	555	3526	1559	443	3526	1572
Grp Volume(v), veh/h	83	0	159	42	0	108	38	1193	53	80	941	67
Grp Sat Flow(s),veh/h/ln1267	0	1587	1211	0	1512	555	1763	1559	443	1763	1572	
Q Serve(g_s), s	7.6	0.0	11.2	4.0	0.0	7.7	3.0	15.4	1.1	10.0	10.9	1.3
Cycle Q Clear(g_c), s	15.3	0.0	11.2	15.2	0.0	7.7	13.9	15.4	1.1	25.4	10.9	1.3
Prop In Lane	1.00		0.25	1.00		0.55	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	184	0	258	144	0	246	425	2644	1169	335	2644	1179
V/C Ratio(X)	0.45	0.00	0.62	0.29	0.00	0.44	0.09	0.45	0.05	0.24	0.36	0.06
Avail Cap(c_a), veh/h	332	0	443	285	0	422	425	2644	1169	335	2644	1179
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	0.0	46.8	53.8	0.0	45.3	7.5	5.7	3.9	10.5	5.1	3.9
Incr Delay (d2), s/veh	1.7	0.0	2.4	1.1	0.0	1.2	0.4	0.6	0.1	1.7	0.4	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/ln2.5	0.0	0.0	4.6	1.3	0.0	3.0	0.4	4.9	0.3	1.1	3.6	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.9	0.0	49.1	54.9	0.0	46.5	7.9	6.2	4.0	12.1	5.5	4.0
LnGrp LOS	D		D	D		D	A	A	A	B	A	A
Approach Vol, veh/h		242			150			1284			1088	
Approach Delay, s/veh		50.8			48.9			6.2			5.9	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		95.5		24.5		95.5		24.5				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+1), s		17.4		17.3		27.4		17.2				
Green Ext Time (p_c), s		10.1		1.0		0.0		0.6				

Intersection Summary

HCM 7th Control Delay, s/veh	12.3
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	7	651	18	12	266	7	8	0	6	10	0	6
Future Vol, veh/h	7	651	18	12	266	7	8	0	6	10	0	6
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	740	20	13	302	8	9	0	7	11	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	311	0	0	759	0	0	944	1103	380	719	1109	157
Stage 1	-	-	-	-	-	-	765	765	-	333	333	-
Stage 2	-	-	-	-	-	-	178	337	-	386	775	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	1239	-	-	842	-	-	215	209	615	314	207	857
Stage 1	-	-	-	-	-	-	359	408	-	651	640	-
Stage 2	-	-	-	-	-	-	803	637	-	606	404	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1238	-	-	842	-	-	208	203	615	303	201	856
Mov Cap-2 Maneuver	-	-	-	-	-	-	208	203	-	303	201	-
Stage 1	-	-	-	-	-	-	356	404	-	640	628	-
Stage 2	-	-	-	-	-	-	783	626	-	595	400	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.14			0.51			18.07			14.44		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	291	36	-	-	140	-	-	399
HCM Lane V/C Ratio	0.052	0.006	-	-	0.015	-	-	0.046
HCM Control Delay (s/veh)	18.1	7.9	0.1	-	9.3	0.1	-	14.4
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Carson Triangle Residential Project
 7: I-405 SB Ramps/Gas Station Driveway & Carson St

Existing - PM Peak Hour
 09/13/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗↗		↖		↖			
Traffic Volume (veh/h)	4	1052	911	63	800	11	39	0	67	0	0	3
Future Volume (veh/h)	4	1052	911	63	800	11	39	0	67	0	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	4	1143	850	68	870	12	42	0	-125			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	577	2810	1158	160	4840	67	2	0	2			
Arrive On Green	0.80	0.80	0.80	0.09	0.94	0.94	0.00	0.00	0.00			
Sat Flow, veh/h	624	3526	1565	1767	5149	71	1767	0	1572			
Grp Volume(v), veh/h	4	1143	850	68	570	312	42	0	-125			
Grp Sat Flow(s),veh/h/ln	624	1763	1565	1767	1689	1842	1767	0	1572			
Q Serve(g_s), s	0.1	8.8	27.8	3.3	1.1	1.1	0.1	0.0	0.0			
Cycle Q Clear(g_c), s	0.1	8.8	27.8	3.3	1.1	1.1	0.1	0.0	0.0			
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00			
Lane Grp Cap(c), veh/h	577	2810	1158	160	3174	1732	2	0	2			
V/C Ratio(X)	0.01	0.41	0.73	0.42	0.18	0.18	21.39	0.00	-71.54			
Avail Cap(c_a), veh/h	577	2810	1158	320	3174	1732	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	1.9	2.7	6.6	38.7	0.2	0.2	45.0	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.4	4.1	1.8	0.1	0.2	9378.3	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.6	4.5	1.4	0.1	0.1	5.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	1.9	3.2	10.8	40.5	0.3	0.4	9423.3	0.0	0.0			
LnGrp LOS	A	A	B	D	A	A	F					
Approach Vol, veh/h		1997			950			-83				
Approach Delay, s/veh		6.4			3.2			0.0				
Approach LOS		A			A			A				
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	12.9	77.1				90.0		0.0				
Change Period (Y+Rc), s	4.7	5.4				5.4		5.1				
Max Green Setting (Gmax), s	16.3	38.6				59.6		19.9				
Max Q Clear Time (g_c+I1), s	5.3	29.8				3.1		2.1				
Green Ext Time (p_c), s	0.1	7.5				9.9		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			5.5									
HCM 7th LOS			A									

Carson Triangle Residential Project
8: Main St & Carson St

Existing - PM Peak Hour
09/13/2024

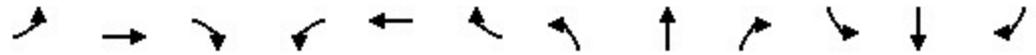


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	827	99	137	525	110	169	445	198	193	703	124
Future Volume (veh/h)	111	827	99	137	525	110	169	445	198	193	703	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	122	909	42	151	577	41	186	489	172	212	773	106
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	148	1281	555	177	1340	582	212	845	285	236	1083	147
Arrive On Green	0.08	0.36	0.36	0.10	0.38	0.38	0.12	0.23	0.23	0.13	0.24	0.24
Sat Flow, veh/h	1767	3526	1529	1767	3526	1532	1767	3708	1252	1767	4491	611
Grp Volume(v), veh/h	122	909	42	151	577	41	186	444	217	212	580	299
Grp Sat Flow(s),veh/h/ln	1767	1763	1529	1767	1763	1532	1767	1689	1583	1767	1689	1724
Q Serve(g_s), s	8.2	26.5	2.2	10.1	14.6	2.0	12.4	14.0	14.8	14.2	18.9	19.1
Cycle Q Clear(g_c), s	8.2	26.5	2.2	10.1	14.6	2.0	12.4	14.0	14.8	14.2	18.9	19.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.79	1.00		0.35
Lane Grp Cap(c), veh/h	148	1281	555	177	1340	582	212	770	361	236	814	416
V/C Ratio(X)	0.83	0.71	0.08	0.85	0.43	0.07	0.88	0.58	0.60	0.90	0.71	0.72
Avail Cap(c_a), veh/h	236	1281	555	236	1340	582	236	971	455	236	971	496
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	54.1	32.8	25.0	53.1	27.6	23.7	51.9	41.2	41.5	51.2	41.7	41.8
Incr Delay (d2), s/veh	6.1	3.4	0.3	15.9	1.0	0.2	25.3	1.0	2.3	32.5	2.4	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	11.7	0.8	5.2	6.2	0.8	6.9	5.8	5.9	8.3	8.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.2	36.1	25.3	69.0	28.6	23.9	77.2	42.1	43.8	83.7	44.1	46.6
LnGrp LOS	E	D	C	E	C	C	E	D	D	F	D	D
Approach Vol, veh/h		1073			769			847			1091	
Approach Delay, s/veh		38.4			36.3			50.2			52.5	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	49.1	21.0	32.9	15.0	51.1	19.4	34.4				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	16.0	32.5	16.0	34.5	16.0	32.5	16.0	34.5				
Max Q Clear Time (g_c+1/2), s	11.2	28.5	16.2	16.8	10.2	16.6	14.4	21.1				
Green Ext Time (p_c), s	0.0	2.6	0.0	5.3	0.0	4.7	0.0	6.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			44.7									
HCM 7th LOS			D									

Future Base (2026), AM Peak Hour

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Future Base - AM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	505	138	553	0	0	0	0	1233	107	0	666	387
Future Volume (veh/h)	505	138	553	0	0	0	0	1233	107	0	666	387
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	543	148	0				0	1326	109	0	716	298
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	1039	1068					0	1878	154	0	2009	896
Arrive On Green	0.30	0.30	0.00				0.00	0.57	0.57	0.00	0.57	0.57
Sat Flow, veh/h	3428	3526	1572				0	3388	270	0	3618	1572
Grp Volume(v), veh/h	543	148	0				0	707	728	0	716	298
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1802	0	1763	1572
Q Serve(g_s), s	10.8	2.5	0.0				0.0	23.8	24.0	0.0	9.0	8.3
Cycle Q Clear(g_c), s	10.8	2.5	0.0				0.0	23.8	24.0	0.0	9.0	8.3
Prop In Lane	1.00		1.00				0.00		0.15	0.00		1.00
Lane Grp Cap(c), veh/h	1039	1068					0	1005	1027	0	2009	896
V/C Ratio(X)	0.52	0.14					0.00	0.70	0.71	0.00	0.36	0.33
Avail Cap(c_a), veh/h	2285	2349					0	1495	1529	0	2990	1334
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	20.9	0.0				0.0	12.8	12.8	0.0	9.6	9.4
Incr Delay (d2), s/veh	0.4	0.1	0.0				0.0	1.3	1.3	0.0	0.2	0.3
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	4.3	1.0	0.0				0.0	8.3	8.6	0.0	3.1	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.2	21.0	0.0				0.0	14.0	14.1	0.0	9.7	9.7
LnGrp LOS	C	C						B	B		A	A
Approach Vol, veh/h		691						1435			1014	
Approach Delay, s/veh		23.5						14.1			9.7	
Approach LOS		C						B			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		52.4		30.1		52.4						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		70.0		55.0		70.0						
Max Q Clear Time (g_c+I1), s		26.0		12.8		11.0						
Green Ext Time (p_c), s		21.0		3.2		11.1						

Intersection Summary

HCM 7th Control Delay, s/veh	14.8
HCM 7th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Traffic Vol, veh/h	0	3	1295	2	6	1060
Future Vol, veh/h	0	3	1295	2	6	1060
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	3	1439	2	7	1178

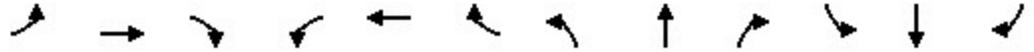
Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1925	722	0	0	1442
Stage 1	1441	-	-	-	-
Stage 2	484	-	-	-	-
Critical Hdwy	5.76	7.16	-	-	5.36
Critical Hdwy Stg 1	6.66	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-
Follow-up Hdwy	3.83	3.93	-	-	3.13
Pot Cap-1 Maneuver	102	315	-	-	236
Stage 1	128	-	-	-	-
Stage 2	532	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	99	315	-	-	236
Mov Cap-2 Maneuver	99	-	-	-	-
Stage 1	128	-	-	-	-
Stage 2	517	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	16.56	0	0.12
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	315	236
HCM Lane V/C Ratio	-	-	0.011	0.028
HCM Control Delay (s/veh)	-	-	16.6	20.7
HCM Lane LOS	-	-	C	C
HCM 95th %tile Q(veh)	-	-	0	0.1

Carson Triangle Residential Project
3: Avalon Blvd & 213th St

Future Base - AM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↑↑		↘	↑↑↑		↘	↑↑↑	
Traffic Volume (veh/h)	176	188	100	126	206	207	128	924	179	81	896	145
Future Volume (veh/h)	176	188	100	126	206	207	128	924	179	81	896	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	187	200	84	134	219	68	136	983	171	86	953	137
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	276	497	416	254	713	216	162	2307	400	125	2289	328
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.09	0.53	0.53	0.07	0.51	0.51
Sat Flow, veh/h	1081	1856	1555	1084	2664	806	1767	4333	752	1767	4475	641
Grp Volume(v), veh/h	187	200	84	134	143	144	136	766	388	86	719	371
Grp Sat Flow(s),veh/h/ln	1081	1856	1555	1084	1763	1707	1767	1689	1708	1767	1689	1739
Q Serve(g_s), s	20.1	10.6	5.0	13.9	7.8	8.1	9.1	16.4	16.5	5.7	15.8	15.9
Cycle Q Clear(g_c), s	28.2	10.6	5.0	24.5	7.8	8.1	9.1	16.4	16.5	5.7	15.8	15.9
Prop In Lane	1.00		1.00	1.00		0.47	1.00		0.44	1.00		0.37
Lane Grp Cap(c), veh/h	276	497	416	254	472	457	162	1798	909	125	1728	890
V/C Ratio(X)	0.68	0.40	0.20	0.53	0.30	0.32	0.84	0.43	0.43	0.69	0.42	0.42
Avail Cap(c_a), veh/h	343	611	512	321	580	562	184	1798	909	184	1728	890
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	0.20	0.20	0.20	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.4	36.1	34.0	46.1	35.0	35.2	53.6	17.0	17.0	54.5	18.2	18.2
Incr Delay (d2), s/veh	3.8	0.5	0.2	1.7	0.4	0.4	5.6	0.1	0.3	2.5	0.7	1.4
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	5.7	4.9	1.9	3.9	3.4	3.4	4.3	6.2	6.3	2.6	6.2	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.2	36.6	34.3	47.8	35.4	35.5	59.3	17.1	17.3	57.0	18.9	19.6
LnGrp LOS	D	D	C	D	D	D	E	B	B	E	B	B
Approach Vol, veh/h		471			421			1290			1176	
Approach Delay, s/veh		41.6			39.4			21.6			21.9	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.5	66.9		37.6	13.0	69.4		37.6				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+I1), s	11.1	17.9		30.2	7.7	18.5		26.5				
Green Ext Time (p_c), s	0.0	12.5		1.6	0.0	13.4		1.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			26.8									
HCM 7th LOS			C									

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Future Base - AM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↔		↔↔	↑↔		↔↑↑↔			↔↑↑↔		
Traffic Volume (veh/h)	156	632	86	244	735	163	97	819	394	191	694	161
Future Volume (veh/h)	156	632	86	244	735	163	97	819	394	191	694	161
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	168	680	83	262	790	166	104	881	337	205	746	146
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	285	1135	138	319	1067	224	143	954	363	184	1237	239
Arrive On Green	0.08	0.36	0.36	0.09	0.37	0.37	0.08	0.27	0.27	0.14	0.39	0.39
Sat Flow, veh/h	3428	3157	385	3428	2890	607	1767	3554	1354	1767	4236	819
Grp Volume(v), veh/h	168	379	384	262	482	474	104	837	381	205	593	299
Grp Sat Flow(s),veh/h/ln	1714	1763	1779	1714	1763	1735	1767	1689	1530	1767	1689	1678
Q Serve(g_s), s	5.7	21.1	21.1	9.0	28.5	28.5	6.9	28.9	29.1	12.5	16.8	17.1
Cycle Q Clear(g_c), s	5.7	21.1	21.1	9.0	28.5	28.5	6.9	28.9	29.1	12.5	16.8	17.1
Prop In Lane	1.00		0.22	1.00		0.35	1.00		0.88	1.00		0.49
Lane Grp Cap(c), veh/h	285	634	639	319	651	641	143	907	411	184	986	490
V/C Ratio(X)	0.59	0.60	0.60	0.82	0.74	0.74	0.73	0.92	0.93	1.11	0.60	0.61
Avail Cap(c_a), veh/h	443	634	639	443	651	641	184	915	414	184	986	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	53.1	31.4	31.4	53.5	32.8	32.8	53.9	42.7	42.7	51.7	31.1	31.2
Incr Delay (d2), s/veh	0.7	4.1	4.1	6.0	7.4	7.5	6.4	14.7	27.1	95.7	1.1	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	9.6	9.7	4.1	13.2	13.0	3.3	13.7	13.9	10.2	6.4	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.8	35.5	35.5	59.5	40.2	40.4	60.3	57.4	69.9	147.4	32.2	33.5
LnGrp LOS	D	D	D	E	D	D	E	E	E	F	C	C
Approach Vol, veh/h		931			1218			1322			1097	
Approach Delay, s/veh		38.8			44.4			61.2			54.1	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	49.8	17.0	37.7	16.7	48.6	14.2	40.5				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	15.5	38.5	12.5	32.5	15.5	38.5	12.5	32.5				
Max Q Clear Time (g_c+1), s	17.5	30.5	14.5	31.1	11.0	23.1	8.9	19.1				
Green Ext Time (p_c), s	0.1	4.6	0.0	1.1	0.1	5.6	0.0	6.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			50.5									
HCM 7th LOS			D									

