

# PROPOSED TORRANCE COMMERCE CENTER PHASE 3 PROJECT TRAFFIC ANALYSIS City of Torrance, California

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## 1.0 Executive Summary

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The purpose of this analysis and report is to evaluate and assess the proposed Torrance Commerce Center Phase 3 project from a traffic and circulation standpoint.

This traffic study has been prepared in accordance with the traffic study guidelines, requirements and thresholds for the City of Torrance and State of California Department of Transportation (Caltrans) and evaluates the traffic conditions associated with the proposed project in accordance with the applicable agency's performance criteria and thresholds.

This study has been prepared in accordance with the Traffic Circulation Analysis (TCA) Guidelines that applies to Land Use Projects sent out for public review on or after July 1, 2020 and in accordance with the scope of work approved by the City of Torrance staff and contained in Appendix A.

The project site is located on the southwest corner of the Western Avenue / 190<sup>th</sup> Street intersection in the City of Torrance. The proposed project is planned to consist of up to 730,000 square feet of industrial park use that will displace the existing uses, which previously was a part of the Toyota Campus. The project site currently contains a total of ten buildings as shown and summarized in the table below.

### Summary of Existing Uses on Project Site

#	Site/ Building No.	Address	Site Name	Current/Previous Use	Building Gross Square Footage
1	5	19001 South Western Avenue	Toyota Headquarters	Office	330,389
2	6	19001 South Western Avenue	Campus Dining Center	Cafeteria	11,320
3	7	19001 South Western Avenue	Data Center	Data Center	88,307
4	8	19901 South Western Avenue	HQ Central Plant & Parking	Utility & Parking	22,794
5	9	1910 West 190th Street	Scion & Service Garage	Office & Garage	35,618
6	10	2000 West 190th Street	Lexus	Office	62,009
7	11	19200 South Gramercy Place	Toyota Administrative Center	Office	67,757
8	12	1900 West 190th Street	Helipad	Helipad	---
9	13	19300 South Gramercy Place	Project Center North	Office	69,719
10	14	2015 Toyota Way	Project Center South	Office	60,356
<b>Total Trip Generating Uses</b>				<b>Office</b>	<b>590,230</b>

Access for the proposed project is planned to be provided as follows:

- Project Access 1: One full access unsignalized driveway on 190<sup>th</sup> Street;
- Project Access 2: One full access unsignalized driveway on Western Avenue (SR-213);
- Project Access 3: One full access unsignalized driveway on Gramercy Place;
- Project Access 4: One full access unsignalized driveway on 195<sup>th</sup> Street; and
- Project Access 5: One full access unsignalized driveway on 195<sup>th</sup> Street.



The project is planned to open in 2023 and is evaluated in a single phase.

The analysis evaluates traffic conditions of the study intersections and driveways for the following scenarios:

- Existing Conditions;
- Forecast Opening Year (2023) Without Project Conditions (Existing traffic plus Ambient Growth); and
- Forecast Opening Year (2023) With Project Conditions (Existing traffic plus Ambient Growth plus Proposed Project).

Project Trip Generation:

Trip generation for the existing uses, and the proposed project is determined based on ITE 10<sup>th</sup> Edition trip generation rates for the proposed land uses.

To account for the large trucks, the trip generation for trucks has been converted to passenger car equivalents (PCE).

Without applying PCE-factors, the proposed project is forecast to generate approximately 2,460 daily trips which include approximately 292 AM peak hour trip and approximately 292 PM peak hour trips.

After applying PCE-factors, the proposed project is forecast to generate approximately 3,038 PCE-adjusted daily trips which include approximately 361 PCE-adjusted AM peak hour trip and approximately 360 PCE-adjusted PM peak hour trips.

This analysis does not account for the existing land uses which will be displaced by the proposed project.

### Signal Warrant Analysis:

Based on the traffic signal warrant analysis prepared for the unsignalized study intersections, the following unsignalized study intersection is forecast to satisfy the MUTCD peak hour traffic volume traffic signal warrant for the study scenarios evaluated as part of this report:

- Western Avenue (SR-213) / Project Access 2: Forecast Opening Year With Project Conditions (only PM peak hour warrant satisfied).

However, due to the proximity of this intersection to the existing signalized intersection of Western Avenue (SR-213) / 190<sup>th</sup> Street, installation of a traffic signal at this location might not be feasible and recommended.

### **City of Torrance Study Intersection Analysis - Level of Service & Mitigation Measures:**

Based on City of Torrance-established performance criteria, all of the study intersections are currently operating at an acceptable LOS (LOS D or better) for the analysis scenarios evaluated as part of this report with the exception of the following study intersections which are currently operating at a deficient level of service (LOS E or F) for Existing Conditions and are forecast to continue to operate at a deficient level of service for future analysis scenarios during one or more peak hours:

- Project Access 1 / 190<sup>th</sup> Street; and
- Western Avenue (SR-213) / Project Access 2.

It should be noted the deficient operation of these study intersections, which are project driveways, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (190<sup>th</sup> Street and Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria.

Since the Project Access 1 / 190<sup>th</sup> Street study intersection does not satisfy the traffic signal warrants, the project is not required to contribute to improvements at this intersection based on the City of Torrance thresholds for requiring level of service improvements.

The study intersection of Western Avenue (SR-213) / Project Access 2 does satisfy the traffic signal warrants for Opening Year (2023) With Project Conditions during the PM peak hour. However, based on the analysis conducted as part of this report, improvements at this study intersection are not required for the following reasons:

- The deficient operation of the study intersection, which is a project driveway, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria; and
- Due to the proximity of this intersection to the existing signalized intersection of Western Avenue (SR-213) / 190<sup>th</sup> Street, installation of a traffic signal at this location might not be feasible and recommended.

Hence, no improvements are identified and required for the City of Torrance study intersections.

### **State Highway Study Intersection Analysis - Level of Service & Mitigation Measures:**

Based on Caltrans-established performance criteria, all of the study intersections are currently operating at an acceptable LOS (LOS C or better) for the analysis scenarios evaluated as part of this report with the exception of the following study intersection which is currently operating at a deficient level of service (LOS D or worse) for Existing Conditions and is forecast to continue to operate at a deficient level of service for future analysis scenarios during one or more peak hours:

- Western Avenue (SR-213) / Project Access 2.

It should be noted the deficient operation of these study intersection, which is a project driveway, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (Western Avenue) have free flow movement and operate with acceptable level of service (LOS C or better) based on Caltrans performance criteria.

Based on Caltrans-established thresholds, the proposed project is not required to contribute to any improvements at the State Highway study intersections.

## **2.0 Introduction**

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### **2.1 Purpose of Report & Study Objectives**

The purpose of this analysis and report is to evaluate and assess the proposed Torrance Commerce Center Phase 3 project from a traffic and circulation standpoint.

This traffic study has been prepared in accordance with the traffic study guidelines, requirements and thresholds for the City of Torrance and State of California Department of Transportation (Caltrans) and evaluates the traffic conditions associated with the proposed project in accordance with the applicable agency's performance criteria and thresholds.

This study has been prepared in accordance with the Traffic Circulation Analysis (TCA) Guidelines that applies to Land Use Projects sent out for public review on or after July 1, 2020 and in accordance with the scope of work approved by the City of Torrance staff and contained in Appendix A.

### **2.2 Site Location & Project Description**

The project site is located on the southwest corner of the Western Avenue / 190<sup>th</sup> Street intersection in the City of Torrance. The proposed project is planned to consist of up to 730,000 square feet of industrial park use that will displace the existing uses, which previously was a part of the Toyota Campus. The project site currently contains a total of ten buildings as shown and summarized in the table below.

### Summary of Existing Uses on Project Site

#	Site/ Building No.	Address	Site Name	Current/Previous Use	Building Gross Square Footage
1	5	19001 South Western Avenue	Toyota Headquarters	Office	330,389
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9	13	19300 South Gramercy Place	Project Center North	Office	69,719
10	14	2015 Toyota Way	Project Center South	Office	60,356
<b>Total Trip Generating Uses</b>				<b>Office</b>	<b>590,230</b>

Exhibit 2-1 shows the location of the proposed project.

Exhibit 2-2 shows the proposed site plan.

Access for the proposed project is planned to be provided as follows:

- Project Access 1: One full access unsignalized driveway on 190<sup>th</sup> Street;
- Project Access 2: One full access unsignalized driveway on Western Avenue (SR-213);
- Project Access 3: One full access unsignalized driveway on Gramercy Place;

- Project Access 4: One full access unsignalized driveway on 195<sup>th</sup> Street; and
- Project Access 5: One full access unsignalized driveway on 195<sup>th</sup> Street.

The project is planned to open in 2023 and is evaluated in a single phase.

### 2.3 Traffic Study Area & Analysis Scenarios

Exhibit 2-1 illustrates the site location map and traffic analysis study area. The study area consists of the following signalized and unsignalized intersections listed below. The study intersections are under the jurisdiction of different agencies (City of Torrance, and Caltrans).

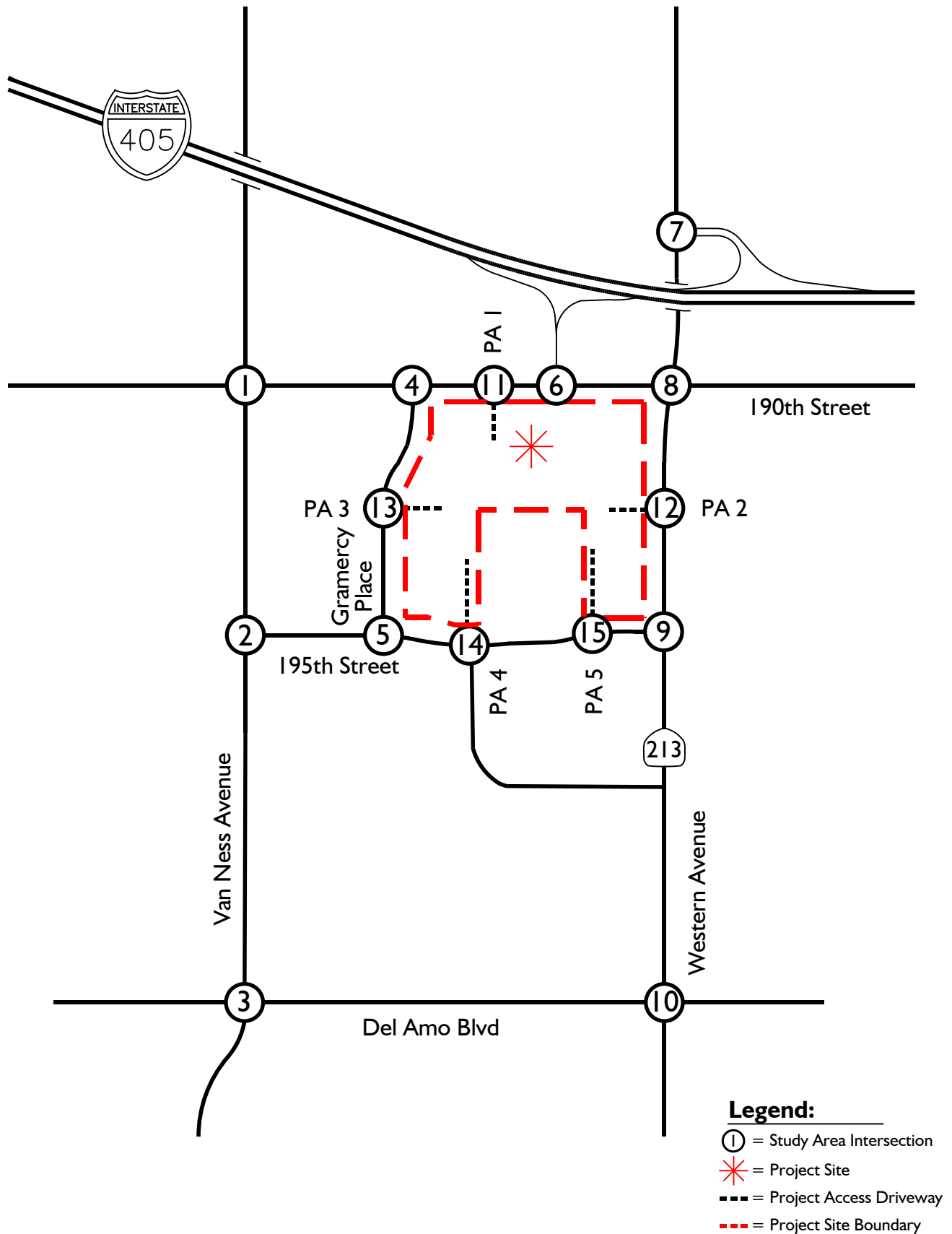
**Study Intersections by Jurisdiction**

Study Intersection	Responsible Jurisdiction	
	City of Torrance	State Highway (Caltrans)
1. Van Ness Ave / 190 <sup>th</sup> St (Signalized)	X	
2. Van Ness Ave / 195 <sup>th</sup> St (Signalized)	X	
3. Van Ness Ave / Del Amo Blvd (Signalized)	X	
4. Gramercy Pl / 190 <sup>th</sup> St (Signalized)	X	
5. Gramercy Pl / 195 <sup>th</sup> St (Unsignalized)	X	
6. I-405 SB Ramp / 190 <sup>th</sup> St (Signalized)	X	X
7. Western Ave (SR-213) / I-405 NB Ramp (Signalized)	X	X
8. Western Ave (SR-213) / 190 <sup>th</sup> St (Signalized)	X	X
9. Western Ave (SR-213) / 195 <sup>th</sup> St (Signalized)	X	X
10. Western Ave (SR-213) / Del Amo Blvd (Signalized)	X	X
11. Project Access 1 / 190 <sup>th</sup> Street	X	
12. Western Avenue (SR-213) / Project Access 2	X	X
13. Gramercy Avenue / Project Access 3	X	
14 Project Access 4 / 195 <sup>th</sup> Street	X	
15. Project Access 5 / 195 <sup>th</sup> Street	X	

**Notes:** X = intersection within jurisdiction; NB = Northbound & SB = Southbound.

The analysis evaluates traffic conditions of the study intersections and driveways for the following scenarios:

- Existing Conditions;
- Forecast Opening Year (2023) Without Project Conditions (Existing traffic plus Ambient Growth); and
- Forecast Opening Year (2023) With Project Conditions (Existing traffic plus Ambient Growth plus Proposed Project).



**Legend:**

- ① = Study Area Intersection
- \* = Project Site
- = Project Access Driveway
- - - = Project Site Boundary





## **3.0 Analysis Methodologies, Performance Criteria, & Thresholds**

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report in accordance with the City of Torrance, and Caltrans requirements.

This section also discusses the agency-established applicable performance criteria and thresholds for requiring level of service improvements.

### **3.1 Study Intersection Peak Hour Level of Service Analysis Methodology**

Level of service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection.

The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
- LOS B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
- LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
- LOS D represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.

- LOS E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
- LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

### 3.1.1 ICU Methodology – City of Torrance Signalized Intersections

The *Intersection Capacity Utilization (ICU)* analysis method is utilized by the City of Torrance to determine the operating LOS of signalized intersections.

To calculate the ICU, the volume of traffic using the intersection is compared with the capacity of the intersection. ICU is usually expressed as a ratio. This ratio represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. The ICU analysis methodology utilizes the following parameters consistent with the governing agencies’ requirements and guidelines:

The ICU analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of volume-to-capacity at intersections. The following thresholds are used in assigning a letter value to the resulting Levels of Service.

**ICU Intersection LOS & V/C Ranges**

LOS	CRITICAL VOLUME TO CAPACITY RATIO
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	>1.00

### **3.1.2 HCM Methodology – *City of Torrance Unsignalized Intersections/Driveways & State Highway Intersections***

The Highway Capacity Manual (HCM) methodology is the adopted methodology for evaluation of State Highway facilities by The State of California Department of Transportation (Caltrans).

This methodology is also utilized for evaluation of unsignalized study intersections and driveways in the City of Torrance jurisdiction.

The HCM methodology defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

For signalized intersections and all-way stop-controlled intersections, average control delay per vehicle is used to determine the level of service. For intersections and driveways with stop control on the minor approach only, the calculation of level of service is dependent on the occurrence of gaps occurring in the free-flow traffic movement of the main street, and the level of service is determined based on the worst individual movements on the stop-controlled minor approach or movements sharing a single lane on the stop-controlled minor approach.

The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of stopped delay experienced per vehicle for signalized and unsignalized intersections. The following thresholds are used in assigning a letter value to the resulting Levels of Service.

### HCM Intersection LOS & Delay Ranges

LOS	Average Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	0.00 - 10.00	0.00 - 10.00
B	10.01 - 20.00	10.01 - 15.00
C	20.01 - 35.00	15.01 - 25.00
D	35.01 - 55.00	25.01 - 35.00
E	55.01 - 80.00	35.01 - 50.00
F	>80.00	>50.00

### 3.1.3 Study Intersection LOS Analysis Methodology Utilized

The City of Torrance has directed that this analysis evaluate all study intersections utilizing the applicable LOS analysis methodology in accordance with the agency that has jurisdiction over the study intersection, as well as evaluate all study intersections located in the City of Torrance to be evaluated under the Torrance LOS analysis methodology. Hence, all the State Highway study intersection which are under the jurisdiction of Caltrans located in the City of Torrance are also evaluated utilizing the Torrance ICU analysis methodology. The following table summarizes the LOS analysis method(s) utilized for each study intersection.

### Study Intersection LOS Methodology Utilized

Study Intersection	LOS Analysis Methodology Used in Analysis
1. Van Ness Ave / 190 <sup>th</sup> St (Signalized)	ICU
2. Van Ness Ave / 195 <sup>th</sup> St (Signalized)	ICU
3. Van Ness Ave / Del Amo Blvd (Signalized)	ICU
4. Gramercy Pl / 190 <sup>th</sup> St (Signalized)	ICU
5. Gramercy Pl / 195 <sup>th</sup> St (Unsignalized)	HCM
6. I-405 SB Ramp / 190 <sup>th</sup> St (Signalized)	HCM & ICU
7. Western Ave (SR-213) / I-405 NB Ramp (Signalized)	HCM & ICU
8. Western Ave (SR-213) / 190 <sup>th</sup> St (Signalized)	HCM & ICU
9. Western Ave (SR-213) / 195 <sup>th</sup> St (Signalized)	HCM & ICU
10. Western Ave (SR-213) / Del Amo Blvd (Signalized)	HCM & ICU
11. Project Access 1 / 190 <sup>th</sup> Street	HCM
12. Western Avenue (SR-213) / Project Access 2	HCM
13. Gramercy Avenue / Project Access 3	HCM
14 Project Access 4 / 195 <sup>th</sup> Street	HCM
15. Project Access 5 / 195 <sup>th</sup> Street	HCM

**Notes:** NB = Northbound & SB = Southbound.

### 3.2 Level of Service Performance Criteria & Thresholds for Requiring Improvement

The following are the jurisdictional performance criteria and thresholds for requiring improvements to the study area.

#### 3.2.1 City of Torrance Performance Criteria & Thresholds for Requiring Improvement

The acceptable Level of Service (LOS) for intersections within the City of Torrance is LOS D or better.

The need for identification of level of service improvements for City of Torrance Signalized locations will be determined through the following criteria per the City’s guidelines:

<b><u>LOS Without Project</u></b>	<b><u>V/C Difference</u></b>
C	0.0400 or more
D	0.0200 or more
E,F	0.0100 or more

For City of Torrance unsignalized study intersections, identification of level of service improvements is needed if the level of service degrades to E or F and the intersection satisfies the traffic signal warrant.

### **3.2.2 State Highway Performance Criteria & Thresholds of Significance**

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities.