Carson Triangle Residential Project
5: Avalon Blvd & 220th St

Future Base - AM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	124	46	82	81	124	40	1058	73	116	809	40
Future Volume (veh/h)	74	124	46	82	81	124	40	1058	73	116	809	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	80	141	37	93	92	135	45	1150	80	126	879	43
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	168	294	77	221	141	207	406	2401	1061	297	2401	1071
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1141	1269	333	1192	609	893	601	3526	1557	449	3526	1572
Grp Volume(v), veh/h	80	0	178	93	0	227	45	1150	80	126	879	43
Grp Sat Flow(s),veh/h/ln	1141	0	1602	1192	0	1502	601	1763	1557	449	1763	1572
Q Serve(g_s), s	8.2	0.0	11.5	8.8	0.0	16.4	4.1	18.5	2.1	22.1	12.7	1.1
Cycle Q Clear(g_c), s	24.6	0.0	11.5	20.3	0.0	16.4	16.8	18.5	2.1	40.7	12.7	1.1
Prop In Lane	1.00		0.21	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	168	0	371	221	0	348	406	2401	1061	297	2401	1071
V/C Ratio(X)	0.48	0.00	0.48	0.42	0.00	0.65	0.11	0.48	0.08	0.42	0.37	0.04
Avail Cap(c_a), veh/h	222	0	447	278	0	419	406	2401	1061	297	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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	0.0	39.9	48.7	0.0	41.8	11.7	9.1	6.4	18.7	8.1	6.3
Incr Delay (d2), s/veh	2.1	0.0	1.0	1.3	0.0	2.7	0.6	0.7	0.1	4.4	0.4	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	2.4	0.0	4.7	2.7	0.0	6.4	0.6	6.6	0.7	2.6	4.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.0	0.0	40.8	49.9	0.0	44.4	12.3	9.7	6.6	23.1	8.6	6.3
LnGrp LOS	D		D	D		D	B	A	A	C	A	A
Approach Vol, veh/h		258			320			1275			1048	
Approach Delay, s/veh		45.2			46.0			9.6			10.2	
Approach LOS		D			D			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.2		32.8		87.2		32.8				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+I1), s		20.5		26.6		42.7		22.3				
Green Ext Time (p_c), s		9.7		0.7		0.0		1.3				

Intersection Summary

HCM 7th Control Delay, s/veh	17.0
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	15	352	7	5	528	11	2	0	0	9	0	4
Future Vol, veh/h	15	352	7	5	528	11	2	0	0	9	0	4
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	400	8	5	600	13	2	0	0	10	0	5

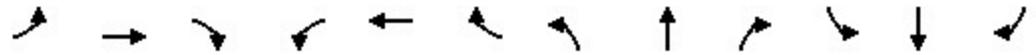
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	614	0	0	408	0	0	750	1062	204	852	1060	308
Stage 1	-	-	-	-	-	-	438	438	-	618	618	-
Stage 2	-	-	-	-	-	-	312	624	-	234	442	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	955	-	-	1141	-	-	298	220	800	251	221	685
Stage 1	-	-	-	-	-	-	565	575	-	441	476	-
Stage 2	-	-	-	-	-	-	671	473	-	745	572	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	954	-	-	1141	-	-	288	215	800	245	215	683
Mov Cap-2 Maneuver	-	-	-	-	-	-	288	215	-	245	215	-
Stage 1	-	-	-	-	-	-	553	563	-	438	473	-
Stage 2	-	-	-	-	-	-	662	470	-	730	561	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.51			0.12			17.58			17.41		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	288	141	-	-	31	-	-	305
HCM Lane V/C Ratio	0.008	0.018	-	-	0.005	-	-	0.048
HCM Control Delay (s/veh)	17.6	8.8	0.2	-	8.2	0	-	17.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.2

Carson Triangle Residential Project
 7: I-405 SB Ramps/Gas Station Driveway & Carson St

Future Base - AM Peak Hour
 09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘		↗			
Traffic Volume (veh/h)	7	698	542	68	1107	4	81	0	219	0	0	2
Future Volume (veh/h)	7	698	542	68	1107	4	81	0	219	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	8	759	449	74	1203	4	88	0	40			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	369	2224	1153	165	4048	13	188	0	168			
Arrive On Green	0.63	0.63	0.63	0.09	0.78	0.78	0.11	0.00	0.11			
Sat Flow, veh/h	459	3526	1563	1767	5212	17	1767	0	1572			
Grp Volume(v), veh/h	8	759	449	74	779	428	88	0	40			
Grp Sat Flow(s),veh/h/ln	459	1763	1563	1767	1689	1852	1767	0	1572			
Q Serve(g_s), s	0.6	9.1	9.5	3.6	6.0	6.0	4.2	0.0	2.1			
Cycle Q Clear(g_c), s	0.6	9.1	9.5	3.6	6.0	6.0	4.2	0.0	2.1			
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00			
Lane Grp Cap(c), veh/h	369	2224	1153	165	2623	1439	188	0	168			
V/C Ratio(X)	0.02	0.34	0.39	0.45	0.30	0.30	0.47	0.00	0.24			
Avail Cap(c_a), veh/h	369	2224	1153	320	2623	1439	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	6.2	7.8	4.4	38.6	2.9	2.9	37.8	0.0	36.9			
Incr Delay (d2), s/veh	0.1	0.4	1.0	1.9	0.3	0.5	1.8	0.0	0.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.1	3.0	4.0	1.6	1.2	1.4	1.9	0.0	0.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.3	8.2	5.3	40.5	3.2	3.4	39.6	0.0	37.6			
LnGrp LOS	A	A	A	D	A	A	D		D			
Approach Vol, veh/h		1216			1281			128				
Approach Delay, s/veh		7.2			5.4			39.0				
Approach LOS		A			A			D				
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	13.1	62.2				75.3		14.7				
Change Period (Y+Rc), s	4.7	5.4				5.4		5.1				
Max Green Setting (Gmax), s	16.3	38.6				59.6		19.9				
Max Q Clear Time (g_c+I1), s	5.6	11.5				8.0		6.2				
Green Ext Time (p_c), s	0.1	11.0				15.4		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			7.9									
HCM 7th LOS			A									

Carson Triangle Residential Project
8: Main St & Carson St

Future Base - AM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	477	97	195	742	145	166	796	212	98	756	149
Future Volume (veh/h)	200	477	97	195	742	145	166	796	212	98	756	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	220	524	40	214	815	79	182	875	187	108	831	134
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	221	1166	505	221	1166	505	208	1200	255	143	1102	176
Arrive On Green	0.13	0.33	0.33	0.13	0.33	0.33	0.12	0.29	0.29	0.08	0.25	0.25
Sat Flow, veh/h	1767	3526	1527	1767	3526	1529	1767	4161	884	1767	4381	701
Grp Volume(v), veh/h	220	524	40	214	815	79	182	709	353	108	639	326
Grp Sat Flow(s),veh/h/ln	1767	1763	1527	1767	1763	1529	1767	1689	1668	1767	1689	1705
Q Serve(g_s), s	14.9	14.0	2.2	14.5	24.2	4.4	12.2	22.7	22.9	7.2	21.0	21.2
Cycle Q Clear(g_c), s	14.9	14.0	2.2	14.5	24.2	4.4	12.2	22.7	22.9	7.2	21.0	21.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.53	1.00		0.41
Lane Grp Cap(c), veh/h	221	1166	505	221	1166	505	208	974	481	143	850	429
V/C Ratio(X)	1.00	0.45	0.08	0.97	0.70	0.16	0.87	0.73	0.73	0.75	0.75	0.76
Avail Cap(c_a), veh/h	221	1166	505	221	1166	505	221	974	481	221	971	490
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	52.5	31.6	27.6	52.3	35.0	28.3	52.1	38.5	38.5	54.0	41.5	41.5
Incr Delay (d2), s/veh	59.3	1.3	0.3	51.3	3.5	0.7	27.4	3.0	6.2	3.0	3.3	6.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	6.1	0.8	9.5	10.8	1.7	6.9	9.6	10.0	3.3	9.0	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	111.8	32.8	27.9	103.5	38.5	29.0	79.4	41.5	44.7	57.0	44.8	48.2
LnGrp LOS	F	C	C	F	D	C	E	D	D	E	D	D
Approach Vol, veh/h		784		1108		1244		1073				
Approach Delay, s/veh		54.7		50.4		48.0		47.0				
Approach LOS		D		D		D		D				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	45.2	14.7	40.1	20.0	45.2	19.1	35.7				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	15.0	34.5	15.0	34.5	15.0	34.5	15.0	34.5				
Max Q Clear Time (g_c+110), s	16.0	16.0	9.2	24.9	16.9	26.2	14.2	23.2				
Green Ext Time (p_c), s	0.0	4.6	0.0	5.6	0.0	4.5	0.0	6.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			49.6									
HCM 7th LOS			D									

Future Base (2026), PM Peak Hour

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Future Base - PM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	445	583	641	0	0	0	0	1151	167	0	1083	749
Future Volume (veh/h)	445	583	641	0	0	0	0	1151	167	0	1083	749
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	478	627	0				0	1238	174	0	1165	687
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	967	994					0	1859	260	0	2114	943
Arrive On Green	0.28	0.28	0.00				0.00	0.60	0.60	0.00	0.60	0.60
Sat Flow, veh/h	3428	3526	1572				0	3193	433	0	3618	1572
Grp Volume(v), veh/h	478	627	0				0	701	711	0	1165	687
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1770	0	1763	1572
Q Serve(g_s), s	10.3	13.8	0.0				0.0	23.4	23.8	0.0	17.5	27.5
Cycle Q Clear(g_c), s	10.3	13.8	0.0				0.0	23.4	23.8	0.0	17.5	27.5
Prop In Lane	1.00		1.00				0.00		0.24	0.00		1.00
Lane Grp Cap(c), veh/h	967	994					0	1057	1062	0	2114	943
V/C Ratio(X)	0.49	0.63					0.00	0.66	0.67	0.00	0.55	0.73
Avail Cap(c_a), veh/h	2127	2187					0	1392	1398	0	2783	1241
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	27.8	0.0				0.0	11.8	11.9	0.0	10.6	12.6
Incr Delay (d2), s/veh	0.4	0.7	0.0				0.0	1.0	1.1	0.0	0.3	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	5.7	0.0				0.0	8.2	8.3	0.0	6.0	8.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.0	28.5	0.0				0.0	12.8	13.0	0.0	10.9	14.5
LnGrp LOS	C	C						B	B		B	B
Approach Vol, veh/h		1105						1412			1852	
Approach Delay, s/veh		27.8						12.9			12.3	
Approach LOS		C						B			B	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		58.6		30.1		58.6						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		70.0		55.0		70.0						
Max Q Clear Time (g_c+I1), s		25.8		15.8		29.5						
Green Ext Time (p_c), s		20.6		7.2		23.6						

Intersection Summary

HCM 7th Control Delay, s/veh	16.4
HCM 7th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Traffic Vol, veh/h	0	0	1273	0	0	1458
Future Vol, veh/h	0	0	1273	0	0	1458
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	1414	0	0	1620

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2063	708	0	0	1415	0
Stage 1	1415	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Critical Hdwy	5.76	7.16	-	-	5.36	-
Critical Hdwy Stg 1	6.66	-	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-	-
Follow-up Hdwy	3.83	3.93	-	-	3.13	-
Pot Cap-1 Maneuver	86	322	-	-	243	-
Stage 1	133	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	85	321	-	-	243	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	132	-	-	-	-	-
Stage 2	437	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	243
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Carson Triangle Residential Project
3: Avalon Blvd & 213th St

Future Base - PM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	413	116	124	161	89	111	983	251	169	1205	207
Future Volume (veh/h)	218	413	116	124	161	89	111	983	251	169	1205	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	232	439	101	132	171	-57	118	1046	248	180	1282	203
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	448	611	512	164	1160	0	143	1784	422	184	2030	321
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.00	0.08	0.44	0.44	0.10	0.46	0.46
Sat Flow, veh/h	1266	1856	1556	858	3618	0	1767	4077	965	1767	4407	698
Grp Volume(v), veh/h	232	439	101	132	114	0	118	866	428	180	982	503
Grp Sat Flow(s),veh/h/ln	1266	1856	1556	858	1763	0	1767	1689	1665	1767	1689	1728
Q Serve(g_s), s	18.7	24.9	5.6	14.6	2.7	0.0	7.9	23.3	23.3	12.2	26.5	26.6
Cycle Q Clear(g_c), s	21.4	24.9	5.6	39.5	2.7	0.0	7.9	23.3	23.3	12.2	26.5	26.6
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.58	1.00		0.40
Lane Grp Cap(c), veh/h	448	611	512	164	1160	0	143	1477	728	184	1555	796
V/C Ratio(X)	0.52	0.72	0.20	0.80	0.10	0.00	0.82	0.59	0.59	0.98	0.63	0.63
Avail Cap(c_a), veh/h	448	611	512	164	1160	0	184	1477	728	184	1555	796
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	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	35.4	28.9	54.3	27.9	0.0	54.3	25.5	25.5	53.6	24.6	24.6
Incr Delay (d2), s/veh	1.0	4.1	0.2	24.5	0.0	0.0	1.8	0.2	0.3	59.4	2.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	11.9	2.1	5.1	1.2	0.0	3.5	9.1	9.1	8.4	10.7	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.4	39.4	29.1	78.8	27.9	0.0	56.0	25.7	25.9	113.1	26.6	28.4
LnGrp LOS	D	D	C	E	C		E	C	C	F	C	C
Approach Vol, veh/h		772			246			1412			1665	
Approach Delay, s/veh		37.2			55.2			28.3			36.5	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	60.8		45.0	17.0	58.0		45.0				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+I1), s	9.9	28.6		26.9	14.2	25.3		41.5				
Green Ext Time (p_c), s	0.0	14.9		3.3	0.0	13.9		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh				34.9								
HCM 7th LOS				C								

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Future Base - PM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	200	913	105	255	634	198	106	877	560	269	877	246
Future Volume (veh/h)	200	913	105	255	634	198	106	877	560	269	877	246
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	215	982	104	274	682	204	114	943	515	289	943	238
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	285	1054	112	331	910	272	144	915	406	228	1277	321
Arrive On Green	0.08	0.33	0.33	0.10	0.34	0.34	0.08	0.27	0.27	0.17	0.42	0.42
Sat Flow, veh/h	3428	3210	340	3428	2663	796	1767	3377	1499	1767	4008	1008
Grp Volume(v), veh/h	215	539	547	274	451	435	114	943	515	289	794	387
Grp Sat Flow(s),veh/h/ln	1714	1763	1787	1714	1763	1696	1767	1689	1499	1767	1689	1639
Q Serve(g_s), s	7.4	35.5	35.5	9.4	27.2	27.2	7.6	32.5	32.5	15.5	23.7	23.8
Cycle Q Clear(g_c), s	7.4	35.5	35.5	9.4	27.2	27.2	7.6	32.5	32.5	15.5	23.7	23.8
Prop In Lane	1.00		0.19	1.00		0.47	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	285	579	587	331	602	580	144	915	406	228	1076	522
V/C Ratio(X)	0.75	0.93	0.93	0.83	0.75	0.75	0.79	1.03	1.27	1.27	0.74	0.74
Avail Cap(c_a), veh/h	471	579	587	471	602	580	228	915	406	228	1076	522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.65	0.65	0.65
Uniform Delay (d), s/veh	53.8	39.0	39.0	53.2	34.9	35.0	54.1	43.7	43.8	49.7	30.4	30.4
Incr Delay (d2), s/veh	1.5	23.8	23.6	5.6	8.3	8.6	3.7	38.0	139.1	140.5	1.9	4.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	18.8	19.0	4.3	12.8	12.4	3.5	18.1	27.5	15.4	9.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.3	62.8	62.6	58.8	43.3	43.6	57.8	81.7	182.8	190.2	32.3	34.4
LnGrp LOS	E	E	E	E	D	D	E	F	F	F	C	C
Approach Vol, veh/h		1301			1160			1572			1470	
Approach Delay, s/veh		61.5			47.1			113.1			63.9	
Approach LOS		E			D			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	46.5	20.0	38.0	17.1	44.9	14.3	43.7				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	16.5	34.5	15.5	32.5	16.5	34.5	15.5	32.5				
Max Q Clear Time (g_c+I), s	19.4	29.2	17.5	34.5	11.4	37.5	9.6	25.8				
Green Ext Time (p_c), s	0.2	3.1	0.0	0.0	0.2	0.0	0.0	4.7				
Intersection Summary												
HCM 7th Control Delay, s/veh											73.8	
HCM 7th LOS											E	

Carson Triangle Residential Project
5: Avalon Blvd & 220th St

Future Base - PM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↖	↖	↑↑	↖
Traffic Volume (veh/h)	86	140	54	41	53	61	35	1247	53	85	1016	78
Future Volume (veh/h)	86	140	54	41	53	61	35	1247	53	85	1016	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	93	159	46	47	60	66	40	1355	57	92	1104	85
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	233	67	140	136	150	340	2554	1129	269	2554	1139
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.72	0.72	0.72	0.72	0.72	0.72
Sat Flow, veh/h	1248	1238	358	1163	723	796	467	3526	1558	378	3526	1572
Grp Volume(v), veh/h	93	0	205	47	0	126	40	1355	57	92	1104	85
Grp Sat Flow(s),veh/h/ln	1248	0	1596	1163	0	1519	467	1763	1558	378	1763	1572
Q Serve(g_s), s	8.6	0.0	14.4	4.7	0.0	8.8	4.5	20.6	1.3	17.3	15.1	1.9
Cycle Q Clear(g_c), s	17.4	0.0	14.4	19.1	0.0	8.8	19.6	20.6	1.3	37.9	15.1	1.9
Prop In Lane	1.00		0.22	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	300	140	0	286	340	2554	1129	269	2554	1139
V/C Ratio(X)	0.46	0.00	0.68	0.34	0.00	0.44	0.12	0.53	0.05	0.34	0.43	0.07
Avail Cap(c_a), veh/h	317	0	446	246	0	424	340	2554	1129	269	2554	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	45.4	54.2	0.0	43.1	10.6	7.4	4.7	15.9	6.6	4.8
Incr Delay (d2), s/veh	1.6	0.0	2.7	1.4	0.0	1.1	0.7	0.8	0.1	3.5	0.5	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	5.9	1.4	0.0	3.4	0.5	7.0	0.4	1.7	5.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	52.4	0.0	48.1	55.7	0.0	44.2	11.3	8.2	4.8	19.4	7.2	4.9
LnGrp LOS	D		D	E		D	B	A	A	B	A	A
Approach Vol, veh/h		298			173			1452			1281	
Approach Delay, s/veh		49.4			47.3			8.2			7.9	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		92.4		27.6		92.4		27.6				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+I1), s		22.6		19.4		39.9		21.1				
Green Ext Time (p_c), s		12.6		1.2		0.0		0.7				

Intersection Summary		
HCM 7th Control Delay, s/veh		14.0
HCM 7th LOS		B

Notes
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	7	755	18	12	356	7	8	0	6	10	0	6
Future Vol, veh/h	7	755	18	12	356	7	8	0	6	10	0	6
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	858	20	13	405	8	9	0	7	11	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	414	0	0	878	0	0	1113	1323	439	880	1329	208
Stage 1	-	-	-	-	-	-	884	884	-	436	436	-
Stage 2	-	-	-	-	-	-	229	440	-	445	893	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	1135	-	-	759	-	-	162	154	563	240	152	795
Stage 1	-	-	-	-	-	-	305	359	-	567	576	-
Stage 2	-	-	-	-	-	-	750	574	-	559	356	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	1134	-	-	759	-	-	156	149	563	230	148	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	149	-	230	148	-
Stage 1	-	-	-	-	-	-	302	356	-	555	564	-
Stage 2	-	-	-	-	-	-	728	562	-	548	352	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.15			0.47			22.1			17.2		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	31	-	-	107	-	-	313
HCM Lane V/C Ratio	0.067	0.007	-	-	0.017	-	-	0.058
HCM Control Delay (s/veh)	22.1	8.2	0.1	-	9.8	0.2	-	17.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

Carson Triangle Residential Project
 7: I-405 SB Ramps/Gas Station Driveway & Carson St

Future Base - PM Peak Hour
 09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘		↗			
Traffic Volume (veh/h)	4	1143	964	76	908	11	61	0	95	0	0	3
Future Volume (veh/h)	4	1143	964	76	908	11	61	0	95	0	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	4	1242	908	83	987	12	66	0	-95			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	522	2787	1148	172	4849	59	2	0	2			
Arrive On Green	0.79	0.79	0.79	0.10	0.94	0.94	0.00	0.00	0.00			
Sat Flow, veh/h	559	3526	1565	1767	5158	63	1767	0	1572			
Grp Volume(v), veh/h	4	1242	908	83	646	353	66	0	-95			
Grp Sat Flow(s),veh/h/ln	559	1763	1565	1767	1689	1844	1767	0	1572			
Q Serve(g_s), s	0.1	10.2	33.1	4.0	1.3	1.3	0.1	0.0	0.0			
Cycle Q Clear(g_c), s	0.1	10.2	33.1	4.0	1.3	1.3	0.1	0.0	0.0			
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00			
Lane Grp Cap(c), veh/h	522	2787	1148	172	3174	1733	2	0	2			
V/C Ratio(X)	0.01	0.45	0.79	0.48	0.20	0.20	33.61	0.00	-54.37			
Avail Cap(c_a), veh/h	522	2787	1148	320	3174	1733	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.0	3.0	7.6	38.5	0.2	0.2	45.0	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.5	5.6	2.1	0.1	0.3	14876.4	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.0	5.9	1.8	0.1	0.1	8.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	2.0	3.6	13.2	40.6	0.3	0.5	14921.4	0.0	0.0			
LnGrp LOS	A	A	B	D	A	A	F					
Approach Vol, veh/h		2154			1082			-29				
Approach Delay, s/veh		7.6			3.5			0.0				
Approach LOS		A			A			A				
Timer - Assigned Phs	1	2			6			8				
Phs Duration (G+Y+Rc), s	13.4	76.6			90.0			0.0				
Change Period (Y+Rc), s	4.7	5.4			5.4			5.1				
Max Green Setting (Gmax), s	16.3	38.6			59.6			19.9				
Max Q Clear Time (g_c+I1), s	6.0	35.1			3.3			2.1				
Green Ext Time (p_c), s	0.1	3.2			11.8			0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			6.3									
HCM 7th LOS			A									

Carson Triangle Residential Project
8: Main St & Carson St

Future Base - PM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	940	106	220	608	121	185	595	212	202	821	133
Future Volume (veh/h)	271	940	106	220	608	121	185	595	212	202	821	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	298	1033	49	242	668	53	203	654	187	222	902	116
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	236	1077	466	236	1077	467	229	987	277	236	1162	149
Arrive On Green	0.13	0.31	0.31	0.13	0.31	0.31	0.13	0.25	0.25	0.13	0.26	0.26
Sat Flow, veh/h	1767	3526	1525	1767	3526	1527	1767	3903	1094	1767	4529	580
Grp Volume(v), veh/h	298	1033	49	242	668	53	203	564	277	222	672	346
Grp Sat Flow(s),veh/h/ln	1767	1763	1525	1767	1763	1527	1767	1689	1620	1767	1689	1732
Q Serve(g_s), s	16.0	34.5	2.8	16.0	19.5	3.0	13.6	18.0	18.5	14.9	22.1	22.3
Cycle Q Clear(g_c), s	16.0	34.5	2.8	16.0	19.5	3.0	13.6	18.0	18.5	14.9	22.1	22.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.68	1.00		0.33
Lane Grp Cap(c), veh/h	236	1077	466	236	1077	467	229	854	410	236	866	444
V/C Ratio(X)	1.26	0.96	0.11	1.03	0.62	0.11	0.89	0.66	0.68	0.94	0.78	0.78
Avail Cap(c_a), veh/h	236	1077	466	236	1077	467	236	971	466	236	971	498
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	52.0	40.9	29.9	52.0	35.7	30.0	51.4	40.2	40.4	51.5	41.4	41.5
Incr Delay (d2), s/veh	148.4	19.1	0.5	65.8	2.7	0.5	29.2	1.7	3.9	42.3	4.0	7.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.7	17.5	1.1	11.3	8.7	1.2	7.7	7.5	7.7	9.3	9.6	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	200.4	60.1	30.3	117.8	38.4	30.5	80.5	41.9	44.3	93.9	45.3	49.2
LnGrp LOS	F	E	C	F	D	C	F	D	D	F	D	D
Approach Vol, veh/h		1380			963			1044			1240	
Approach Delay, s/veh		89.3			57.9			50.1			55.1	
Approach LOS		F			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	42.2	21.0	35.8	21.0	42.2	20.5	36.3				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	16.0	32.5	16.0	34.5	16.0	32.5	16.0	34.5				
Max Q Clear Time (g_c+11g), s	16.0	36.5	16.9	20.5	18.0	21.5	15.6	24.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	5.9	0.0	4.5	0.0	5.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			64.8									
HCM 7th LOS			E									

**Future plus Project (2026), South Driveway Right-In/Right-Out
Access Restriction, AM Peak Hour**

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Future With Project SDwy Restricted - AM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	505	138	569	0	0	0	0	1289	116	0	671	387
Future Volume (veh/h)	505	138	569	0	0	0	0	1289	116	0	671	387
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	543	148	0				0	1386	119	0	722	298
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	1000	1028					0	1924	164	0	2066	921
Arrive On Green	0.29	0.29	0.00				0.00	0.59	0.59	0.00	0.59	0.59
Sat Flow, veh/h	3428	3526	1572				0	3375	281	0	3618	1572
Grp Volume(v), veh/h	543	148	0				0	741	764	0	722	298
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1800	0	1763	1572
Q Serve(g_s), s	11.4	2.7	0.0				0.0	25.8	26.2	0.0	9.1	8.3
Cycle Q Clear(g_c), s	11.4	2.7	0.0				0.0	25.8	26.2	0.0	9.1	8.3
Prop In Lane	1.00		1.00				0.00		0.16	0.00		1.00
Lane Grp Cap(c), veh/h	1000	1028					0	1033	1055	0	2066	921
V/C Ratio(X)	0.54	0.14					0.00	0.72	0.72	0.00	0.35	0.32
Avail Cap(c_a), veh/h	2199	2261					0	1439	1470	0	2878	1284
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	22.5	0.0				0.0	12.7	12.8	0.0	9.2	9.1
Incr Delay (d2), s/veh	0.5	0.1	0.0				0.0	1.4	1.5	0.0	0.1	0.3
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	4.6	1.1	0.0				0.0	9.0	9.4	0.0	3.1	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.0	22.5	0.0				0.0	14.1	14.2	0.0	9.4	9.4
LnGrp LOS	C	C						B	B		A	A
Approach Vol, veh/h		691						1505			1020	
Approach Delay, s/veh		25.3						14.2			9.4	
Approach LOS		C						B			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		55.6		30.1		55.6						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		70.0		55.0		70.0						
Max Q Clear Time (g_c+I1), s		28.2		13.4		11.1						
Green Ext Time (p_c), s		22.1		3.2		11.3						

Intersection Summary

HCM 7th Control Delay, s/veh	15.0
HCM 7th LOS	B

Notes

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Traffic Volume (veh/h)	31	63	1300	35	27	1060
Future Volume (veh/h)	31	63	1300	35	27	1060
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	34	70	1444	39	30	1178
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	42	87	4253	115	276	4251
Arrive On Green	0.08	0.08	0.28	0.28	0.84	0.84
Sat Flow, veh/h	529	1089	5235	137	353	5233
Grp Volume(v), veh/h	105	0	962	521	30	1178
Grp Sat Flow(s),veh/h/ln	1633	0	1689	1827	353	1689
Q Serve(g_s), s	7.6	0.0	27.3	27.3	4.3	5.8
Cycle Q Clear(g_c), s	7.6	0.0	27.3	27.3	31.6	5.8
Prop In Lane	0.32	0.67		0.07	1.00	
Lane Grp Cap(c), veh/h	131	0	2834	1533	276	4251
V/C Ratio(X)	0.80	0.00	0.34	0.34	0.11	0.28
Avail Cap(c_a), veh/h	577	0	2834	1533	276	4251
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.79	0.79	0.76	0.76
Uniform Delay (d), s/veh	54.3	0.0	16.8	16.8	9.9	2.0
Incr Delay (d2), s/veh	10.8	0.0	0.3	0.5	0.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	12.4	13.5	0.4	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	65.1	0.0	17.1	17.3	10.5	2.1
LnGrp LOS	E		B	B	B	A
Approach Vol, veh/h	105		1483			1208
Approach Delay, s/veh	65.1		17.2			2.4
Approach LOS	E		B			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		105.8			105.8	14.2
Change Period (Y+Rc), s		5.1			5.1	4.6
Max Green Setting (Gmax), s		67.9			67.9	42.4
Max Q Clear Time (g_c+I1), s		29.3			33.6	9.6
Green Ext Time (p_c), s		13.6			11.1	0.3

Intersection Summary

HCM 7th Control Delay, s/veh	12.6
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	189	100	156	208	214	128	956	163	86	922	146
Future Volume (veh/h)	176	189	100	156	208	214	128	956	163	86	922	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	187	201	84	166	221	76	136	1017	154	91	981	138
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	276	503	422	258	703	235	162	2341	354	126	2280	320
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.09	0.53	0.53	0.05	0.34	0.34
Sat Flow, veh/h	1072	1856	1555	1083	2593	866	1767	4431	670	1767	4488	630
Grp Volume(v), veh/h	187	201	84	166	148	149	136	775	396	91	738	381
Grp Sat Flow(s),veh/h/ln	1072	1856	1555	1083	1763	1696	1767	1689	1724	1767	1689	1741
Q Serve(g_s), s	20.3	10.6	5.0	17.7	8.0	8.4	9.1	16.8	16.9	6.1	20.3	20.3
Cycle Q Clear(g_c), s	28.7	10.6	5.0	28.4	8.0	8.4	9.1	16.8	16.9	6.1	20.3	20.3
Prop In Lane	1.00		1.00	1.00		0.51	1.00		0.39	1.00		0.36
Lane Grp Cap(c), veh/h	276	503	422	258	478	460	162	1784	910	126	1716	884
V/C Ratio(X)	0.68	0.40	0.20	0.64	0.31	0.32	0.84	0.43	0.44	0.72	0.43	0.43
Avail Cap(c_a), veh/h	338	611	512	321	580	558	184	1784	910	184	1716	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.20	0.20	0.20	0.96	0.96	0.96
Uniform Delay (d), s/veh	46.4	35.7	33.7	47.3	34.8	34.9	53.6	17.3	17.3	56.0	26.2	26.2
Incr Delay (d2), s/veh	4.0	0.5	0.2	3.0	0.4	0.4	5.6	0.2	0.3	2.8	0.8	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.9	1.9	5.0	3.5	3.5	4.3	6.4	6.6	2.8	8.8	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.4	36.2	33.9	50.3	35.2	35.3	59.3	17.5	17.6	58.7	26.9	27.7
LnGrp LOS	D	D	C	D	D	D	E	B	B	E	C	C
Approach Vol, veh/h		472			463			1307			1210	
Approach Delay, s/veh		41.4			40.7			21.9			29.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	55.5	66.5		38.0	13.1	68.9		38.0				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	42.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+fl), s	22.3			30.7	8.1	18.9		30.4				
Green Ext Time (p_c), s	0.0	12.2		1.5	0.0	13.6		1.7				
Intersection Summary												
HCM 7th Control Delay, s/veh											29.8	
HCM 7th LOS											C	