While Caltrans has not established traffic thresholds for requiring level of service improvements, the previously prepared traffic studies have utilized the following traffic thresholds:

- Identification of level of service improvements at a State Highway study intersection is required when the addition of project-generated trips causes the peak hour level of service of the study intersection to change from acceptable operation (LOS A, B, or C) to deficient operation (LOS D, E or F).

## **4.0 Existing Traffic Volumes & Circulation System**

This section provides a discussion of existing study area conditions and traffic volumes.

### **4.1 Existing Traffic Controls & Intersection Geometrics**

Exhibit 4-1 identifies the existing traffic control and geometry conditions for the study area.

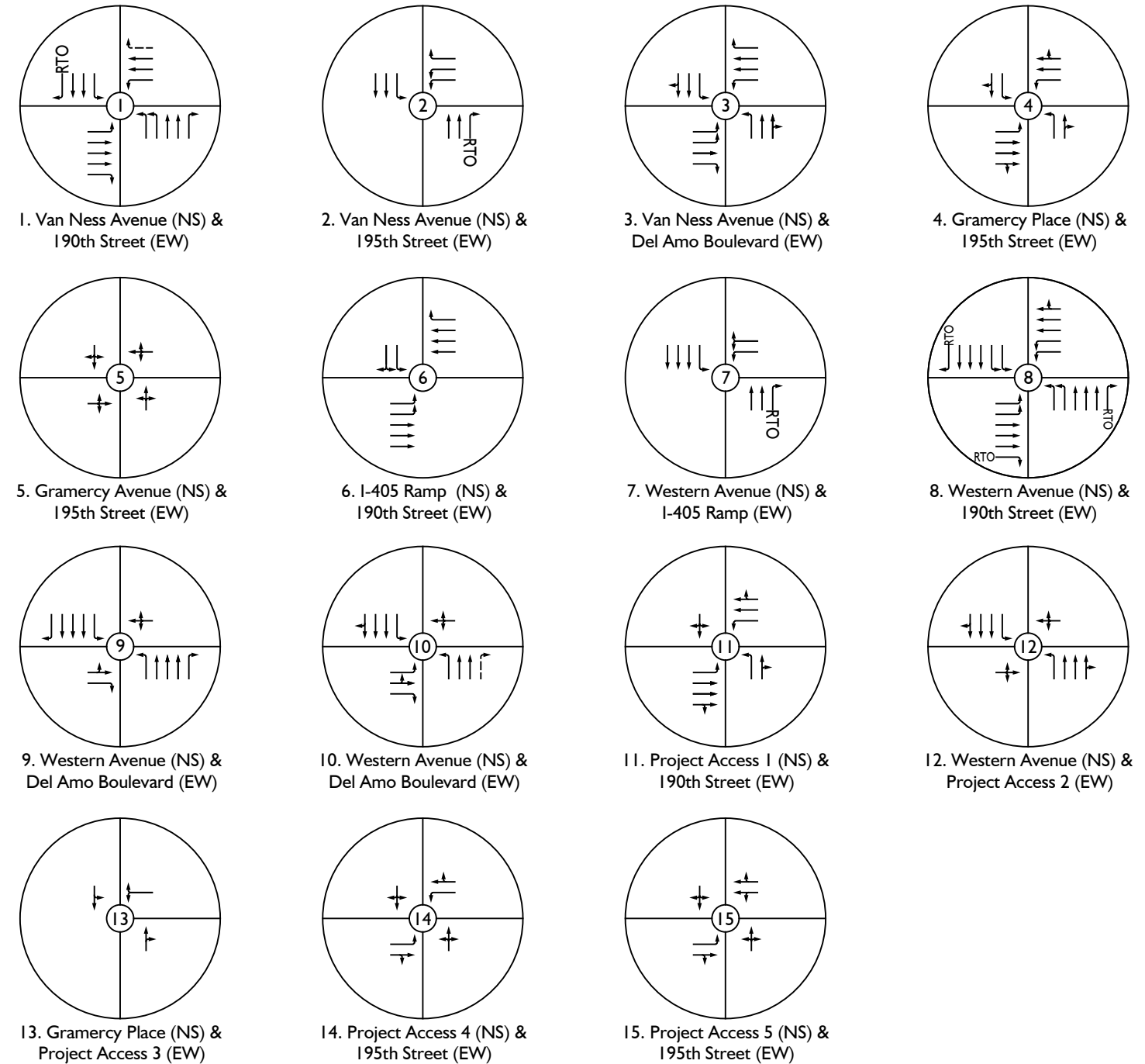
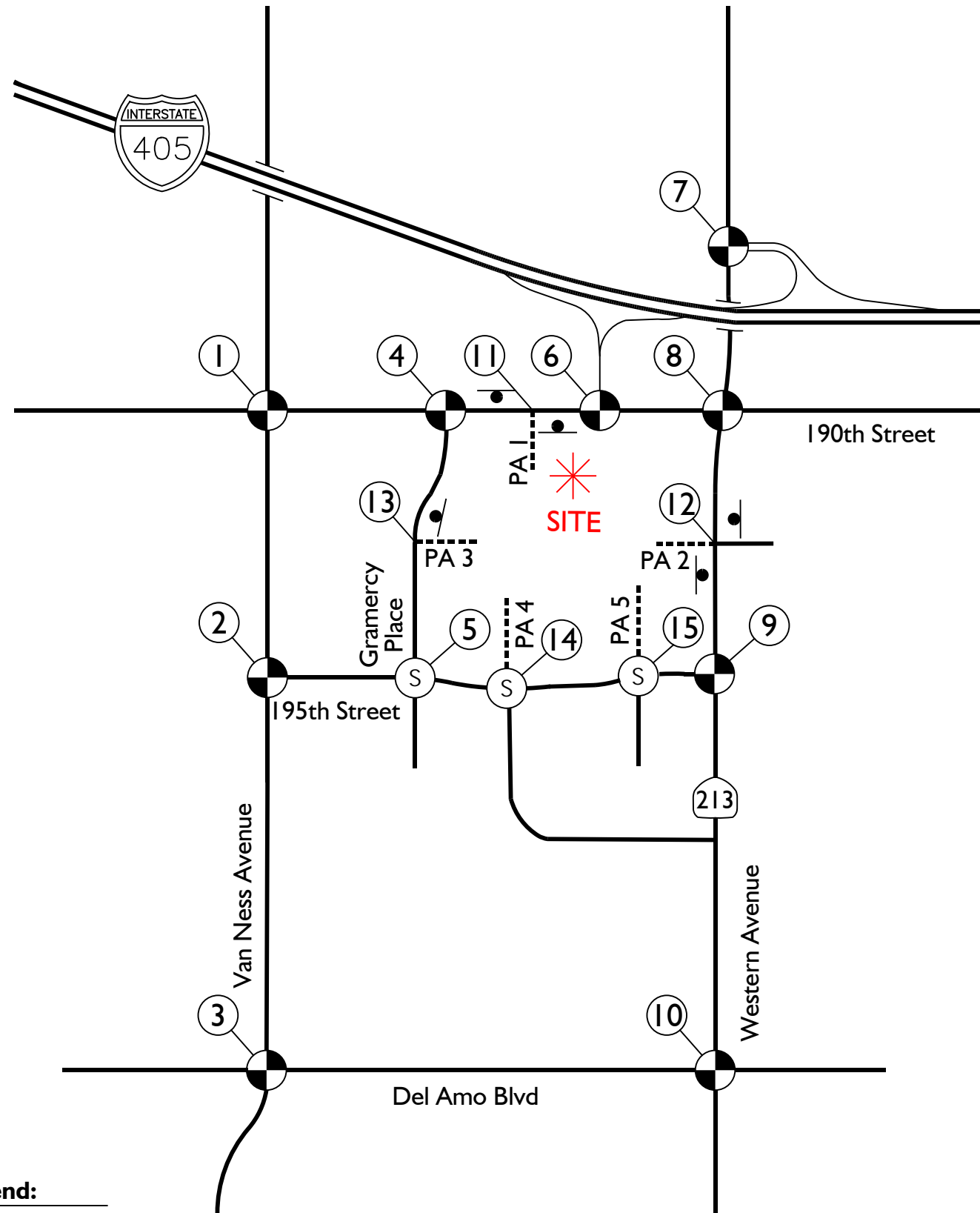
### **4.2 Existing Conditions Traffic Volumes**

Existing conditions intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts taken in August 2021 during typical weekday conditions. The AM peak hour traffic volumes were determined by counting the two-hour peak period between 7:00 AM and 9:00 AM and using the highest hour within that two-hour peak period. Similarly, the PM peak hour traffic volumes were identified by counting the two-hour peak period between 4:00 PM and 6:00 PM and using the highest hour within that two-hour peak period. The traffic count worksheets are included in Appendix B.

Existing (2021) traffic volumes for the study area intersections and driveways are shown on Exhibit 4-2.