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Future With Project SDwy Restricted - AM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↔		↔↔	↑↔		↔↑↑↔			↔↑↑↔		
Traffic Volume (veh/h)	164	632	86	244	735	168	97	823	394	213	705	184
Future Volume (veh/h)	164	632	86	244	735	168	97	823	394	213	705	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	176	680	83	262	790	172	104	885	337	229	758	171
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	285	1134	138	319	1059	231	143	956	363	184	1203	268
Arrive On Green	0.08	0.36	0.36	0.09	0.37	0.37	0.08	0.27	0.27	0.14	0.39	0.39
Sat Flow, veh/h	3428	3157	385	3428	2870	625	1767	3559	1350	1767	4116	918
Grp Volume(v), veh/h	176	379	384	262	485	477	104	840	382	229	620	309
Grp Sat Flow(s),veh/h/ln	1714	1763	1779	1714	1763	1732	1767	1689	1531	1767	1689	1657
Q Serve(g_s), s	6.0	21.1	21.1	9.0	28.8	28.8	6.9	29.0	29.2	12.5	17.8	18.2
Cycle Q Clear(g_c), s	6.0	21.1	21.1	9.0	28.8	28.8	6.9	29.0	29.2	12.5	17.8	18.2
Prop In Lane	1.00		0.22	1.00		0.36	1.00		0.88	1.00		0.55
Lane Grp Cap(c), veh/h	285	633	639	319	651	639	143	907	411	184	987	484
V/C Ratio(X)	0.62	0.60	0.60	0.82	0.75	0.75	0.73	0.93	0.93	1.24	0.63	0.64
Avail Cap(c_a), veh/h	443	633	639	443	651	639	184	915	415	184	987	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	53.2	31.4	31.4	53.5	33.0	33.0	53.9	42.7	42.8	51.7	31.4	31.5
Incr Delay (d2), s/veh	0.8	4.2	4.1	6.0	7.6	7.7	6.4	15.0	27.5	142.5	1.3	2.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	9.6	9.7	4.1	13.4	13.2	3.3	13.8	14.0	12.5	6.8	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.0	35.5	35.5	59.5	40.6	40.7	60.3	57.7	70.3	194.2	32.7	34.3
LnGrp LOS	D	D	D	E	D	D	E	E	E	F	C	C
Approach Vol, veh/h		939			1224			1326			1158	
Approach Delay, s/veh		39.0			44.7			61.6			65.0	
Approach LOS		D			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	49.8	17.0	37.7	16.7	48.6	14.2	40.6				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	15.5	38.5	12.5	32.5	15.5	38.5	12.5	32.5				
Max Q Clear Time (g_c+10), s	19.0	30.8	14.5	31.2	11.0	23.1	8.9	20.2				
Green Ext Time (p_c), s	0.1	4.5	0.0	1.0	0.1	5.6	0.0	6.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			53.4									
HCM 7th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (veh/h)	76	124	46	82	81	124	40	1060	73	116	815	45
Future Volume (veh/h)	76	124	46	82	81	124	40	1060	73	116	815	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	141	37	93	92	135	45	1152	80	126	886	49
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	171	296	78	224	142	208	400	2394	1058	295	2394	1068
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1141	1269	333	1192	609	893	594	3526	1557	449	3526	1572
Grp Volume(v), veh/h	83	0	178	93	0	227	45	1152	80	126	886	49
Grp Sat Flow(s),veh/h/ln	1141	0	1602	1192	0	1502	594	1763	1557	449	1763	1572
Q Serve(g_s), s	8.5	0.0	11.5	8.8	0.0	16.4	4.2	18.7	2.1	22.3	12.9	1.2
Cycle Q Clear(g_c), s	24.9	0.0	11.5	20.3	0.0	16.4	17.1	18.7	2.1	41.0	12.9	1.2
Prop In Lane	1.00		0.21	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	374	224	0	351	400	2394	1058	295	2394	1068
V/C Ratio(X)	0.49	0.00	0.48	0.42	0.00	0.65	0.11	0.48	0.08	0.43	0.37	0.05
Avail Cap(c_a), veh/h	223	0	447	279	0	419	400	2394	1058	295	2394	1068
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	0.0	39.7	48.4	0.0	41.5	11.9	9.2	6.5	19.0	8.3	6.4
Incr Delay (d2), s/veh	2.1	0.0	0.9	1.2	0.0	2.6	0.6	0.7	0.1	4.5	0.4	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	2.5	0.0	4.6	2.7	0.0	6.4	0.6	6.7	0.7	2.6	4.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.9	0.0	40.6	49.6	0.0	44.1	12.5	9.9	6.7	23.4	8.7	6.5
LnGrp LOS	D		D	D		D	B	A	A	C	A	A
Approach Vol, veh/h		261			320			1277			1061	
Approach Delay, s/veh		45.2			45.7			9.8			10.3	
Approach LOS		D			D			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.0		33.0		87.0		33.0				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+1), s		20.7		26.9		43.0		22.3				
Green Ext Time (p_c), s		9.7		0.7		0.0		1.3				

Intersection Summary

HCM 7th Control Delay, s/veh	17.1
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑				↑
Traffic Vol, veh/h	0	357	7	5	530	13	2	0	0	0	0	41
Future Vol, veh/h	0	357	7	5	530	13	2	0	0	0	0	41
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	406	8	5	602	15	2	0	0	0	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	413	0	0	722	1038	207	-	-	311
Stage 1	-	-	-	-	-	-	409	409	-	-	-	-
Stage 2	-	-	-	-	-	-	313	629	-	-	-	-
Critical Hdwy	-	-	-	4.16	-	-	7.56	6.56	6.96	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	-	-	-
Follow-up Hdwy	-	-	-	2.23	-	-	3.53	4.03	3.33	-	-	3.33
Pot Cap-1 Maneuver	0	-	-	1135	-	-	312	228	797	0	0	682
Stage 1	0	-	-	-	-	-	587	592	-	0	0	-
Stage 2	0	-	-	-	-	-	670	471	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1135	-	-	289	226	797	-	-	681
Mov Cap-2 Maneuver	-	-	-	-	-	-	289	226	-	-	-	-
Stage 1	-	-	-	-	-	-	587	592	-	-	-	-
Stage 2	-	-	-	-	-	-	620	468	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			0.07			17.56			10.67		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	289	-	-	1135	-	-	681
HCM Lane V/C Ratio	0.008	-	-	0.005	-	-	0.068
HCM Control Delay (s/veh)	17.6	-	-	8.2	-	-	10.7
HCM Lane LOS	C	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	0	-	-	0.2

Carson Triangle Residential Project Future With Project SDwy Restricted - AM Peak Hour
 7: I-405 SB Ramps/Gas Station Driveway & Carson St 09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘		↗			
Traffic Volume (veh/h)	7	711	551	68	1109	4	84	0	219	0	0	2
Future Volume (veh/h)	7	711	551	68	1109	4	84	0	219	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	8	773	459	74	1205	4	91	0	40			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	369	2223	1153	165	4047	13	189	0	168			
Arrive On Green	0.63	0.63	0.63	0.09	0.78	0.78	0.11	0.00	0.11			
Sat Flow, veh/h	458	3526	1563	1767	5212	17	1767	0	1572			
Grp Volume(v), veh/h	8	773	459	74	781	428	91	0	40			
Grp Sat Flow(s),veh/h/ln	458	1763	1563	1767	1689	1852	1767	0	1572			
Q Serve(g_s), s	0.6	9.3	9.8	3.6	6.1	6.1	4.4	0.0	2.1			
Cycle Q Clear(g_c), s	0.6	9.3	9.8	3.6	6.1	6.1	4.4	0.0	2.1			
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00			
Lane Grp Cap(c), veh/h	369	2223	1153	165	2622	1438	189	0	168			
V/C Ratio(X)	0.02	0.35	0.40	0.45	0.30	0.30	0.48	0.00	0.24			
Avail Cap(c_a), veh/h	369	2223	1153	320	2622	1438	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	6.3	7.9	4.4	38.6	2.9	2.9	37.8	0.0	36.8			
Incr Delay (d2), s/veh	0.1	0.4	1.0	1.9	0.3	0.5	1.9	0.0	0.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.1	3.1	4.2	1.6	1.2	1.5	2.0	0.0	0.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.4	8.3	5.4	40.5	3.2	3.5	39.7	0.0	37.6			
LnGrp LOS	A	A	A	D	A	A	D		D			
Approach Vol, veh/h		1240			1283			131				
Approach Delay, s/veh		7.2			5.4			39.1				
Approach LOS		A			A			D				
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	13.1	62.2				75.3		14.7				
Change Period (Y+Rc), s	4.7	5.4				5.4		5.1				
Max Green Setting (Gmax), s	16.3	38.6				59.6		19.9				
Max Q Clear Time (g_c+I1), s	5.6	11.8				8.1		6.4				
Green Ext Time (p_c), s	0.1	11.2				15.4		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh				7.9								
HCM 7th LOS				A								



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	483	97	195	760	145	166	796	212	98	756	149
Future Volume (veh/h)	200	483	97	195	760	145	166	796	212	98	756	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	220	531	40	214	835	79	182	875	187	108	831	134
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	221	1166	505	221	1166	505	208	1200	255	143	1102	176
Arrive On Green	0.13	0.33	0.33	0.13	0.33	0.33	0.12	0.29	0.29	0.08	0.25	0.25
Sat Flow, veh/h	1767	3526	1527	1767	3526	1529	1767	4161	884	1767	4381	701
Grp Volume(v), veh/h	220	531	40	214	835	79	182	709	353	108	639	326
Grp Sat Flow(s),veh/h/ln	1767	1763	1527	1767	1763	1529	1767	1689	1668	1767	1689	1705
Q Serve(g_s), s	14.9	14.2	2.2	14.5	24.9	4.4	12.2	22.7	22.9	7.2	21.0	21.2
Cycle Q Clear(g_c), s	14.9	14.2	2.2	14.5	24.9	4.4	12.2	22.7	22.9	7.2	21.0	21.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.53	1.00		0.41
Lane Grp Cap(c), veh/h	221	1166	505	221	1166	505	208	974	481	143	850	429
V/C Ratio(X)	1.00	0.46	0.08	0.97	0.72	0.16	0.87	0.73	0.73	0.75	0.75	0.76
Avail Cap(c_a), veh/h	221	1166	505	221	1166	505	221	974	481	221	971	490
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	52.5	31.6	27.6	52.3	35.2	28.3	52.1	38.5	38.5	54.0	41.5	41.5
Incr Delay (d2), s/veh	59.3	1.3	0.3	51.3	3.8	0.7	27.4	3.0	6.2	3.0	3.3	6.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	6.2	0.8	9.5	11.1	1.7	6.9	9.6	10.0	3.3	9.0	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	111.8	32.9	27.9	103.5	39.0	29.0	79.4	41.5	44.7	57.0	44.8	48.2
LnGrp LOS	F	C	C	F	D	C	E	D	D	E	D	D
Approach Vol, veh/h		791			1128			1244			1073	
Approach Delay, s/veh		54.6			50.6			48.0			47.0	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	45.2	14.7	40.1	20.0	45.2	19.1	35.7				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	15.0	34.5	15.0	34.5	15.0	34.5	15.0	34.5				
Max Q Clear Time (g_c+110), s	16.2	16.2	9.2	24.9	16.9	26.9	14.2	23.2				
Green Ext Time (p_c), s	0.0	4.6	0.0	5.6	0.0	4.2	0.0	6.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			49.7									
HCM 7th LOS			D									

**Future plus Project (2026), South Driveway Right-In/Right-Out
Access Restriction, PM Peak Hour**

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Future With Project Dwy Restricted - PM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	445	583	685	0	0	0	0	1191	173	0	1096	749
Future Volume (veh/h)	445	583	685	0	0	0	0	1191	173	0	1096	749
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	478	627	0				0	1281	180	0	1178	687
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	964	991					0	1862	260	0	2118	945
Arrive On Green	0.28	0.28	0.00				0.00	0.60	0.60	0.00	0.60	0.60
Sat Flow, veh/h	3428	3526	1572				0	3193	433	0	3618	1572
Grp Volume(v), veh/h	478	627	0				0	725	736	0	1178	687
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1771	0	1763	1572
Q Serve(g_s), s	10.4	13.8	0.0				0.0	24.8	25.3	0.0	17.8	27.5
Cycle Q Clear(g_c), s	10.4	13.8	0.0				0.0	24.8	25.3	0.0	17.8	27.5
Prop In Lane	1.00		1.00				0.00		0.24	0.00		1.00
Lane Grp Cap(c), veh/h	964	991					0	1059	1064	0	2118	945
V/C Ratio(X)	0.50	0.63					0.00	0.68	0.69	0.00	0.56	0.73
Avail Cap(c_a), veh/h	2121	2181					0	1388	1394	0	2776	1238
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	27.9	0.0				0.0	12.0	12.1	0.0	10.6	12.6
Incr Delay (d2), s/veh	0.4	0.7	0.0				0.0	1.2	1.3	0.0	0.3	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	5.8	0.0				0.0	8.7	8.9	0.0	6.1	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.1	28.6	0.0				0.0	13.3	13.4	0.0	11.0	14.5
LnGrp LOS	C	C						B	B		B	B
Approach Vol, veh/h		1105						1461			1865	
Approach Delay, s/veh		28.0						13.4			12.3	
Approach LOS		C						B			B	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		58.8		30.1		58.8						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		70.0		55.0		70.0						
Max Q Clear Time (g_c+I1), s		27.3		15.8		29.5						
Green Ext Time (p_c), s		21.4		7.2		23.9						

Intersection Summary

HCM 7th Control Delay, s/veh	16.5
HCM 7th LOS	B

Notes

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↑↑↑		↘	↑↑↑
Traffic Volume (veh/h)	18	40	1278	55	57	1458
Future Volume (veh/h)	18	40	1278	55	57	1458
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	20	44	1420	61	63	1620
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	33	73	4242	182	361	4320
Arrive On Green	0.07	0.07	1.00	1.00	0.85	0.85
Sat Flow, veh/h	502	1104	5142	214	354	5233
Grp Volume(v), veh/h	65	0	964	517	63	1620
Grp Sat Flow(s),veh/h/ln	1632	0	1689	1812	354	1689
Q Serve(g_s), s	4.6	0.0	0.0	0.0	3.8	8.3
Cycle Q Clear(g_c), s	4.6	0.0	0.0	0.0	3.8	8.3
Prop In Lane	0.31	0.68		0.12	1.00	
Lane Grp Cap(c), veh/h	108	0	2880	1545	361	4320
V/C Ratio(X)	0.60	0.00	0.33	0.33	0.17	0.38
Avail Cap(c_a), veh/h	305	0	2880	1545	361	4320
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.66	0.66	0.44	0.44
Uniform Delay (d), s/veh	54.5	0.0	0.0	0.0	1.6	1.9
Incr Delay (d2), s/veh	5.2	0.0	0.2	0.4	0.5	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.1	0.2	0.2	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	59.7	0.0	0.2	0.4	2.0	2.0
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	65		1481			1683
Approach Delay, s/veh	59.7		0.3			2.0
Approach LOS	E		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		107.4			107.4	12.6
Change Period (Y+Rc), s		5.1			5.1	4.6
Max Green Setting (Gmax), s		87.9			87.9	22.4
Max Q Clear Time (g_c+I1), s		2.0			10.3	6.6
Green Ext Time (p_c), s		15.5			23.4	0.1
Intersection Summary						
HCM 7th Control Delay, s/veh			2.4			
HCM 7th LOS			A			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	415	116	146	162	97	111	1035	242	169	1222	207
Future Volume (veh/h)	219	415	116	146	162	97	111	1035	242	169	1222	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	233	441	101	155	172	-49	118	1101	238	180	1300	203
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	443	611	512	163	1160	0	143	1819	393	184	2035	318
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.00	0.08	0.44	0.44	0.14	0.61	0.61
Sat Flow, veh/h	1255	1856	1556	856	3618	0	1767	4157	898	1767	4417	690
Grp Volume(v), veh/h	233	441	101	155	123	0	118	894	445	180	994	509
Grp Sat Flow(s),veh/h/ln	1255	1856	1556	856	1763	0	1767	1689	1678	1767	1689	1730
Q Serve(g_s), s	19.0	25.1	5.6	14.4	2.9	0.0	7.9	24.3	24.3	12.2	22.5	22.5
Cycle Q Clear(g_c), s	21.9	25.1	5.6	39.5	2.9	0.0	7.9	24.3	24.3	12.2	22.5	22.5
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.54	1.00		0.40
Lane Grp Cap(c), veh/h	443	611	512	163	1160	0	143	1477	734	184	1555	797
V/C Ratio(X)	0.53	0.72	0.20	0.95	0.11	0.00	0.82	0.61	0.61	0.98	0.64	0.64
Avail Cap(c_a), veh/h	443	611	512	163	1160	0	184	1477	734	184	1555	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	0.00	0.09	0.09	0.09	0.93	0.93	0.93
Uniform Delay (d), s/veh	35.6	35.4	28.9	55.2	28.0	0.0	54.3	25.8	25.8	51.5	16.9	16.9
Incr Delay (d2), s/veh	1.2	4.2	0.2	56.3	0.0	0.0	1.8	0.2	0.3	57.2	1.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	12.0	2.1	7.3	1.2	0.0	3.5	9.5	9.5	8.1	7.6	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.8	39.6	29.1	111.5	28.0	0.0	56.0	26.0	26.2	108.7	18.8	20.5
LnGrp LOS	D	D	C	F	C		E	C	C	F	B	C
Approach Vol, veh/h		775			278			1457			1683	
Approach Delay, s/veh		37.4			74.6			28.5			28.9	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	60.8		45.0	17.0	58.0		45.0				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+1.9), s	19.5	24.5		27.1	14.2	26.3		41.5				
Green Ext Time (p_c), s	0.0	16.7		3.3	0.0	14.2		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			33.4									
HCM 7th LOS			C									

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Future With Project Dwy Restricted - PM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↔		↔↔	↕↔		↔↔↔	↕↔↔		↔↔↔	↕↔↔	
Traffic Volume (veh/h)	220	913	105	255	634	211	106	886	560	287	884	260
Future Volume (veh/h)	220	913	105	255	634	211	106	886	560	287	884	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	237	982	104	274	682	218	114	953	515	309	951	253
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	294	1054	112	331	887	283	144	915	406	228	1261	334
Arrive On Green	0.09	0.33	0.33	0.10	0.34	0.34	0.08	0.27	0.27	0.17	0.42	0.42
Sat Flow, veh/h	3428	3210	340	3428	2615	836	1767	3377	1499	1767	3958	1050
Grp Volume(v), veh/h	237	539	547	274	460	440	114	953	515	309	811	393
Grp Sat Flow(s),veh/h/ln	1714	1763	1787	1714	1763	1688	1767	1689	1499	1767	1689	1630
Q Serve(g_s), s	8.1	35.5	35.5	9.4	28.0	28.0	7.6	32.5	32.5	15.5	24.4	24.5
Cycle Q Clear(g_c), s	8.1	35.5	35.5	9.4	28.0	28.0	7.6	32.5	32.5	15.5	24.4	24.5
Prop In Lane	1.00		0.19	1.00		0.50	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	294	579	587	331	598	573	144	915	406	228	1076	519
V/C Ratio(X)	0.81	0.93	0.93	0.83	0.77	0.77	0.79	1.04	1.27	1.35	0.75	0.76
Avail Cap(c_a), veh/h	471	579	587	471	598	573	228	915	406	228	1076	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.59	0.59	0.59
Uniform Delay (d), s/veh	53.9	39.0	39.0	53.2	35.4	35.5	54.1	43.7	43.8	49.7	30.6	30.6
Incr Delay (d2), s/veh	2.1	23.8	23.6	5.6	9.2	9.6	3.7	41.2	139.1	175.3	2.0	4.1
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	8.6	18.8	19.0	4.3	13.3	12.8	3.5	18.5	27.5	17.6	9.3	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.0	62.8	62.6	58.8	44.6	45.0	57.8	85.0	182.8	225.0	32.6	34.7
LnGrp LOS	E	E	E	E	D	D	E	F	F	F	C	C
Approach Vol, veh/h		1323			1174			1582			1513	
Approach Delay, s/veh		61.5			48.1			114.9			72.4	
Approach LOS		E			D			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	46.2	20.0	38.0	17.1	44.9	14.3	43.7				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	16.5	34.5	15.5	32.5	16.5	34.5	15.5	32.5				
Max Q Clear Time (g_c+I10), s	11.0	30.0	17.5	34.5	11.4	37.5	9.6	26.5				
Green Ext Time (p_c), s	0.2	2.7	0.0	0.0	0.2	0.0	0.0	4.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			76.7									
HCM 7th LOS			E									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↖	↖	↑↑	↖
Traffic Volume (veh/h)	90	140	54	41	53	61	35	1252	53	85	1020	81
Future Volume (veh/h)	90	140	54	41	53	61	35	1252	53	85	1020	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	98	159	46	47	60	66	40	1361	57	92	1109	88
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	233	67	140	136	150	337	2554	1129	267	2554	1139
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.72	0.72	0.72	0.72	0.72	0.72
Sat Flow, veh/h	1248	1238	358	1163	723	796	464	3526	1558	376	3526	1572
Grp Volume(v), veh/h	98	0	205	47	0	126	40	1361	57	92	1109	88
Grp Sat Flow(s),veh/h/ln	1248	0	1596	1163	0	1519	464	1763	1558	376	1763	1572
Q Serve(g_s), s	9.1	0.0	14.4	4.7	0.0	8.8	4.6	20.8	1.3	17.5	15.2	2.0
Cycle Q Clear(g_c), s	17.9	0.0	14.4	19.1	0.0	8.8	19.7	20.8	1.3	38.3	15.2	2.0
Prop In Lane	1.00		0.22	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	300	140	0	286	337	2554	1129	267	2554	1139
V/C Ratio(X)	0.48	0.00	0.68	0.34	0.00	0.44	0.12	0.53	0.05	0.34	0.43	0.08
Avail Cap(c_a), veh/h	317	0	446	246	0	424	337	2554	1129	267	2554	1139
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.0	0.0	45.4	54.2	0.0	43.1	10.6	7.4	4.7	16.0	6.7	4.8
Incr Delay (d2), s/veh	1.8	0.0	2.7	1.4	0.0	1.1	0.7	0.8	0.1	3.5	0.5	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	5.9	1.4	0.0	3.4	0.5	7.0	0.4	1.7	5.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	52.8	0.0	48.1	55.7	0.0	44.2	11.3	8.2	4.8	19.5	7.2	5.0
LnGrp LOS	D		D	E		D	B	A	A	B	A	A
Approach Vol, veh/h		303			173			1458			1289	
Approach Delay, s/veh		49.6			47.3			8.2			7.9	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		92.4		27.6		92.4		27.6				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+1), s		22.8		19.9		40.3		21.1				
Green Ext Time (p_c), s		12.7		1.2		0.0		0.7				

Intersection Summary

HCM 7th Control Delay, s/veh	14.1
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓			↑↓				↑			↑
Traffic Vol, veh/h	0	755	18	12	359	10	8	0	6	0	0	34
Future Vol, veh/h	0	755	18	12	359	10	8	0	6	0	0	34
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	858	20	13	408	11	9	0	7	0	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	878	0	0	1099	-	439	-	-	212
Stage 1	-	-	-	-	-	-	868	-	-	-	-	-
Stage 2	-	-	-	-	-	-	231	-	-	-	-	-
Critical Hdwy	-	-	-	4.16	-	-	7.56	-	6.96	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.23	-	-	3.53	-	3.33	-	-	3.33
Pot Cap-1 Maneuver	0	-	-	759	-	-	166	0	563	0	0	791
Stage 1	0	-	-	-	-	-	312	0	-	0	0	-
Stage 2	0	-	-	-	-	-	748	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	759	-	-	154	-	563	-	-	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	-	-	-	-	-
Stage 1	-	-	-	-	-	-	312	-	-	-	-	-
Stage 2	-	-	-	-	-	-	697	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			0.3			11.47			9.8		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	563	-	-	759	-	-	789
HCM Lane V/C Ratio	0.012	-	-	0.017	-	-	0.049
HCM Control Delay (s/veh)	11.5	-	-	9.8	-	-	9.8
HCM Lane LOS	B	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-	-	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑	↗	↖	↑↑↑		↖		↗			
Traffic Volume (veh/h)	4	1155	970	76	913	11	69	0	95	0	0	3
Future Volume (veh/h)	4	1155	970	76	913	11	69	0	95	0	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	4	1255	914	83	992	12	75	0	-95			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	520	2787	1148	172	4849	59	2	0	2			
Arrive On Green	0.79	0.79	0.79	0.10	0.94	0.94	0.00	0.00	0.00			
Sat Flow, veh/h	556	3526	1565	1767	5159	62	1767	0	1572			
Grp Volume(v), veh/h	4	1255	914	83	649	355	75	0	-95			
Grp Sat Flow(s),veh/h/ln	556	1763	1565	1767	1689	1844	1767	0	1572			
Q Serve(g_s), s	0.1	10.4	33.6	4.0	1.3	1.3	0.1	0.0	0.0			
Cycle Q Clear(g_c), s	0.1	10.4	33.6	4.0	1.3	1.3	0.1	0.0	0.0			
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00			
Lane Grp Cap(c), veh/h	520	2787	1148	172	3174	1733	2	0	2			
V/C Ratio(X)	0.01	0.45	0.80	0.48	0.20	0.20	38.19	0.00	-54.37			
Avail Cap(c_a), veh/h	520	2787	1148	320	3174	1733	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.0	3.1	7.7	38.5	0.2	0.2	45.0	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.5	5.8	2.1	0.1	0.3	16938.5	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			
%ile BackOfQ(50%),veh/ln	0.0	2.1	6.0	1.8	0.1	0.1	9.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	2.0	3.6	13.4	40.6	0.3	0.5	16983.5	0.0	0.0			
LnGrp LOS	A	A	B	D	A	A	F					
Approach Vol, veh/h		2173			1087			-20				
Approach Delay, s/veh		7.7			3.5			0.0				
Approach LOS		A			A			A				
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	13.4	76.6				90.0		0.0				
Change Period (Y+Rc), s	4.7	5.4				5.4		5.1				
Max Green Setting (Gmax), s	16.3	38.6				59.6		19.9				
Max Q Clear Time (g_c+I1), s	6.0	35.6				3.3		2.1				
Green Ext Time (p_c), s	0.1	2.8				11.8		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			6.3									
HCM 7th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	956	106	220	619	121	185	595	212	202	821	133
Future Volume (veh/h)	271	956	106	220	619	121	185	595	212	202	821	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	298	1051	49	242	680	53	203	654	187	222	902	116
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	236	1077	466	236	1077	467	229	987	277	236	1162	149
Arrive On Green	0.13	0.31	0.31	0.13	0.31	0.31	0.13	0.25	0.25	0.13	0.26	0.26
Sat Flow, veh/h	1767	3526	1525	1767	3526	1527	1767	3903	1094	1767	4529	580
Grp Volume(v), veh/h	298	1051	49	242	680	53	203	564	277	222	672	346
Grp Sat Flow(s),veh/h/ln	1767	1763	1525	1767	1763	1527	1767	1689	1620	1767	1689	1732
Q Serve(g_s), s	16.0	35.4	2.8	16.0	19.9	3.0	13.6	18.0	18.5	14.9	22.1	22.3
Cycle Q Clear(g_c), s	16.0	35.4	2.8	16.0	19.9	3.0	13.6	18.0	18.5	14.9	22.1	22.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.68	1.00		0.33
Lane Grp Cap(c), veh/h	236	1077	466	236	1077	467	229	854	410	236	866	444
V/C Ratio(X)	1.26	0.98	0.11	1.03	0.63	0.11	0.89	0.66	0.68	0.94	0.78	0.78
Avail Cap(c_a), veh/h	236	1077	466	236	1077	467	236	971	466	236	971	498
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	52.0	41.2	29.9	52.0	35.8	30.0	51.4	40.2	40.4	51.5	41.4	41.5
Incr Delay (d2), s/veh	148.4	22.1	0.5	65.8	2.8	0.5	29.2	1.7	3.9	42.3	4.0	7.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.7	18.3	1.1	11.3	8.9	1.2	7.7	7.5	7.7	9.3	9.6	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	200.4	63.4	30.3	117.8	38.7	30.5	80.5	41.9	44.3	93.9	45.3	49.2
LnGrp LOS	F	E	C	F	D	C	F	D	D	F	D	D
Approach Vol, veh/h		1398			975			1044			1240	
Approach Delay, s/veh		91.4			57.9			50.1			55.1	
Approach LOS		F			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	42.2	21.0	35.8	21.0	42.2	20.5	36.3				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	16.0	32.5	16.0	34.5	16.0	32.5	16.0	34.5				
Max Q Clear Time (g_c+11g), s	11.0	37.4	16.9	20.5	18.0	21.9	15.6	24.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	5.9	0.0	4.4	0.0	5.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			65.5									
HCM 7th LOS			E									

**Future plus Project (2026), Full Driveway Access, AM Peak
Hour**

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Future With Project - AM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	505	138	569	0	0	0	0	1284	116	0	671	387
Future Volume (veh/h)	505	138	569	0	0	0	0	1284	116	0	671	387
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	543	148	0				0	1381	119	0	722	298
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	1002	1031					0	1919	165	0	2062	920
Arrive On Green	0.29	0.29	0.00				0.00	0.58	0.58	0.00	0.58	0.58
Sat Flow, veh/h	3428	3526	1572				0	3374	281	0	3618	1572
Grp Volume(v), veh/h	543	148	0				0	739	761	0	722	298
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1800	0	1763	1572
Q Serve(g_s), s	11.4	2.7	0.0				0.0	25.6	26.0	0.0	9.1	8.3
Cycle Q Clear(g_c), s	11.4	2.7	0.0				0.0	25.6	26.0	0.0	9.1	8.3
Prop In Lane	1.00		1.00				0.00		0.16	0.00		1.00
Lane Grp Cap(c), veh/h	1002	1031					0	1031	1053	0	2062	920
V/C Ratio(X)	0.54	0.14					0.00	0.72	0.72	0.00	0.35	0.32
Avail Cap(c_a), veh/h	2205	2267					0	1443	1473	0	2886	1287
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	22.4	0.0				0.0	12.7	12.8	0.0	9.3	9.1
Incr Delay (d2), s/veh	0.5	0.1	0.0				0.0	1.4	1.5	0.0	0.1	0.3
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	4.6	1.1	0.0				0.0	9.0	9.3	0.0	3.1	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.9	22.4	0.0				0.0	14.1	14.2	0.0	9.4	9.4
LnGrp LOS	C	C						B	B		A	A
Approach Vol, veh/h		691						1500			1020	
Approach Delay, s/veh		25.2						14.2			9.4	
Approach LOS		C						B			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		55.4		30.1		55.4						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		70.0		55.0		70.0						
Max Q Clear Time (g_c+I1), s		28.0		13.4		11.1						
Green Ext Time (p_c), s		22.0		3.2		11.3						

Intersection Summary

HCM 7th Control Delay, s/veh	15.0
HCM 7th LOS	B

Notes

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

Carson Triangle Residential Project
2: Avalon Blvd & E Driveway

Future With Project - AM Peak Hour

09/18/2024



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Traffic Volume (veh/h)	26	63	1295	11	27	1060
Future Volume (veh/h)	26	63	1295	11	27	1060
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	29	70	1439	12	30	1178
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	36	87	4364	36	286	4267
Arrive On Green	0.08	0.08	0.28	0.28	0.84	0.84
Sat Flow, veh/h	472	1139	5348	43	364	5233
Grp Volume(v), veh/h	100	0	938	513	30	1178
Grp Sat Flow(s),veh/h/ln	1627	0	1689	1847	364	1689
Q Serve(g_s), s	7.3	0.0	26.5	26.5	4.1	5.7
Cycle Q Clear(g_c), s	7.3	0.0	26.5	26.5	30.6	5.7
Prop In Lane	0.29	0.70		0.02	1.00	
Lane Grp Cap(c), veh/h	125	0	2845	1556	286	4267
V/C Ratio(X)	0.80	0.00	0.33	0.33	0.10	0.28
Avail Cap(c_a), veh/h	575	0	2845	1556	286	4267
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.81	0.81	0.76	0.76
Uniform Delay (d), s/veh	54.5	0.0	16.4	16.4	9.4	1.9
Incr Delay (d2), s/veh	11.1	0.0	0.3	0.5	0.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	12.0	13.3	0.4	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	65.6	0.0	16.6	16.9	9.9	2.1
LnGrp LOS	E		B	B	A	A
Approach Vol, veh/h	100		1451		1208	
Approach Delay, s/veh	65.6		16.7		2.3	
Approach LOS	E		B		A	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		106.2			106.2	13.8
Change Period (Y+Rc), s		5.1			5.1	4.6
Max Green Setting (Gmax), s		67.9			67.9	42.4
Max Q Clear Time (g_c+I1), s		28.5			32.6	9.3
Green Ext Time (p_c), s		13.2			11.1	0.3
Intersection Summary						
HCM 7th Control Delay, s/veh			12.2			
HCM 7th LOS			B			
Notes						
User approved pedestrian interval to be less than phase max green.						