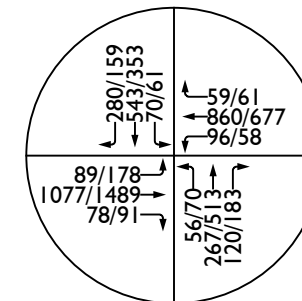
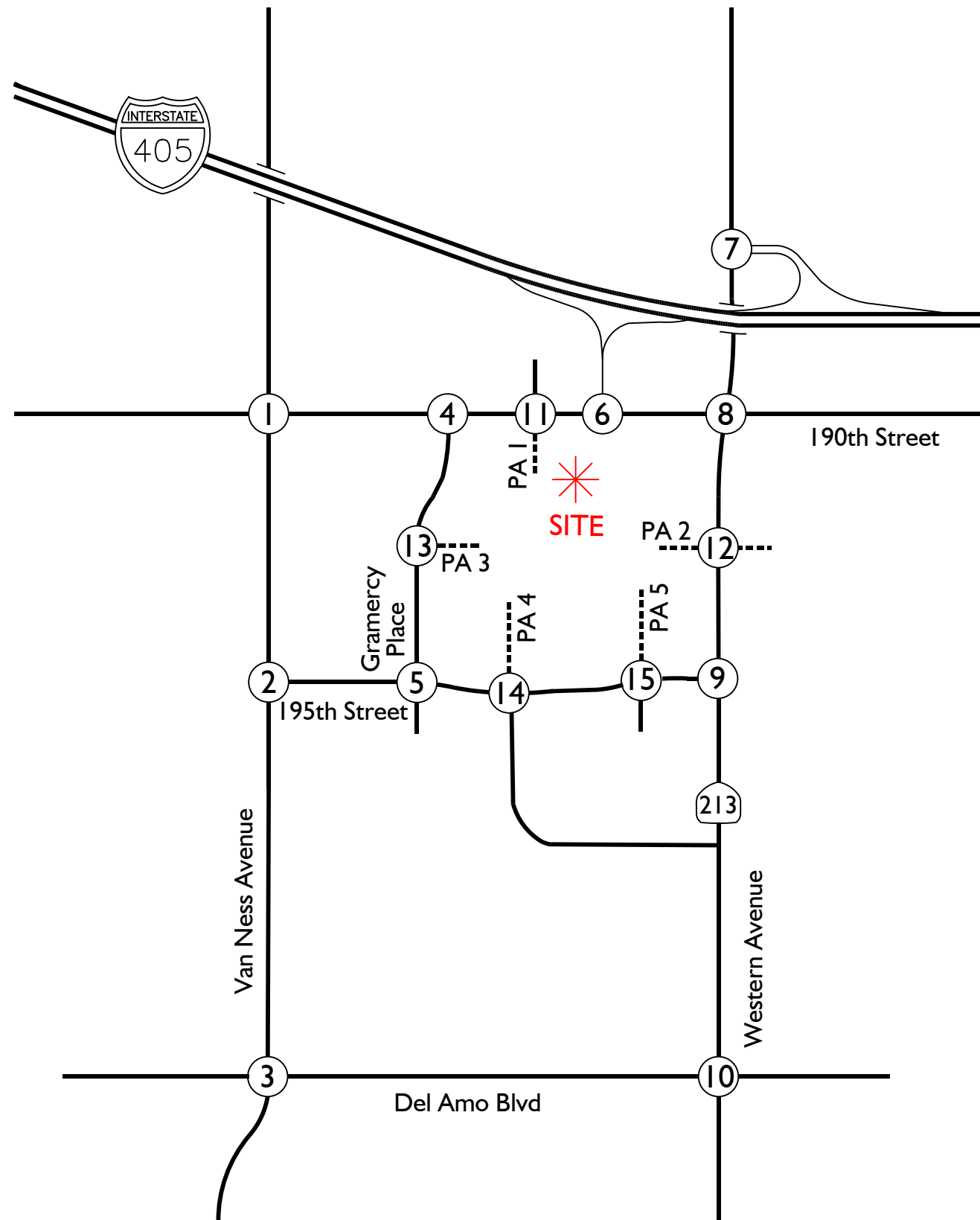
# Existing Traffic Controls & Study Intersection Geometry



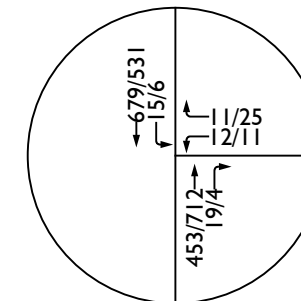
**Legend:**

- = Traffic Signal
- = All Way Stop
- = Stop Sign
- = Right Turn Overlap
- = Defacto Right Turn

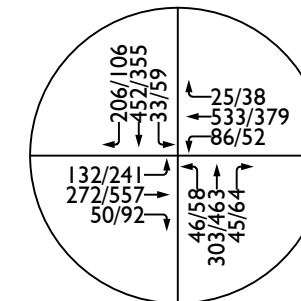




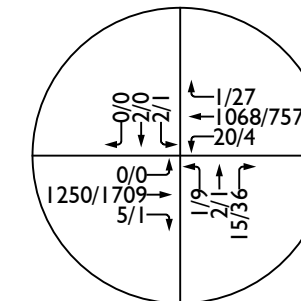
1. Van Ness Avenue (NS) & 190th Street (EW)



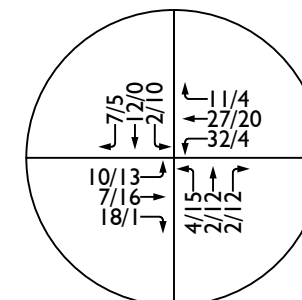
2. Van Ness Avenue (NS) & 195th Street (EW)



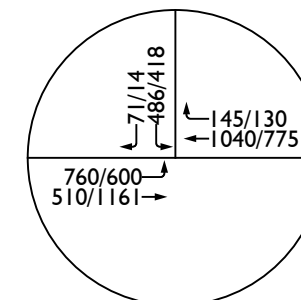
3. Van Ness Avenue (NS) & Del Amo Boulevard (EW)



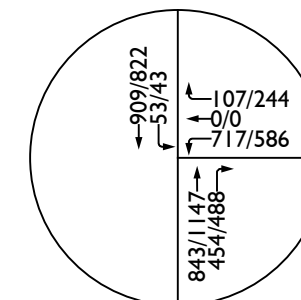
4. Gramercy Place (NS) & 195th Street (EW)



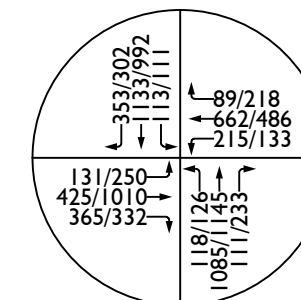
5. Gramercy Avenue (NS) & 195th Street (EW)



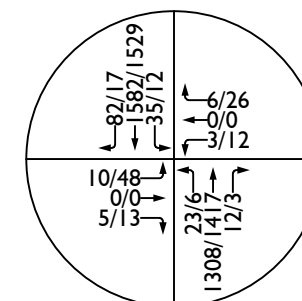
6. I-405 Ramp (NS) & 190th Street (EW)



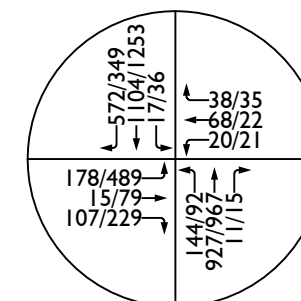
7. Western Avenue (NS) & I-405 Ramp (EW)



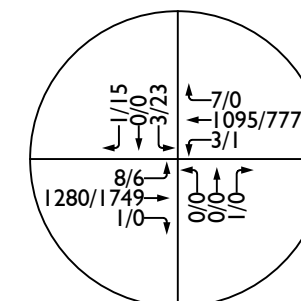
8. Western Avenue (NS) & 190th Street (EW)



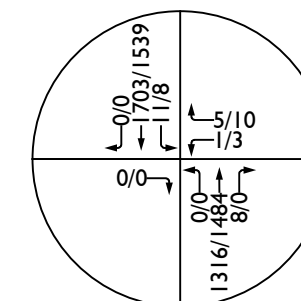
9. Western Avenue (NS) & Del Amo Boulevard (EW)



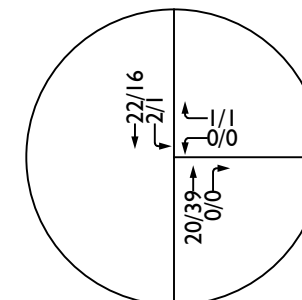
10. Western Avenue (NS) & Del Amo Boulevard (EW)



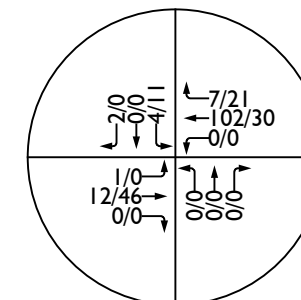
11. Project Access 1 (NS) & 190th Street (EW)



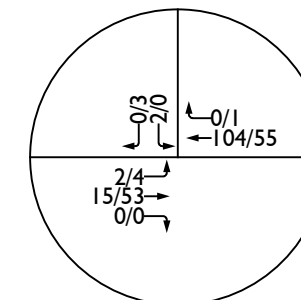
12. Western Avenue (NS) & Project Access 2 (EW)



13. Gramercy Place (NS) & Project Access 3 (EW)



14. Project Access 4 (NS) & 195th Street (EW)



15. Project Access 5 (NS) & 195th Street (EW)

**Legend:**

10/20 = AM/PM Peak Hour Volumes



## **5.0 Projected & Future Traffic Volumes**

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This section provides a discussion on methodologies utilized to derive future traffic volumes for the study area.

### **5.1. Project Traffic Conditions**

#### **5.1.1 Project Trip Generation**

Trip generation represents the amount of trips that is attracted and produced by land use.

Trip generation for the proposed project is determined based on ITE 10<sup>th</sup> Edition trip generation rates for the proposed land uses as shown in Table 5-1.

Utilizing the ITE trip generation rates shown in Table 5-1, Table 5-2 summarizes the daily and peak hour trip generation for the proposed project.

As shown in Table 5-2, to account for the large trucks, the trip generation for trucks has been converted to passenger car equivalents (PCE).

As shown in Table 5-2, without applying PCE-factors, the proposed project is forecast to generate approximately 2,460 daily trips which include approximately 292 AM peak hour trip and approximately 292 PM peak hour trips.

As also shown in Table 5-2, after applying PCE-factors, the proposed project is forecast to generate approximately 3,038 PCE-adjusted daily trips which include approximately 361 PCE-adjusted AM peak hour trip and approximately 360 PCE-adjusted PM peak hour trips.

*This analysis does not account for the existing land uses which will be displaced by the proposed project*

#### **5.1.2 Project Trip Distribution**

Trip distribution represents the directional orientation of trips to and from the project. Trip distribution is heavily influenced by the geographical location of the site, the location of residential, retail, employment, recreational opportunities, and the proximity to the regional freeway system. The directional orientation of project-generated trips was determined by evaluating existing and proposed land uses and highways within the community.