Carson Triangle Residential Project
3: Avalon Blvd & 213th St

Future With Project - AM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	189	100	152	208	207	128	933	188	81	922	146
Future Volume (veh/h)	176	189	100	152	208	207	128	933	188	81	922	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	187	201	84	162	221	68	136	993	181	86	981	138
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	276	498	417	254	716	215	162	2286	416	125	2293	322
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.09	0.53	0.53	0.05	0.34	0.34
Sat Flow, veh/h	1079	1856	1555	1083	2671	800	1767	4297	781	1767	4488	630
Grp Volume(v), veh/h	187	201	84	162	144	145	136	780	394	86	738	381
Grp Sat Flow(s),veh/h/ln	1079	1856	1555	1083	1763	1708	1767	1689	1702	1767	1689	1741
Q Serve(g_s), s	20.1	10.7	5.0	17.3	7.8	8.2	9.1	16.9	16.9	5.8	20.2	20.3
Cycle Q Clear(g_c), s	28.3	10.7	5.0	28.0	7.8	8.2	9.1	16.9	16.9	5.8	20.2	20.3
Prop In Lane	1.00		1.00	1.00		0.47	1.00		0.46	1.00		0.36
Lane Grp Cap(c), veh/h	276	498	417	254	473	458	162	1796	905	125	1726	890
V/C Ratio(X)	0.68	0.40	0.20	0.64	0.30	0.32	0.84	0.43	0.44	0.69	0.43	0.43
Avail Cap(c_a), veh/h	342	611	512	320	580	562	184	1796	905	184	1726	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.20	0.20	0.20	0.96	0.96	0.96
Uniform Delay (d), s/veh	46.4	36.0	34.0	47.5	35.0	35.1	53.6	17.1	17.1	55.9	25.9	26.0
Incr Delay (d2), s/veh	3.9	0.5	0.2	2.7	0.4	0.4	5.6	0.2	0.3	2.4	0.7	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.9	1.9	4.9	3.4	3.5	4.3	6.4	6.5	2.7	8.7	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.3	36.6	34.2	50.3	35.3	35.5	59.3	17.3	17.4	58.3	26.7	27.4
LnGrp LOS	D	D	C	D	D	D	E	B	B	E	C	C
Approach Vol, veh/h		472			451			1310			1205	
Approach Delay, s/veh		41.6			40.8			21.7			29.2	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	55.5	66.8		37.7	13.0	69.3		37.7				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+fl), s	11.5	22.3		30.3	7.8	18.9		30.0				
Green Ext Time (p_c), s	0.0	12.3		1.6	0.0	13.7		1.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			29.5									
HCM 7th LOS			C									

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Future With Project - AM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↔		↔↔	↑↔		↔↑↑↔			↔↑↑↔		
Traffic Volume (veh/h)	164	632	86	244	735	169	97	823	394	209	705	184
Future Volume (veh/h)	164	632	86	244	735	169	97	823	394	209	705	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	176	680	83	262	790	173	104	885	337	225	758	171
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	285	1134	138	319	1058	232	143	956	363	184	1203	268
Arrive On Green	0.08	0.36	0.36	0.09	0.37	0.37	0.08	0.27	0.27	0.14	0.39	0.39
Sat Flow, veh/h	3428	3157	385	3428	2866	628	1767	3559	1350	1767	4116	918
Grp Volume(v), veh/h	176	379	384	262	486	477	104	840	382	225	620	309
Grp Sat Flow(s),veh/h/ln	1714	1763	1779	1714	1763	1731	1767	1689	1531	1767	1689	1657
Q Serve(g_s), s	6.0	21.1	21.1	9.0	28.8	28.8	6.9	29.0	29.2	12.5	17.8	18.2
Cycle Q Clear(g_c), s	6.0	21.1	21.1	9.0	28.8	28.8	6.9	29.0	29.2	12.5	17.8	18.2
Prop In Lane	1.00		0.22	1.00		0.36	1.00		0.88	1.00		0.55
Lane Grp Cap(c), veh/h	285	633	639	319	651	639	143	907	411	184	987	484
V/C Ratio(X)	0.62	0.60	0.60	0.82	0.75	0.75	0.73	0.93	0.93	1.22	0.63	0.64
Avail Cap(c_a), veh/h	443	633	639	443	651	639	184	915	415	184	987	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	53.2	31.4	31.4	53.5	33.0	33.0	53.9	42.7	42.8	51.7	31.4	31.5
Incr Delay (d2), s/veh	0.8	4.2	4.1	6.0	7.7	7.8	6.4	15.0	27.5	134.1	1.3	2.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	9.6	9.7	4.1	13.4	13.2	3.3	13.8	14.0	12.1	6.8	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.0	35.5	35.5	59.5	40.6	40.8	60.3	57.7	70.3	185.8	32.7	34.3
LnGrp LOS	D	D	D	E	D	D	E	E	E	F	C	C
Approach Vol, veh/h		939			1225			1326			1154	
Approach Delay, s/veh		39.0			44.7			61.6			63.0	
Approach LOS		D			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	55.5	49.8	17.0	37.7	16.7	48.6	14.2	40.6				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	15.5	38.5	12.5	32.5	15.5	38.5	12.5	32.5				
Max Q Clear Time (g_c+10), s	19.0	30.8	14.5	31.2	11.0	23.1	8.9	20.2				
Green Ext Time (p_c), s	0.1	4.5	0.0	1.0	0.1	5.6	0.0	6.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			52.9									
HCM 7th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↖	↖	↑↑	↖
Traffic Volume (veh/h)	76	124	46	82	81	124	40	1060	73	116	815	45
Future Volume (veh/h)	76	124	46	82	81	124	40	1060	73	116	815	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	141	37	93	92	135	45	1152	80	126	886	49
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	171	296	78	224	142	208	400	2394	1058	295	2394	1068
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1141	1269	333	1192	609	893	594	3526	1557	449	3526	1572
Grp Volume(v), veh/h	83	0	178	93	0	227	45	1152	80	126	886	49
Grp Sat Flow(s),veh/h/ln	1141	0	1602	1192	0	1502	594	1763	1557	449	1763	1572
Q Serve(g_s), s	8.5	0.0	11.5	8.8	0.0	16.4	4.2	18.7	2.1	22.3	12.9	1.2
Cycle Q Clear(g_c), s	24.9	0.0	11.5	20.3	0.0	16.4	17.1	18.7	2.1	41.0	12.9	1.2
Prop In Lane	1.00		0.21	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	374	224	0	351	400	2394	1058	295	2394	1068
V/C Ratio(X)	0.49	0.00	0.48	0.42	0.00	0.65	0.11	0.48	0.08	0.43	0.37	0.05
Avail Cap(c_a), veh/h	223	0	447	279	0	419	400	2394	1058	295	2394	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	0.0	39.7	48.4	0.0	41.5	11.9	9.2	6.5	19.0	8.3	6.4
Incr Delay (d2), s/veh	2.1	0.0	0.9	1.2	0.0	2.6	0.6	0.7	0.1	4.5	0.4	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	2.5	0.0	4.6	2.7	0.0	6.4	0.6	6.7	0.7	2.6	4.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.9	0.0	40.6	49.6	0.0	44.1	12.5	9.9	6.7	23.4	8.7	6.5
LnGrp LOS	D		D	D		D	B	A	A	C	A	A
Approach Vol, veh/h		261			320			1277			1061	
Approach Delay, s/veh		45.2			45.7			9.8			10.3	
Approach LOS		D			D			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.0		33.0		87.0		33.0				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+I1), s		20.7		26.9		43.0		22.3				
Green Ext Time (p_c), s		9.7		0.7		0.0		1.3				

Intersection Summary

HCM 7th Control Delay, s/veh	17.1
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	24	352	7	5	528	13	2	0	0	14	0	32
Future Vol, veh/h	24	352	7	5	528	13	2	0	0	14	0	32
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	27	400	8	5	600	15	2	0	0	16	0	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	616	0	0	408	0	0	770	1085	204	874	1081	309
Stage 1	-	-	-	-	-	-	458	458	-	619	619	-
Stage 2	-	-	-	-	-	-	312	627	-	255	462	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	953	-	-	1141	-	-	288	214	800	242	215	684
Stage 1	-	-	-	-	-	-	549	563	-	440	476	-
Stage 2	-	-	-	-	-	-	671	472	-	725	560	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	952	-	-	1141	-	-	262	205	800	233	206	682
Mov Cap-2 Maneuver	-	-	-	-	-	-	262	205	-	233	206	-
Stage 1	-	-	-	-	-	-	531	544	-	437	473	-
Stage 2	-	-	-	-	-	-	631	469	-	701	542	-

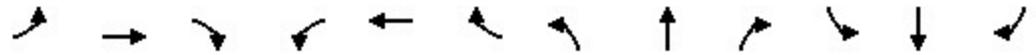
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.79			0.12			18.84			14.53		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	262	220	-	-	31	-	-	430
HCM Lane V/C Ratio	0.008	0.029	-	-	0.005	-	-	0.122
HCM Control Delay (s/veh)	18.8	8.9	0.3	-	8.2	0	-	14.5
HCM Lane LOS		C	A	A	-	A	A	B
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.4

Carson Triangle Residential Project
 7: I-405 SB Ramps/Gas Station Driveway & Carson St

Future With Project - AM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘		↗			
Traffic Volume (veh/h)	7	707	551	68	1110	4	84	0	219	0	0	2
Future Volume (veh/h)	7	707	551	68	1110	4	84	0	219	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	8	768	459	74	1207	4	91	0	40			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	368	2223	1153	165	4047	13	189	0	168			
Arrive On Green	0.63	0.63	0.63	0.09	0.78	0.78	0.11	0.00	0.11			
Sat Flow, veh/h	457	3526	1563	1767	5212	17	1767	0	1572			
Grp Volume(v), veh/h	8	768	459	74	782	429	91	0	40			
Grp Sat Flow(s),veh/h/ln	457	1763	1563	1767	1689	1852	1767	0	1572			
Q Serve(g_s), s	0.6	9.3	9.8	3.6	6.1	6.1	4.4	0.0	2.1			
Cycle Q Clear(g_c), s	0.6	9.3	9.8	3.6	6.1	6.1	4.4	0.0	2.1			
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00			
Lane Grp Cap(c), veh/h	368	2223	1153	165	2622	1438	189	0	168			
V/C Ratio(X)	0.02	0.35	0.40	0.45	0.30	0.30	0.48	0.00	0.24			
Avail Cap(c_a), veh/h	368	2223	1153	320	2622	1438	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	6.3	7.9	4.4	38.6	2.9	2.9	37.8	0.0	36.8			
Incr Delay (d2), s/veh	0.1	0.4	1.0	1.9	0.3	0.5	1.9	0.0	0.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.1	3.0	4.2	1.6	1.2	1.5	2.0	0.0	0.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.4	8.3	5.4	40.5	3.2	3.5	39.7	0.0	37.6			
LnGrp LOS	A	A	A	D	A	A	D		D			
Approach Vol, veh/h		1235			1285			131				
Approach Delay, s/veh		7.2			5.4			39.1				
Approach LOS		A			A			D				
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	13.1	62.2				75.3		14.7				
Change Period (Y+Rc), s	4.7	5.4				5.4		5.1				
Max Green Setting (Gmax), s	16.3	38.6				59.6		19.9				
Max Q Clear Time (g_c+I1), s	5.6	11.8				8.1		6.4				
Green Ext Time (p_c), s	0.1	11.2				15.4		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			7.9									
HCM 7th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	483	97	195	760	145	166	796	212	98	756	149
Future Volume (veh/h)	200	483	97	195	760	145	166	796	212	98	756	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	220	531	40	214	835	79	182	875	187	108	831	134
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	221	1166	505	221	1166	505	208	1200	255	143	1102	176
Arrive On Green	0.13	0.33	0.33	0.13	0.33	0.33	0.12	0.29	0.29	0.08	0.25	0.25
Sat Flow, veh/h	1767	3526	1527	1767	3526	1529	1767	4161	884	1767	4381	701
Grp Volume(v), veh/h	220	531	40	214	835	79	182	709	353	108	639	326
Grp Sat Flow(s),veh/h/ln	1767	1763	1527	1767	1763	1529	1767	1689	1668	1767	1689	1705
Q Serve(g_s), s	14.9	14.2	2.2	14.5	24.9	4.4	12.2	22.7	22.9	7.2	21.0	21.2
Cycle Q Clear(g_c), s	14.9	14.2	2.2	14.5	24.9	4.4	12.2	22.7	22.9	7.2	21.0	21.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.53	1.00		0.41
Lane Grp Cap(c), veh/h	221	1166	505	221	1166	505	208	974	481	143	850	429
V/C Ratio(X)	1.00	0.46	0.08	0.97	0.72	0.16	0.87	0.73	0.73	0.75	0.75	0.76
Avail Cap(c_a), veh/h	221	1166	505	221	1166	505	221	974	481	221	971	490
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	52.5	31.6	27.6	52.3	35.2	28.3	52.1	38.5	38.5	54.0	41.5	41.5
Incr Delay (d2), s/veh	59.3	1.3	0.3	51.3	3.8	0.7	27.4	3.0	6.2	3.0	3.3	6.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	6.2	0.8	9.5	11.1	1.7	6.9	9.6	10.0	3.3	9.0	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	111.8	32.9	27.9	103.5	39.0	29.0	79.4	41.5	44.7	57.0	44.8	48.2
LnGrp LOS	F	C	C	F	D	C	E	D	D	E	D	D
Approach Vol, veh/h		791			1128			1244			1073	
Approach Delay, s/veh		54.6			50.6			48.0			47.0	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	45.2	14.7	40.1	20.0	45.2	19.1	35.7				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	15.0	34.5	15.0	34.5	15.0	34.5	15.0	34.5				
Max Q Clear Time (g_c+110), s	16.2	16.2	9.2	24.9	16.9	26.9	14.2	23.2				
Green Ext Time (p_c), s	0.0	4.6	0.0	5.6	0.0	4.2	0.0	6.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			49.7									
HCM 7th LOS			D									

**Future plus Project (2026), Full Driveway Access, PM Peak
Hour**

Carson Triangle Residential Project
1: Avalon Blvd & I-405 SB Ramps

Future With Project - PM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↗					↑↑			↑↑	↗
Traffic Volume (veh/h)	445	583	685	0	0	0	0	1185	173	0	1095	749
Future Volume (veh/h)	445	583	685	0	0	0	0	1185	173	0	1095	749
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	0	1856	1856
Adj Flow Rate, veh/h	478	627	0				0	1274	180	0	1177	687
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				0	3	3	0	3	3
Cap, veh/h	964	992					0	1861	261	0	2118	944
Arrive On Green	0.28	0.28	0.00				0.00	0.60	0.60	0.00	0.60	0.60
Sat Flow, veh/h	3428	3526	1572				0	3191	435	0	3618	1572
Grp Volume(v), veh/h	478	627	0				0	721	733	0	1177	687
Grp Sat Flow(s),veh/h/ln	1714	1763	1572				0	1763	1770	0	1763	1572
Q Serve(g_s), s	10.4	13.8	0.0				0.0	24.6	25.1	0.0	17.8	27.5
Cycle Q Clear(g_c), s	10.4	13.8	0.0				0.0	24.6	25.1	0.0	17.8	27.5
Prop In Lane	1.00		1.00				0.00		0.25	0.00		1.00
Lane Grp Cap(c), veh/h	964	992					0	1059	1063	0	2118	944
V/C Ratio(X)	0.50	0.63					0.00	0.68	0.69	0.00	0.56	0.73
Avail Cap(c_a), veh/h	2121	2181					0	1388	1394	0	2776	1238
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	1.00	0.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	27.9	0.0				0.0	12.0	12.1	0.0	10.6	12.6
Incr Delay (d2), s/veh	0.4	0.7	0.0				0.0	1.2	1.3	0.0	0.3	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	5.8	0.0				0.0	8.6	8.8	0.0	6.1	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.1	28.6	0.0				0.0	13.2	13.4	0.0	11.0	14.5
LnGrp LOS	C	C						B	B		B	B
Approach Vol, veh/h		1105						1454			1864	
Approach Delay, s/veh		27.9						13.3			12.3	
Approach LOS		C						B			B	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		58.8		30.1		58.8						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		70.0		55.0		70.0						
Max Q Clear Time (g_c+I1), s		27.1		15.8		29.5						
Green Ext Time (p_c), s		21.3		7.2		23.8						

Intersection Summary

HCM 7th Control Delay, s/veh	16.5
HCM 7th LOS	B

Notes

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵		↑↑↑		↵	↑↑↑
Traffic Volume (veh/h)	17	39	1273	23	56	1458
Future Volume (veh/h)	17	39	1273	23	56	1458
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	19	43	1414	26	62	1620
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	32	73	4368	80	374	4323
Arrive On Green	0.07	0.07	1.00	1.00	0.85	0.85
Sat Flow, veh/h	492	1113	5286	94	368	5233
Grp Volume(v), veh/h	63	0	933	507	62	1620
Grp Sat Flow(s),veh/h/ln	1631	0	1689	1836	368	1689
Q Serve(g_s), s	4.5	0.0	0.0	0.0	3.6	8.3
Cycle Q Clear(g_c), s	4.5	0.0	0.0	0.0	3.6	8.3
Prop In Lane	0.30	0.68		0.05	1.00	
Lane Grp Cap(c), veh/h	107	0	2882	1567	374	4323
V/C Ratio(X)	0.59	0.00	0.32	0.32	0.17	0.37
Avail Cap(c_a), veh/h	304	0	2882	1567	374	4323
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.66	0.66	0.44	0.44
Uniform Delay (d), s/veh	54.5	0.0	0.0	0.0	1.6	1.9
Incr Delay (d2), s/veh	5.0	0.0	0.2	0.4	0.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.1	0.2	0.2	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	59.5	0.0	0.2	0.4	2.0	2.0
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	63		1440			1682
Approach Delay, s/veh	59.5		0.3			2.0
Approach LOS	E		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		107.5			107.5	12.5
Change Period (Y+Rc), s		5.1			5.1	4.6
Max Green Setting (Gmax), s		87.9			87.9	22.4
Max Q Clear Time (g_c+I1), s		2.0			10.3	6.5
Green Ext Time (p_c), s		14.7			23.2	0.1
Intersection Summary						
HCM 7th Control Delay, s/veh			2.4			
HCM 7th LOS			A			

Carson Triangle Residential Project
3: Avalon Blvd & 213th St

Future With Project - PM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	415	116	140	162	89	111	1006	274	169	1221	207
Future Volume (veh/h)	219	415	116	140	162	89	111	1006	274	169	1221	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.99	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	233	441	101	149	172	-57	118	1070	272	180	1299	203
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	448	611	512	163	1160	0	143	1755	446	184	2034	318
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.00	0.08	0.44	0.44	0.14	0.61	0.61
Sat Flow, veh/h	1264	1856	1556	856	3618	0	1767	4012	1019	1767	4417	690
Grp Volume(v), veh/h	233	441	101	149	115	0	118	901	441	180	993	509
Grp Sat Flow(s),veh/h/ln	1264	1856	1556	856	1763	0	1767	1689	1654	1767	1689	1730
Q Serve(g_s), s	18.8	25.1	5.6	14.4	2.7	0.0	7.9	24.5	24.6	12.2	22.5	22.5
Cycle Q Clear(g_c), s	21.5	25.1	5.6	39.5	2.7	0.0	7.9	24.5	24.6	12.2	22.5	22.5
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.62	1.00		0.40
Lane Grp Cap(c), veh/h	448	611	512	163	1160	0	143	1477	724	184	1555	797
V/C Ratio(X)	0.52	0.72	0.20	0.92	0.10	0.00	0.82	0.61	0.61	0.98	0.64	0.64
Avail Cap(c_a), veh/h	448	611	512	163	1160	0	184	1477	724	184	1555	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.09	0.09	0.09	0.93	0.93	0.93
Uniform Delay (d), s/veh	35.4	35.4	28.9	55.0	27.9	0.0	54.3	25.9	25.9	51.5	16.9	16.9
Incr Delay (d2), s/veh	1.1	4.2	0.2	46.6	0.0	0.0	1.8	0.2	0.3	57.2	1.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	12.0	2.1	6.6	1.2	0.0	3.5	9.6	9.5	8.1	7.6	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.4	39.6	29.1	101.7	27.9	0.0	56.0	26.1	26.2	108.7	18.8	20.5
LnGrp LOS	D	D	C	F	C		E	C	C	F	B	C
Approach Vol, veh/h		775			264			1460			1682	
Approach Delay, s/veh		37.3			69.5			28.5			28.9	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	60.8		45.0	17.0	58.0		45.0				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		39.5	12.5	52.5		39.5				
Max Q Clear Time (g_c+1.9), s	19.5	24.5		27.1	14.2	26.6		41.5				
Green Ext Time (p_c), s	0.0	16.7		3.3	0.0	14.2		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			32.9									
HCM 7th LOS			C									

Carson Triangle Residential Project
4: Avalon Blvd & Carson St

Future With Project - PM Peak Hour
09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↓		↔	↑↓		↔	↑↑↓		↔	↑↑↓	
Traffic Volume (veh/h)	220	913	105	255	634	214	106	886	560	280	884	260
Future Volume (veh/h)	220	913	105	255	634	214	106	886	560	280	884	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	237	982	104	274	682	221	114	953	515	301	951	253
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	294	1054	112	331	884	286	144	915	406	228	1261	334
Arrive On Green	0.09	0.33	0.33	0.10	0.34	0.34	0.08	0.27	0.27	0.17	0.42	0.42
Sat Flow, veh/h	3428	3210	340	3428	2605	844	1767	3377	1499	1767	3958	1050
Grp Volume(v), veh/h	237	539	547	274	461	442	114	953	515	301	811	393
Grp Sat Flow(s),veh/h/ln	1714	1763	1787	1714	1763	1687	1767	1689	1499	1767	1689	1630
Q Serve(g_s), s	8.1	35.5	35.5	9.4	28.1	28.1	7.6	32.5	32.5	15.5	24.4	24.5
Cycle Q Clear(g_c), s	8.1	35.5	35.5	9.4	28.1	28.1	7.6	32.5	32.5	15.5	24.4	24.5
Prop In Lane	1.00		0.19	1.00		0.50	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	294	579	587	331	598	572	144	915	406	228	1076	519
V/C Ratio(X)	0.81	0.93	0.93	0.83	0.77	0.77	0.79	1.04	1.27	1.32	0.75	0.76
Avail Cap(c_a), veh/h	471	579	587	471	598	572	228	915	406	228	1076	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.60	0.60
Uniform Delay (d), s/veh	53.9	39.0	39.0	53.2	35.5	35.5	54.1	43.7	43.8	49.7	30.6	30.6
Incr Delay (d2), s/veh	2.1	23.8	23.6	5.6	9.3	9.7	3.7	41.2	139.1	160.9	2.0	4.1
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	8.6	18.8	19.0	4.3	13.4	12.9	3.5	18.5	27.5	16.7	9.3	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.0	62.8	62.6	58.8	44.8	45.2	57.8	85.0	182.8	210.5	32.6	34.8
LnGrp LOS	E	E	E	E	D	D	E	F	F	F	C	C
Approach Vol, veh/h		1323			1177			1582			1505	
Approach Delay, s/veh		61.5			48.2			114.9			68.8	
Approach LOS		E			D			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	46.2	20.0	38.0	17.1	44.9	14.3	43.7				
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	16.5	34.5	15.5	32.5	16.5	34.5	15.5	32.5				
Max Q Clear Time (g_c+I10), s	11.0	30.1	17.5	34.5	11.4	37.5	9.6	26.5				
Green Ext Time (p_c), s	0.2	2.6	0.0	0.0	0.2	0.0	0.0	4.3				
Intersection Summary												
HCM 7th Control Delay, s/veh											75.8	
HCM 7th LOS											E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↖	↖	↑↑	↖
Traffic Volume (veh/h)	90	140	54	41	53	61	35	1252	53	85	1020	81
Future Volume (veh/h)	90	140	54	41	53	61	35	1252	53	85	1020	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	98	159	46	47	60	66	40	1361	57	92	1109	88
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	233	67	140	136	150	337	2554	1129	267	2554	1139
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.72	0.72	0.72	0.72	0.72	0.72
Sat Flow, veh/h	1248	1238	358	1163	723	796	464	3526	1558	376	3526	1572
Grp Volume(v), veh/h	98	0	205	47	0	126	40	1361	57	92	1109	88
Grp Sat Flow(s),veh/h/ln	1248	0	1596	1163	0	1519	464	1763	1558	376	1763	1572
Q Serve(g_s), s	9.1	0.0	14.4	4.7	0.0	8.8	4.6	20.8	1.3	17.5	15.2	2.0
Cycle Q Clear(g_c), s	17.9	0.0	14.4	19.1	0.0	8.8	19.7	20.8	1.3	38.3	15.2	2.0
Prop In Lane	1.00		0.22	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	300	140	0	286	337	2554	1129	267	2554	1139
V/C Ratio(X)	0.48	0.00	0.68	0.34	0.00	0.44	0.12	0.53	0.05	0.34	0.43	0.08
Avail Cap(c_a), veh/h	317	0	446	246	0	424	337	2554	1129	267	2554	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.0	0.0	45.4	54.2	0.0	43.1	10.6	7.4	4.7	16.0	6.7	4.8
Incr Delay (d2), s/veh	1.8	0.0	2.7	1.4	0.0	1.1	0.7	0.8	0.1	3.5	0.5	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	5.9	1.4	0.0	3.4	0.5	7.0	0.4	1.7	5.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	52.8	0.0	48.1	55.7	0.0	44.2	11.3	8.2	4.8	19.5	7.2	5.0
LnGrp LOS	D		D	E		D	B	A	A	B	A	A
Approach Vol, veh/h		303			173			1458			1289	
Approach Delay, s/veh		49.6			47.3			8.2			7.9	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		92.4		27.6		92.4		27.6				
Change Period (Y+Rc), s		5.5		5.0		* 5.5		5.0				
Max Green Setting (Gmax), s		76.0		33.5		* 18		33.5				
Max Q Clear Time (g_c+I1), s		22.8		19.9		40.3		21.1				
Green Ext Time (p_c), s		12.7		1.2		0.0		0.7				

Intersection Summary

HCM 7th Control Delay, s/veh	14.1
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	32	755	18	12	356	11	8	0	6	13	0	23
Future Vol, veh/h	32	755	18	12	356	11	8	0	6	13	0	23
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	88	88	92	92	92	88	92	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	36	858	20	13	405	13	9	0	7	15	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	418	0	0	878	0	0	1170	1385	439	940	1388	211
Stage 1	-	-	-	-	-	-	940	940	-	438	438	-
Stage 2	-	-	-	-	-	-	229	444	-	502	950	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	1130	-	-	759	-	-	147	141	563	217	140	792
Stage 1	-	-	-	-	-	-	281	338	-	565	575	-
Stage 2	-	-	-	-	-	-	750	571	-	518	334	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1129	-	-	759	-	-	133	132	563	201	132	791
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	132	-	201	132	-
Stage 1	-	-	-	-	-	-	269	324	-	553	563	-
Stage 2	-	-	-	-	-	-	710	559	-	490	320	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.64			0.47			24.68			15.49		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	198	139	-	-	105	-	-	384
HCM Lane V/C Ratio	0.077	0.032	-	-	0.017	-	-	0.107
HCM Control Delay (s/veh)	24.7	8.3	0.3	-	9.8	0.2	-	15.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.1	-	-	0.4

Carson Triangle Residential Project
 7: I-405 SB Ramps/Gas Station Driveway & Carson St

Future With Project - PM Peak Hour

09/18/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑		↘		↗			
Traffic Volume (veh/h)	4	1149	970	76	916	11	69	0	95	0	0	3
Future Volume (veh/h)	4	1149	970	76	916	11	69	0	95	0	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1856	1856	1856	1856	1856	1856	1856	0	1856			
Adj Flow Rate, veh/h	4	1249	914	83	996	12	75	0	-95			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	3	3	3	3	3	0	3			
Cap, veh/h	518	2787	1148	172	4849	58	2	0	2			
Arrive On Green	0.79	0.79	0.79	0.10	0.94	0.94	0.00	0.00	0.00			
Sat Flow, veh/h	554	3526	1565	1767	5159	62	1767	0	1572			
Grp Volume(v), veh/h	4	1249	914	83	652	356	75	0	-95			
Grp Sat Flow(s),veh/h/ln	554	1763	1565	1767	1689	1844	1767	0	1572			
Q Serve(g_s), s	0.1	10.3	33.6	4.0	1.3	1.3	0.1	0.0	0.0			
Cycle Q Clear(g_c), s	0.1	10.3	33.6	4.0	1.3	1.3	0.1	0.0	0.0			
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00			
Lane Grp Cap(c), veh/h	518	2787	1148	172	3174	1733	2	0	2			
V/C Ratio(X)	0.01	0.45	0.80	0.48	0.21	0.21	38.19	0.00	-54.37			
Avail Cap(c_a), veh/h	518	2787	1148	320	3174	1733	391	0	348			
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.0	3.1	7.7	38.5	0.2	0.2	45.0	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.5	5.8	2.1	0.1	0.3	16938.5	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			
%ile BackOfQ(50%),veh/ln	0.0	2.0	6.0	1.8	0.1	0.1	9.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	2.0	3.6	13.4	40.6	0.3	0.5	16983.5	0.0	0.0			
LnGrp LOS	A	A	B	D	A	A	F					
Approach Vol, veh/h		2167			1091			-20				
Approach Delay, s/veh		7.7			3.4			0.0				
Approach LOS		A			A			A				
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	13.4	76.6				90.0		0.0				
Change Period (Y+Rc), s	4.7	5.4				5.4		5.1				
Max Green Setting (Gmax), s	16.3	38.6				59.6		19.9				
Max Q Clear Time (g_c+I1), s	6.0	35.6				3.3		2.1				
Green Ext Time (p_c), s	0.1	2.8				11.9		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			6.3									
HCM 7th LOS			A									