Forecast trip distribution for the proposed project has been developed through discussions with the City during the scoping process.

Exhibit 5-1 shows the forecast *inbound* trip distribution for the proposed project. Exhibit 5-2 shows the forecast *outbound* trip distribution for the proposed project.

### **5.1.3 Modal Split**

Modal split denotes the proportion of traffic generated by a project that would use any of the transportation modes, namely buses, cars, bicycles, motorcycles, trains, carpools, etc. The traffic reducing potential of public transit and other modes can be notable. However, the traffic projections in this study are conservative because no modal split reduction is applied to the projections.

### **5.1.4 Project Peak Hour Traffic Volumes/Assignment**

The assignment of project-generated trips to and from the project site on the adjoining roadway system is based upon the project's trip generation, trip distribution, and proposed arterial highway and local street systems this traffic study assumes would be in place by the time of occupancy of the site.

Project traffic volumes are shown on Exhibit 5-3.

## **5.2 Background Traffic**

### **5.2.1 Method of Projection**

To assess future conditions, project traffic is combined with existing traffic and area-wide growth.

Consistent with the City of Torrance traffic study guidelines and requirements, Forecast Opening Year (2023) Conditions traffic volumes were derived by applying an annual growth rate of 0.525 percent per year over a two-year period to existing traffic volumes to account for background growth in 2023. It should be noted this is a conservative assumption since the growth rate is applied to all movements at the study intersections and driveways.

### **5.3 Forecast Opening Year (2023) Without Project Conditions (Existing Traffic plus Ambient Growth) Traffic Volumes**

Forecast Opening Year (2023) Without Project Conditions traffic volumes consist of existing traffic volumes and a 0.525% annual growth rate.

Forecast Opening Year (2023) Without Project Conditions does not include project traffic.

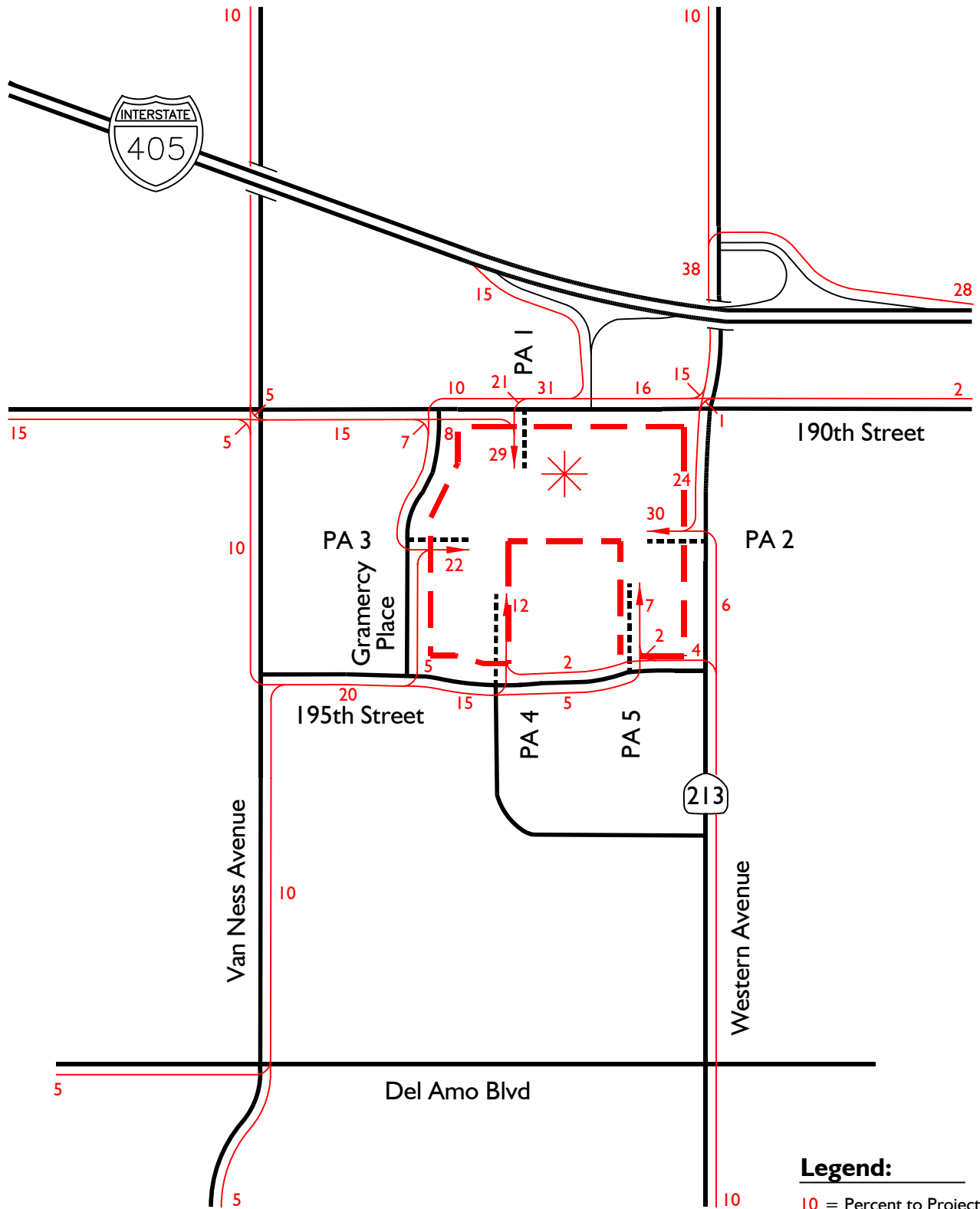
Forecast Opening Year (2023) Without Project Conditions traffic volumes are shown on Exhibit 5-4.

### **5.4 Forecast Opening Year (2023) With Project Conditions (Existing Traffic plus Ambient Growth plus Proposed Project) Traffic Volumes**

Forecast Opening Year (2023) With Project Conditions traffic volumes consist of existing traffic volumes, a 0.525% annual growth rate, and project-generated traffic.

Forecast Opening Year (2023) With Project Conditions traffic volumes are shown on Exhibit 5-5.

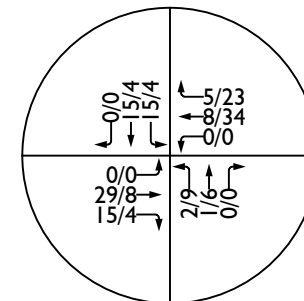
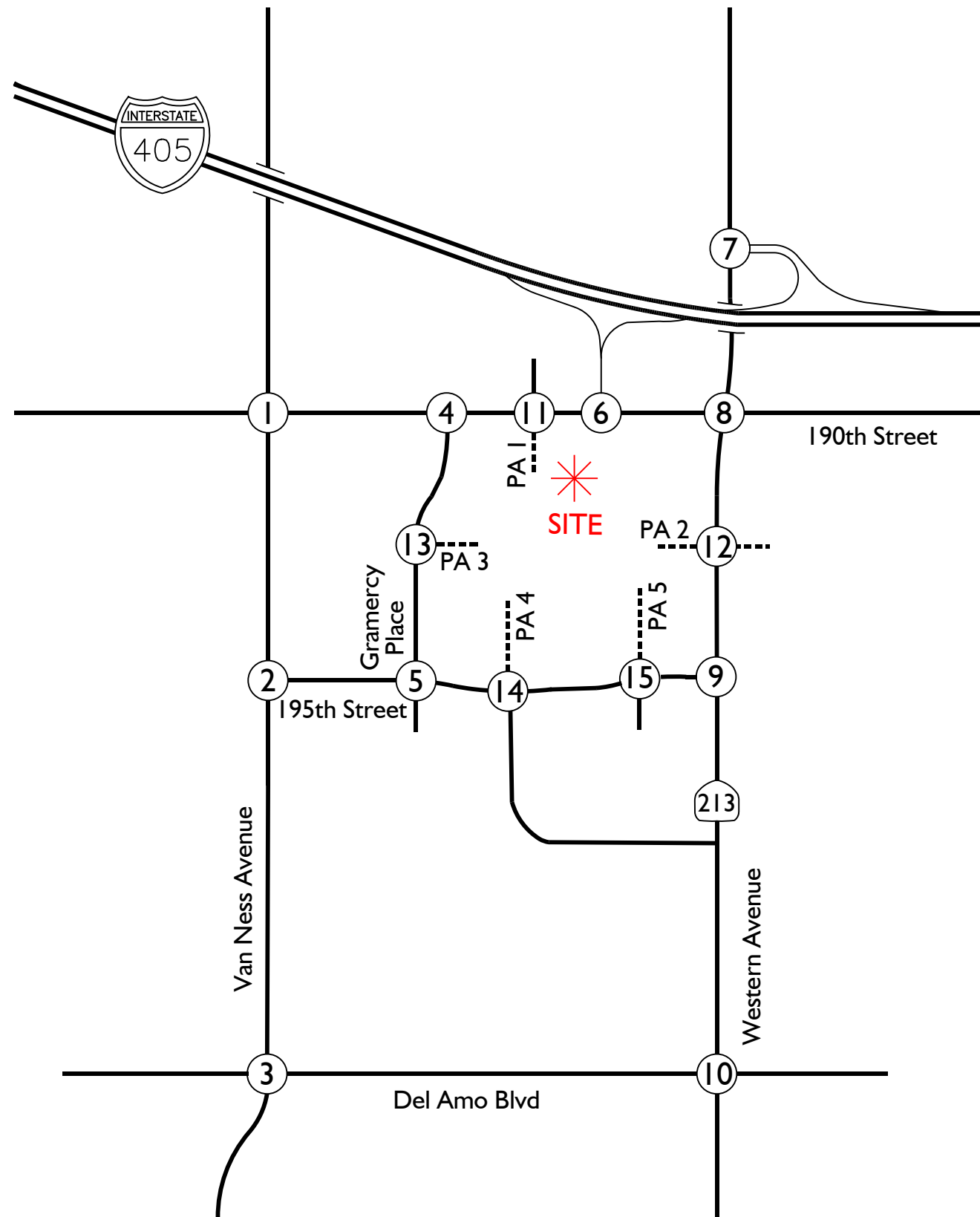
# Inbound Project Trip Distribution



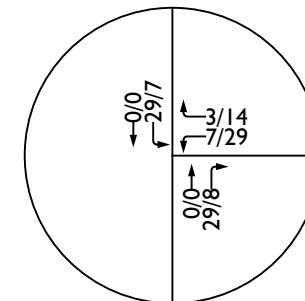
- Legend:**
- 10 = Percent to Project
  - \* = Project Site
  - = Project Access Driveway
  - - - = Project Site Boundary



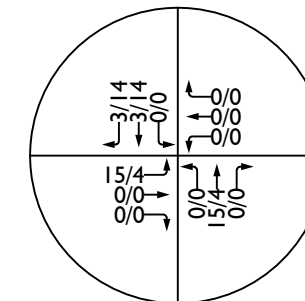




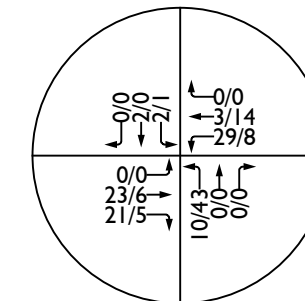
1. Van Ness Avenue (NS) & 190th Street (EW)



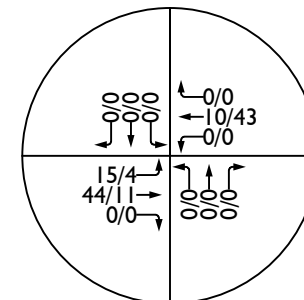
2. Van Ness Avenue (NS) & 195th Street (EW)



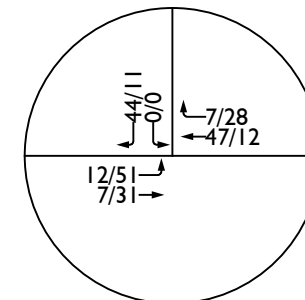
3. Van Ness Avenue (NS) & Del Amo Boulevard (EW)



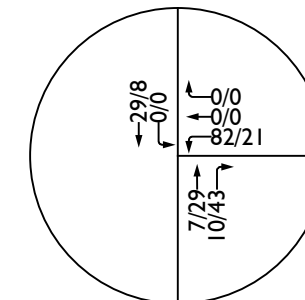
4. Gramercy Place (NS) & 195th Street (EW)



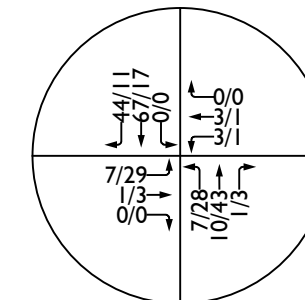
5. Gramercy Avenue (NS) & 195th Street (EW)



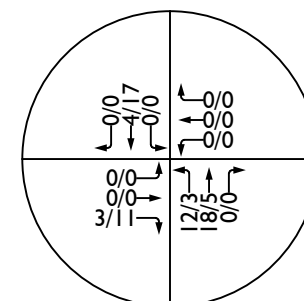
6. I-405 Ramp (NS) & 190th Street (EW)



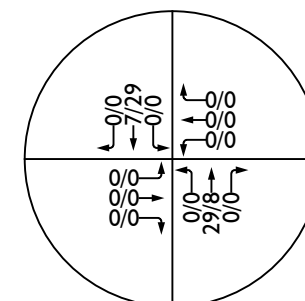
7. Western Avenue (NS) & I-405 Ramp (EW)



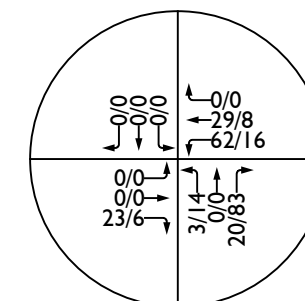
8. Western Avenue (NS) & 190th Street (EW)



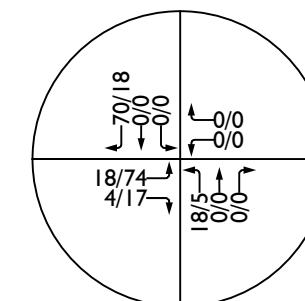
9. Western Avenue (NS) & Del Amo Boulevard (EW)



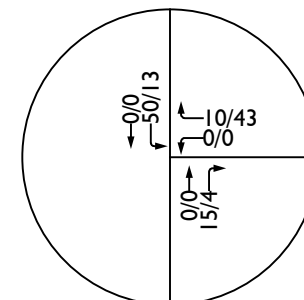
10. Western Avenue (NS) & Del Amo Boulevard (EW)



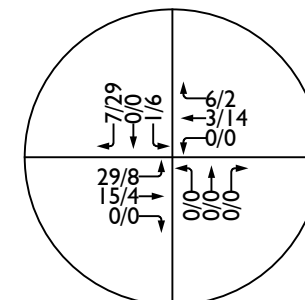
11. Project Access 1 (NS) & 190th Street (EW)



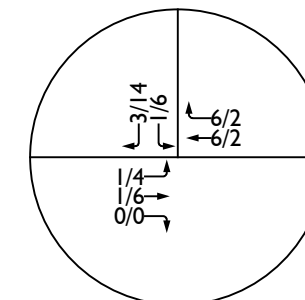
12. Western Avenue (NS) & Project Access 2 (EW)



13. Gramercy Place (NS) & Project Access 3 (EW)



14. Project Access 4 (NS) & 195th Street (EW)



15. Project Access 5 (NS) & 195th Street (EW)

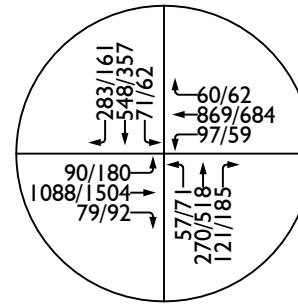
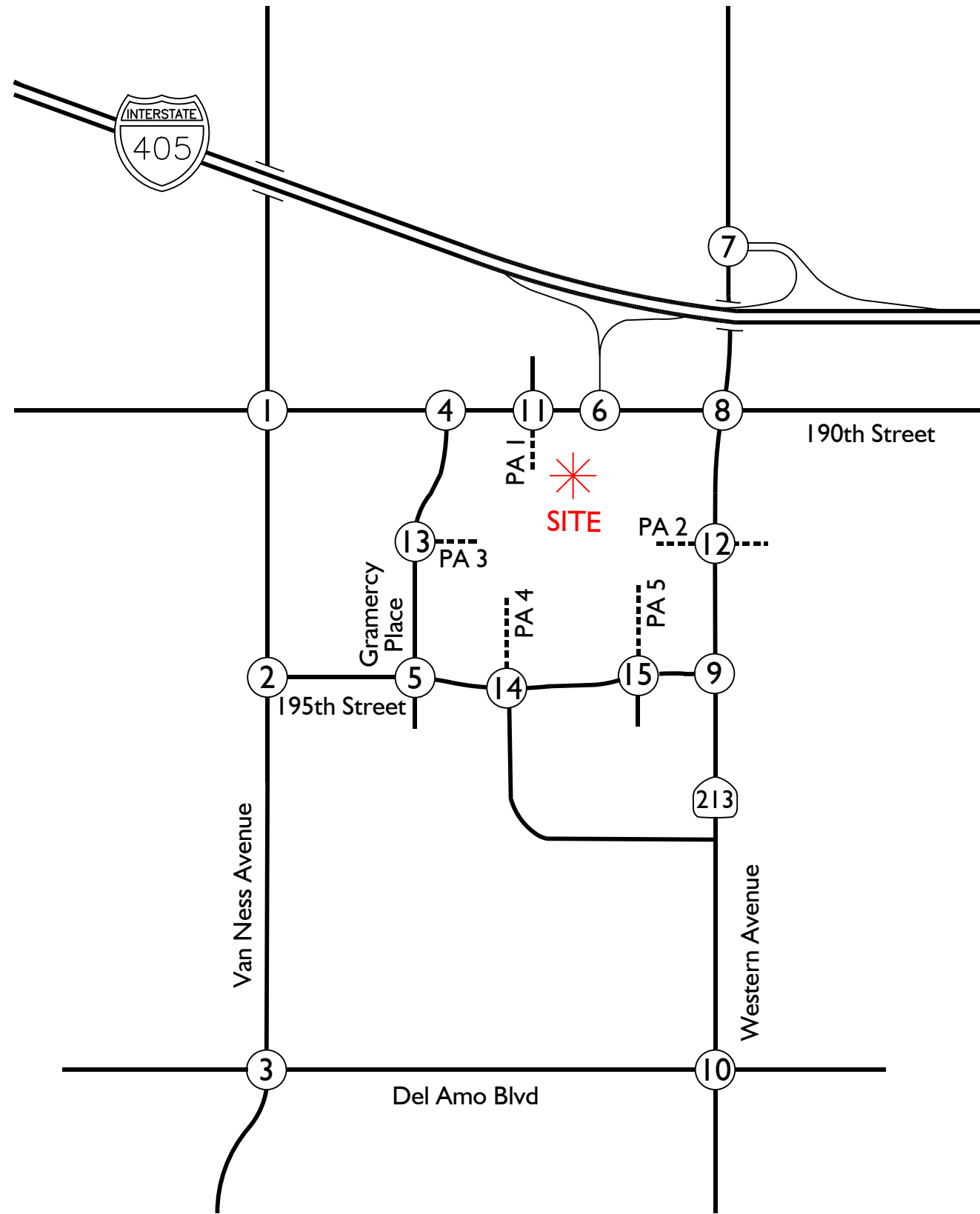
**Legend:**