Carson Triangle Residential Project
8: Main St & Carson St

Future With Project - PM Peak Hour

09/18/2024



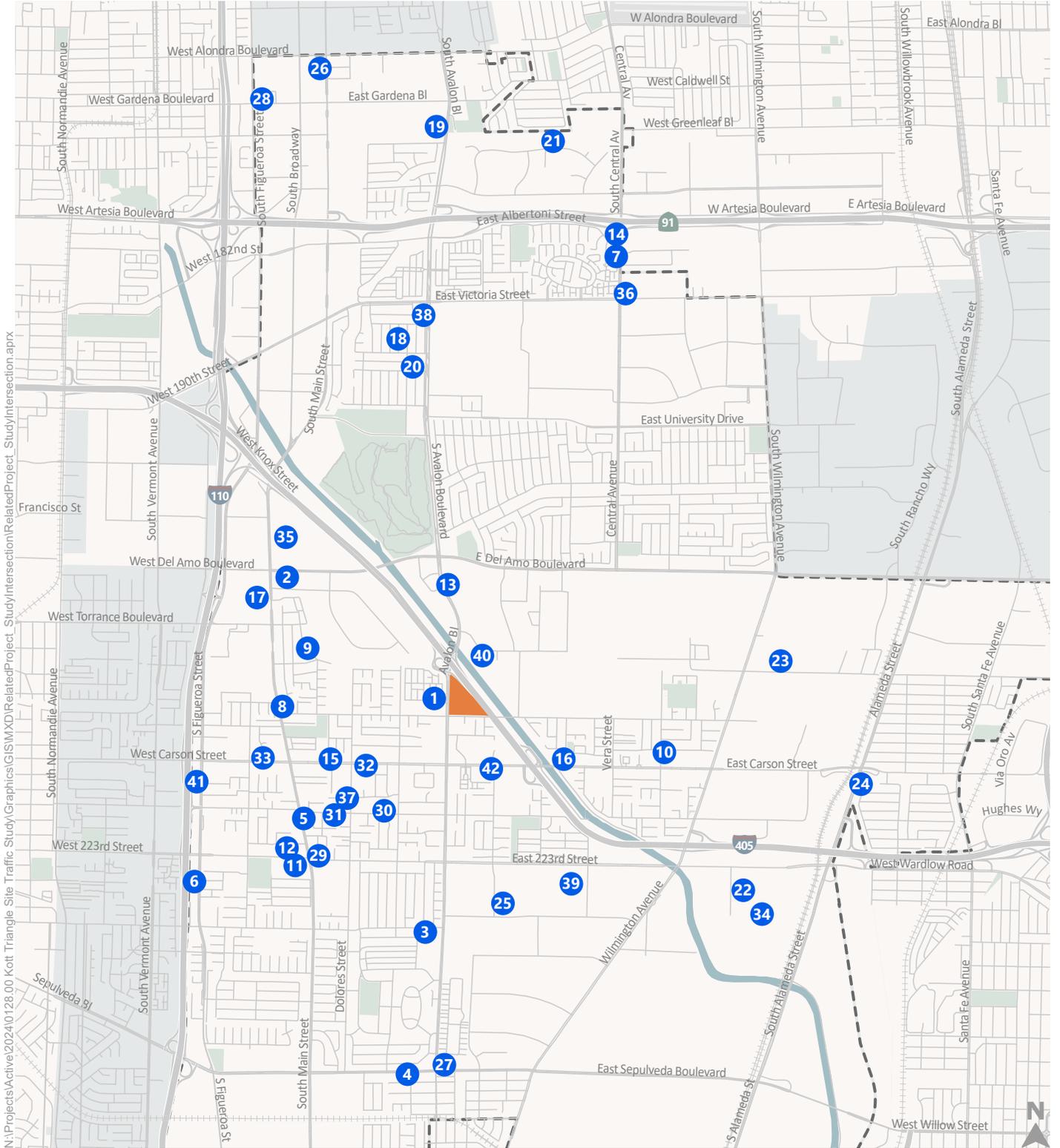
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	956	106	220	619	121	185	595	212	202	821	133
Future Volume (veh/h)	271	956	106	220	619	121	185	595	212	202	821	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	298	1051	49	242	680	53	203	654	187	222	902	116
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	236	1077	466	236	1077	467	229	987	277	236	1162	149
Arrive On Green	0.13	0.31	0.31	0.13	0.31	0.31	0.13	0.25	0.25	0.13	0.26	0.26
Sat Flow, veh/h	1767	3526	1525	1767	3526	1527	1767	3903	1094	1767	4529	580
Grp Volume(v), veh/h	298	1051	49	242	680	53	203	564	277	222	672	346
Grp Sat Flow(s),veh/h/ln	1767	1763	1525	1767	1763	1527	1767	1689	1620	1767	1689	1732
Q Serve(g_s), s	16.0	35.4	2.8	16.0	19.9	3.0	13.6	18.0	18.5	14.9	22.1	22.3
Cycle Q Clear(g_c), s	16.0	35.4	2.8	16.0	19.9	3.0	13.6	18.0	18.5	14.9	22.1	22.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.68	1.00		0.33
Lane Grp Cap(c), veh/h	236	1077	466	236	1077	467	229	854	410	236	866	444
V/C Ratio(X)	1.26	0.98	0.11	1.03	0.63	0.11	0.89	0.66	0.68	0.94	0.78	0.78
Avail Cap(c_a), veh/h	236	1077	466	236	1077	467	236	971	466	236	971	498
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	52.0	41.2	29.9	52.0	35.8	30.0	51.4	40.2	40.4	51.5	41.4	41.5
Incr Delay (d2), s/veh	148.4	22.1	0.5	65.8	2.8	0.5	29.2	1.7	3.9	42.3	4.0	7.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.7	18.3	1.1	11.3	8.9	1.2	7.7	7.5	7.7	9.3	9.6	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	200.4	63.4	30.3	117.8	38.7	30.5	80.5	41.9	44.3	93.9	45.3	49.2
LnGrp LOS	F	E	C	F	D	C	F	D	D	F	D	D
Approach Vol, veh/h		1398			975			1044			1240	
Approach Delay, s/veh		91.4			57.9			50.1			55.1	
Approach LOS		F			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	42.2	21.0	35.8	21.0	42.2	20.5	36.3				
Change Period (Y+Rc), s	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5				
Max Green Setting (Gmax), s	16.0	32.5	16.0	34.5	16.0	32.5	16.0	34.5				
Max Q Clear Time (g_c+1/3), s	11.0	37.4	16.9	20.5	18.0	21.9	15.6	24.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	5.9	0.0	4.4	0.0	5.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			65.5									
HCM 7th LOS			E									

Appendix C: List of Related Projects and Trip Generations

**APPENDIX C
CARSON KOTT SITE RESIDENTIAL PROJECT
RELATED PROJECT**

#	Address	Name	Component	Land Use	ITE Code	Unit	Quantity	AM			PM			AM			PM		
								Rate	In	Out	Rate	In	Out	Total	In	Out	Total	In	Out
1	Imperial Avalon	860 E. Carson St.												402	125	277	457	283	174
2	20400 Main Street	20400 Main Street	1	Multifamily Housing (Mid-Rise)	221	DU	1250	0.37	0.23	0.77	0.39	0.61	0.39	463	107	356	488	298	190
2	20400 Main Street	20400 Main Street	2	General Light Industrial	110	ksf	1567.1	0.74	0.88	0.12	0.65	0.14	0.86	1160	1021	139	1019	143	876
2	20400 Main Street	20400 Main Street	3	Factory Outlet Center	823	ksf	696.5	0.67	0.73	0.27	2.29	0.47	0.53	467	341	126	1595	750	845
2	20400 Main Street	20400 Main Street	4	High-Turnover (Sit-Down) Restaurant	932	ksf	15	9.57	0.55	0.45	9.05	0.61	0.39	144	79	65	136	83	53
2	20400 Main Street	20400 Main Street	5	Fast Casual Restaurant	930	ksf	33.8	1.43	0.5	0.5	12.55	0.55	0.45	49	25	24	425	234	191
3	520 E. 228th St.	520 E. 228th St.		Multifamily Housing (Mid-Rise)	221	DU	32	0.37	0.23	0.77	0.39	0.61	0.39	12	3	9	13	8	5
4	454 E. Sepulveda Blvd.	454 E. Sepulveda Blvd.		Multifamily Housing (Low-Rise)	220	DU	6	0.4	0.24	0.76	0.51	0.63	0.37	3	1	2	4	2	2
5	22022 S. Main St.	22022 S. Main St.		Fast-Food Restaurant with Drive-Through Window	934	ksf	1.2	44.61	0.51	0.49	33.03	0.52	0.48	54	28	26	40	21	19
6	22511 Figueroa St.	22511 Figueroa St.		Multifamily Housing (Mid-Rise)	221	DU	33	0.37	0.23	0.77	0.39	0.61	0.39	13	3	10	13	8	5
7	17625 Central Ave.	17625 Central Ave.		Fast-Food Restaurant with Drive-Through Window	934	ksf	1.9	44.61	0.51	0.49	33.03	0.52	0.48	85	44	41	63	33	30
8	21240-21250 Main St.	21240-21250 Main St.		Multifamily Housing (Low-Rise)	220	DU	19	0.4	0.24	0.76	0.51	0.63	0.37	8	2	6	10	7	3
9	20920 Jamison St.	20920 Jamison St.		Single-Family Detached Housing	210	DU	2	0.7	0.25	0.75	0.94	0.63	0.37	2	1	1	2	2	0
10	21530 Martin St.	21530 Martin St.		Multifamily Housing (Low-Rise)	220	DU	4	0.4	0.24	0.76	0.51	0.63	0.37	2	1	1	3	2	1
11	138 W. 223rd St.	138 W. 223rd St.		Multifamily Housing (Low-Rise)	220	DU	10	0.4	0.24	0.76	0.51	0.63	0.37	4	1	3	6	4	2
12	140 W 223rd St.	140 W 223rd St.		Multifamily Housing (Low-Rise)	220	DU	2	0.4	0.24	0.76	0.51	0.63	0.37	1	1	0	2	1	1
13	20512 Avalon Blvd.	20512 Avalon Blvd.		Fast-Food Restaurant with Drive-Through Window	934	ksf	3.9	44.61	0.51	0.49	33.03	0.52	0.48	174	89	85	129	67	62
14	17453-17455 Central Ave.	336 E. Carson St.		Self-Service Car Wash	947	ksf	3.1				5.54	0.51	0.49	0	0	0	18	9	9
15	205 E. Carson St.	205 E. Carson St.		High-Turnover (Sit-Down) Restaurant	932	ksf	2.6	9.57	0.55	0.45	9.05	0.61	0.39	25	14	11	24	15	9
16	21611 S. Perry St.	21611 S. Perry St.	1	Mini-Warehouse	151	ksf	120	0.09	0.59	0.41	0.15	0.47	0.53	11	7	4	18	9	9
16	21611 S. Perry St.	21611 S. Perry St.	2	Strip Retail Plaza (<40k)	822	ksf	5	2.36	0.6	0.4	6.59	0.5	0.5	12	8	4	33	17	16
17	20601 S. Main St.	20601 S. Main St.	1	Warehousing	150	ksf	309	0.17	0.77	0.23	0.18	0.28	0.72	53	41	12	56	16	40
17	20601 S. Main St.	20601 S. Main St.	2	Strip Retail Plaza (<40k)	822	ksf	4	2.36	0.6	0.4	6.59	0.5	0.5	10	6	4	27	14	13
18	18001 Main Street	18001 Main Street		Warehousing	150	ksf	61	0.17	0.77	0.23	0.18	0.28	0.72	11	8	3	11	4	7
19	16627 S. Avalon Blvd.	16627 S. Avalon Blvd.		Warehousing	150	ksf	113.4	0.17	0.77	0.23	0.18	0.28	0.72	20	15	5	21	6	15
20	18501 S. Main St.	18501 S. Main St.		Warehousing	150	ksf	34	0.17	0.77	0.23	0.18	0.28	0.72	6	5	1	7	2	5
21	1055 E. Sandhill Ave	1055 E. Sandhill Ave		Warehousing	150	ksf	126	0.17	0.77	0.23	0.18	0.28	0.72	22	17	5	23	7	16
22	2104 E. 223rd St.	2104 E. 223rd St.		Warehousing	150	ksf	124.3	0.17	0.77	0.23	0.18	0.28	0.72	22	17	5	23	7	16
23	2001 E. Dominguez St.	2001 E. Dominguez St.		Warehousing	150	ksf	454.3	0.17	0.77	0.23	0.18	0.28	0.72	78	60	18	82	23	59
24	21718 S. Alameda St.	21718 S. Alameda St.		Utility	170	ksf	1	2.33	0.87	0.13	2.16	0.18	0.82	3	3	0	3	1	2
25	22418 and 22650 Bonita	22418 and 22650 Bonita		Warehousing	150	ksf	166	0.17	0.77	0.23	0.18	0.28	0.72	29	22	7	30	9	21
26	100 W. Alondra Blvd.	100 W. Alondra Blvd.		Warehousing	150	ksf	286.8	0.17	0.77	0.23	0.18	0.28	0.72	49	38	11	52	15	37
27	23820 Avalon Blvd.	23820 Avalon Blvd.	1	Coffee/Donut Shop with Drive-Through Window	937	ksf	22.2	85.88	0.51	0.49	38.99	0.5	0.5	1907	973	934	866	433	433
27	23820 Avalon Blvd.	23820 Avalon Blvd.	2	Self-Service Car Wash	947	ksf	3.6				5.54	0.51	0.49	0	0	0	20	11	9
28	439 W. Gardena Blvd.	439 W. Gardena Blvd.		Warehousing	150	ksf	3.8	0.17	0.77	0.23	0.18	0.28	0.72	1	1	0	1	1	0
29	123 E. 223rd St.	123 E. 223rd St.		Multifamily Housing (Low-Rise)	220	DU	9	0.4	0.24	0.76	0.51	0.63	0.37	4	1	3	5	3	2
30	427 E. 220th St.	427 E. 220th St.		Multifamily Housing (Mid-Rise)	221	DU	35	0.37	0.23	0.77	0.39	0.61	0.39	13	3	10	14	9	5
31	222 E. 220th St.	17453-17455 Central Ave.		Multifamily Housing (Low-Rise)	220	DU	4	0.4	0.24	0.76	0.51	0.63	0.37	2	1	1	3	2	1
32	336 E. Carson St.	21915 Dolores St.		Multifamily Housing (Mid-Rise)	221	DU	50	0.37	0.23	0.77	0.39	0.61	0.39	19	5	14	20	12	8
33	215 W. Carson St.	215 W. Carson St.		Multifamily Housing (Mid-Rise)	221	DU	35	0.37	0.23	0.77	0.39	0.61	0.39	13	3	10	14	9	5
34	2112 E. 223rd St.	2112 E. 223rd St.		Warehousing	150	ksf	292.4	0.17	0.77	0.23	0.18	0.28	0.72	50	39	11	53	15	38
35	20151 Main St.	20151 Main St.	1	Shopping Plaza (40-150k)	821	ksf	69.8	3.53	0.62	0.38	9.03	0.48	0.52	247	153	94	631	303	328
35	20151 Main St.	20151 Main St.	2	Fast-Food Restaurant with Drive-Through Window	934	ksf	10.2	44.61	0.51	0.49	33.03	0.52	0.48	456	233	223	337	176	161
35	20151 Main St.	20151 Main St.	3	Wholesale Market	860	ksf	153	0.55	0.67	0.33	1.76	0.53	0.47	85	57	28	270	143	127
35	20151 Main St.	20151 Main St.	4	Warehousing	150	ksf	532.4	0.17	0.77	0.23	0.18	0.28	0.72	91	70	21	96	27	69
36	1301 E. Victoria St.	222 E. 220th St.		Multifamily Housing (Mid-Rise)	221	DU	175	0.37	0.23	0.77	0.39	0.61	0.39	65	15	50	69	42	27
37	21915 Dolores St.	1301 E. Victoria St.		Multifamily Housing (Low-Rise)	220	DU	5	0.4	0.24	0.76	0.51	0.63	0.37	2	1	1	3	2	1
38	18101 Avalon Blvd.	18101 Avalon Blvd.		Multifamily Housing (Mid-Rise)	221	DU	32	0.4	0.24	0.76	0.51	0.63	0.37	13	4	9	17	11	6
39	1210-1250 E. 223rd St.	1210-1250 E. 223rd St.		Warehousing	150	ksf	181	0.17	0.77	0.23	0.18	0.28	0.72	31	24	7	33	10	23
40	888 E. Dominguez St.	888 E. Dominguez St.		Hotel	310	Rooms	111	0.46	0.56	0.44	0.59	0.51	0.49	52	29	23	66	34	32
41	21811 Figueroa St.	21811 Figueroa St.		Multifamily Housing (Mid-Rise)	221	DU	32	0.4	0.24	0.76	0.51	0.63	0.37	13	4	9	17	11	6
42	860 E. Carson St.	860 E. Carson St.		Coffee/Donut Shop with Drive-Through Window	937	ksf	2	85.88	0.51	0.49	38.99	0.5	0.5	172	88	84	78	39	39

Source:
Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE), 2021.



N:\Projects\Active\2024\128.00 Kott Triangle Site Traffic Study\Graphics\GIS\MXD\RelatedProject_Study\Intersection\RelatedProject_Study\Intersection.aprx

- # Related Projects
- Project Site
- City of Carson Boundaries