10/20 = AM/PM Peak Hour Volumes

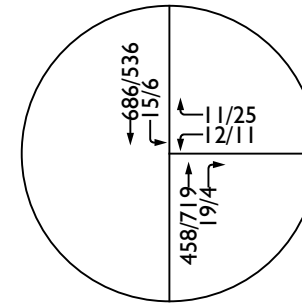




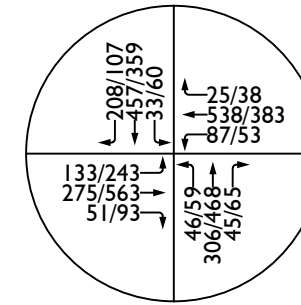
# Opening Year Without Project Volumes



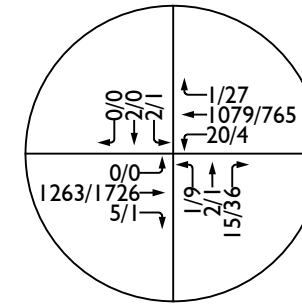
1. Van Ness Avenue (NS) & 190th Street (EW)



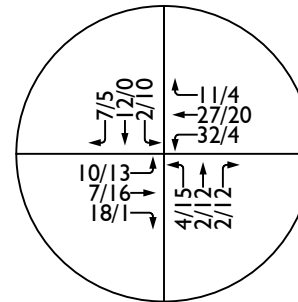
2. Van Ness Avenue (NS) & 195th Street (EW)



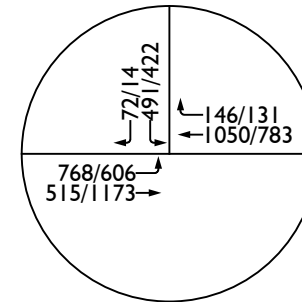
3. Van Ness Avenue (NS) & Del Amo Boulevard (EW)



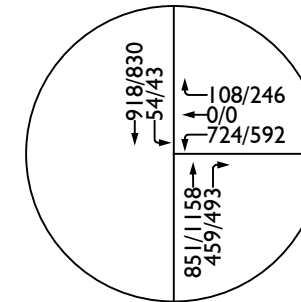
4. Gramercy Place (NS) & 195th Street (EW)



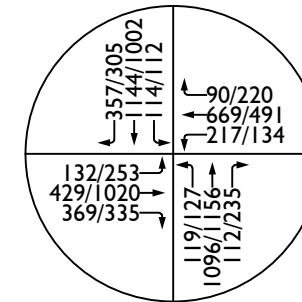
5. Gramercy Avenue (NS) & 195th Street (EW)



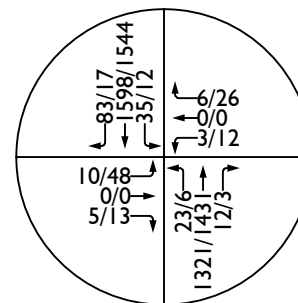
6. I-405 Ramp (NS) & 190th Street (EW)



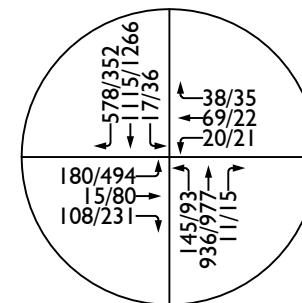
7. Western Avenue (NS) & I-405 Ramp (EW)



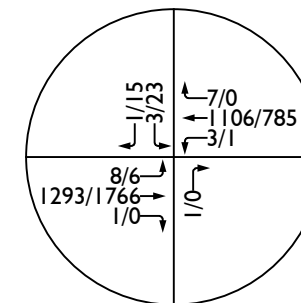
8. Western Avenue (NS) & 190th Street (EW)



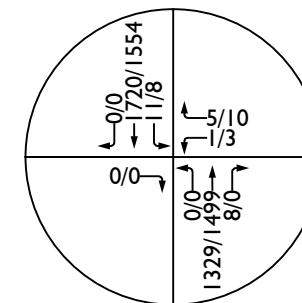
9. Western Avenue (NS) & Del Amo Boulevard (EW)



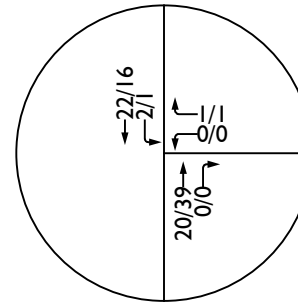
10. Western Avenue (NS) & Del Amo Boulevard (EW)



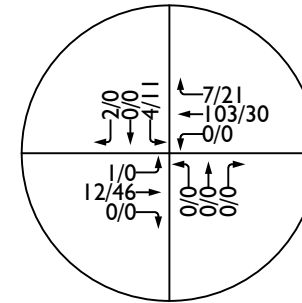
11. Project Access 1 (NS) & 190th Street (EW)



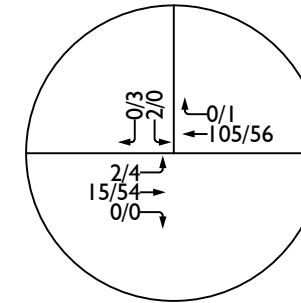
12. Western Avenue (NS) & Project Access 2 (EW)



13. Gramercy Place (NS) & Project Access 3 (EW)



14. Project Access 4 (NS) & 195th Street (EW)



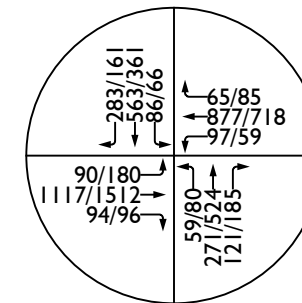
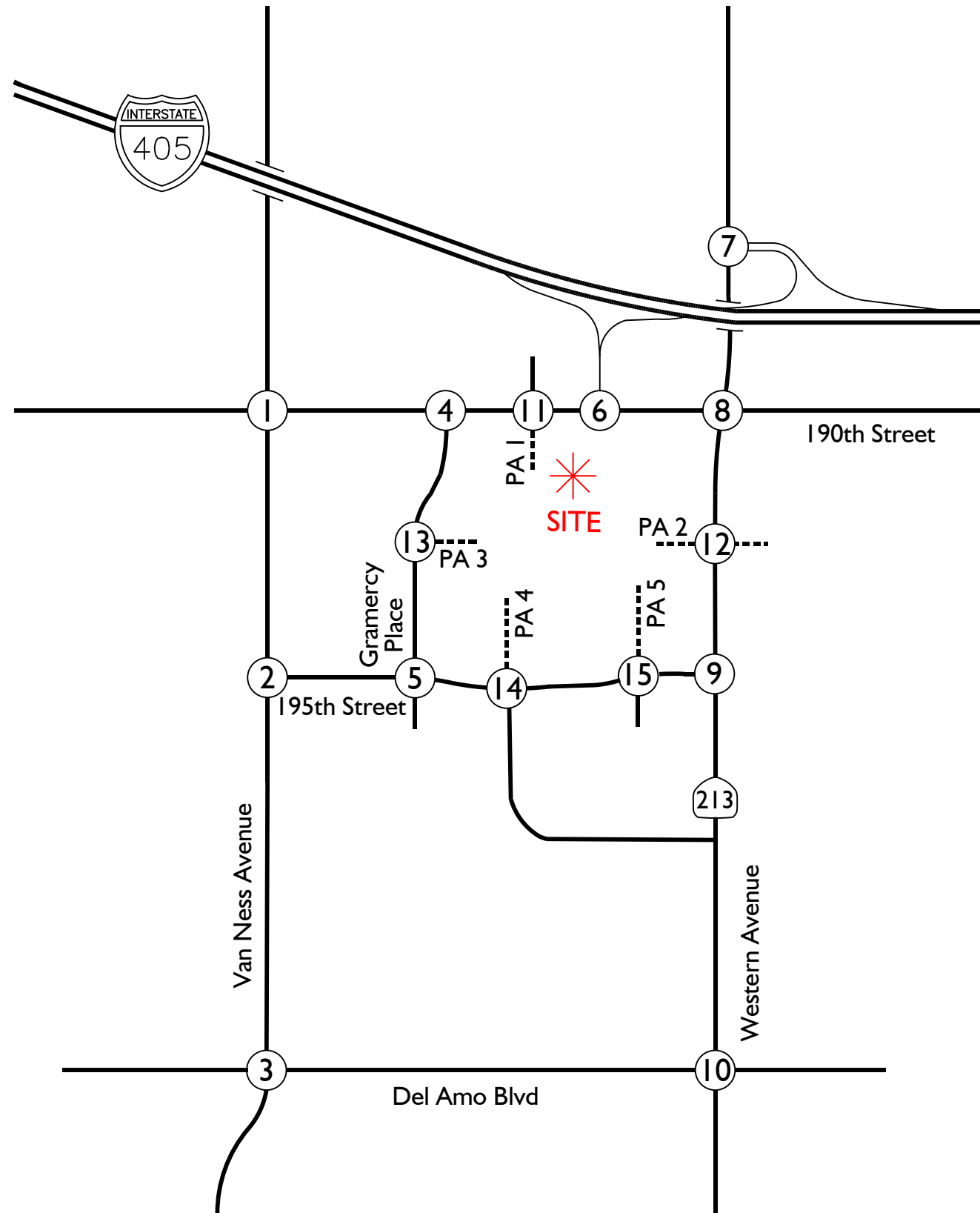
15. Project Access 5 (NS) & 195th Street (EW)

**Legend:**

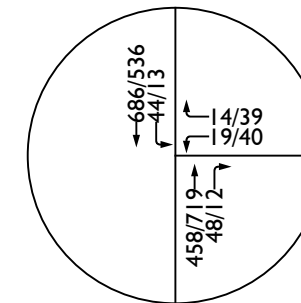
10/20 = AM/PM Peak Hour Volumes



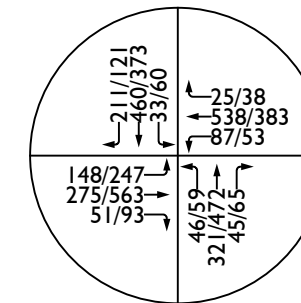
# Opening Year With Project Volumes



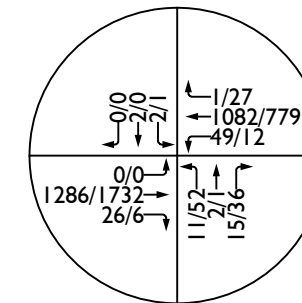
1. Van Ness Avenue (NS) & 190th Street (EW)



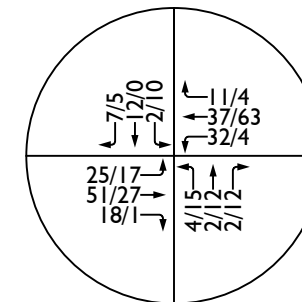
2. Van Ness Avenue (NS) & 195th Street (EW)



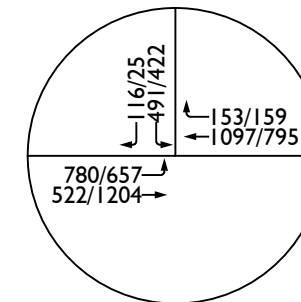
3. Van Ness Avenue (NS) & Del Amo Boulevard (EW)



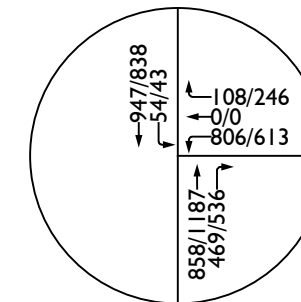
4. Gramercy Place (NS) & 195th Street (EW)



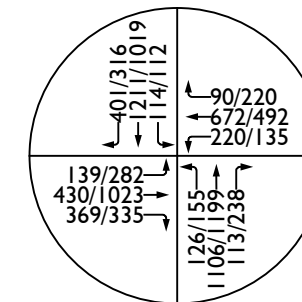
5. Gramercy Avenue (NS) & 195th Street (EW)



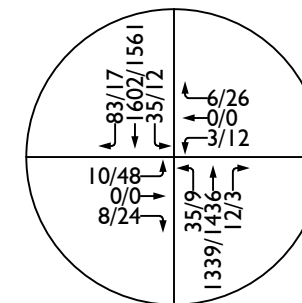
6. I-405 Ramp (NS) & 190th Street (EW)



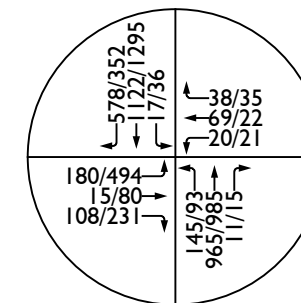
7. Western Avenue (NS) & I-405 Ramp (EW)



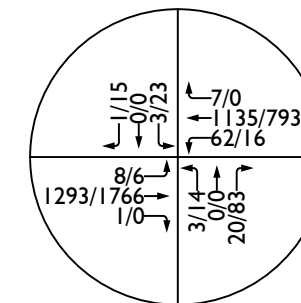
8. Western Avenue (NS) & 190th Street (EW)



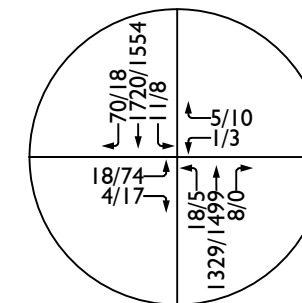
9. Western Avenue (NS) & Del Amo Boulevard (EW)



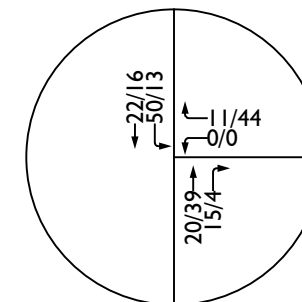
10. Western Avenue (NS) & Del Amo Boulevard (EW)



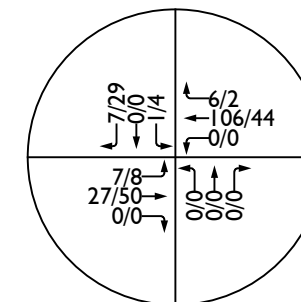
11. Project Access 1 (NS) & 190th Street (EW)



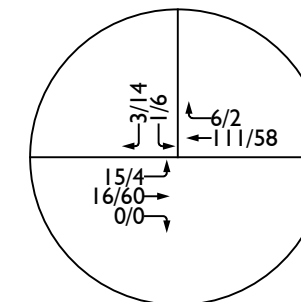
12. Western Avenue (NS) & Project Access 2 (EW)



13. Gramercy Place (NS) & Project Access 3 (EW)



14. Project Access 4 (NS) & 195th Street (EW)



15. Project Access 5 (NS) & 195th Street (EW)

**Legend:**

10/20 = AM/PM Peak Hour Volumes



**Table 5-1  
ITE Trip Generation Rates<sup>1</sup>**

Land Use	Units <sup>2</sup>	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Industrial Park	TSF	130	0.32	0.08	0.40	0.08	0.32	0.40	3.37

<sup>1</sup> Source: 2017 ITE Trip Generation Manual (10th Edition)

<sup>2</sup> TSF = thousand square feet

**Table 5-2  
Proposed Project Trip Generation**

Proposed Land Uses									
Land Use (ITE Code)	Quantity	Units <sup>2</sup>	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Industrial Park (130) [Without PCE-Adjustment] <sup>1</sup>	730.000	TSF	237	55	292	61	231	292	2,460
PCE-Adjustment <sup>3</sup>	Passenger Vehicles (87%) [1.0 PCE]		206	48	254	53	201	254	2,140
	2-Axle Trucks (1%) [1.5 PCE]		4	1	5	1	3	4	37
	3-Axle Trucks (1%) [2.0 PCE]		5	1	6	1	5	6	49
	4 or more-Axle Trucks (11%) [3.0 PCE]		78	18	96	20	76	96	812
<b>Total (PCE-Adjusted)</b>			<b>293</b>	<b>68</b>	<b>361</b>	<b>75</b>	<b>285</b>	<b>360</b>	<b>3,038</b>

<sup>1</sup> Source: 2017 ITE Trip Generation Manual (10th Edition)

<sup>2</sup> TSF = thousand square feet

<sup>3</sup> The ITE Trip Generation Handbook documents that on average, approximately 13 percent of the trips generated by the Industrial Park land use category are truck trips. Since the ITE Trip Generation Handbook does not break down trucks by axle type, this analysis utilizes truck axle breakdown data documented in the Fontana Truck Trip Generation Study (2003).

Based on the Fontana Truck Trip Generation Study (2003), out of the 13 percent total truck traffic, 7.9 percent (equivalent to 1% of total traffic) of Industrial Park truck trips consist of 2 axle trucks, 7.1 percent (equivalent to 1% of total traffic) of Industrial Park truck trips consist of 3 axle trucks, and 85 percent (equivalent to 11% of total traffic) of Industrial Park truck trips consist of 4 or more axle trucks.

## 6.0 MUTCD Traffic Signal Warrant Analysis

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The unsignalized study intersections have been evaluated for signalization based on peak hour traffic warrant procedures contained in the *California Manual on Uniform Traffic Control Devices (CA MUTCD), 2014 Edition*:

- Gramercy Place / 195<sup>th</sup> Street;
- Project Access 1 / 195<sup>th</sup> Street;
- Western Avenue (SR-213) / Project Access 2;
- Gramercy Place / Project Access 3;
- Project Access 4 / 195<sup>th</sup> Street; and
- Project Access 5 / 195<sup>th</sup> Street.

Table 6-1 summarizes the results of the *MUTCD* peak hour signal warrant analysis at the unsignalized study intersections for the analysis scenarios evaluated as part of this report; detailed *MUTCD* signal warrant analysis sheets are contained in Appendix C.

As shown in Table 6-1, based on the traffic signal warrant analysis prepared for the unsignalized study intersections, the following unsignalized study intersection is forecast to satisfy the *MUTCD* peak hour traffic volume traffic signal warrant for the study scenarios evaluated as part of this report:

- Western Avenue (SR-213) / Project Access 2: Forecast Opening Year With Project Conditions (only PM peak hour warrant satisfied).

However, due to the proximity of this intersection to the existing signalized intersection of Western Avenue (SR-213) / 190<sup>th</sup> Street, installation of a traffic signal at this location might not be feasible and recommended.

**Table 6-1**  
**Unsignalized Study Intersections Traffic Signal Warrant Analysis Summary**

Intersection	Signal Warrant Met?					
	Existing Conditions		Opening Year (2023) Without Project Conditions		Opening Year (2023) With Project Conditions	
	AM	PM	AM	PM	AM	PM
5. Gramercy Place (NS) / 195th Street (EW)	NO	NO	NO	NO	NO	NO
11. Project Access 1 (NS) / 190th Street (EW)	NO	NO	NO	NO	NO	NO
12. Western Avenue (SR-213) (NS) / Project Access 2 (EW)	NO	NO	NO	NO	NO	<b>YES</b> <sup>1</sup>
13. Gramercy Place (NS) / Project Access 3 (EW)	NO	NO	NO	NO	NO	NO
14. Project Access 4 (NS) / 195th Street (EW)	NO	NO	NO	NO	NO	NO
15. Project Access 5 (NS) / 195th Street (EW)	NO	NO	NO	NO	NO	NO

## **7.0 City of Torrance Study Intersection LOS Analysis**

This section provides a discussion and summary of the level of service (LOS) analysis for the City of Torrance study intersections.

### **7.1 City of Torrance Study Intersections Existing Conditions Level of Service**

Table 7-1 summarizes the results of the LOS analysis for the City of Torrance study intersections for Existing Conditions.

Detailed LOS analysis sheets for Existing Conditions are contained in Appendix D.

As shown in Table 7-1, the City of Torrance study intersections are currently operating at an acceptable level of service (LOS D or better) during the peak hours for Existing Conditions with the exception of the following study intersections which are currently operating at a deficient LOS (LOS E or F):

- Project Access 1 / 190<sup>th</sup> Street (both AM and PM peak hours); and
- Western Avenue (SR-213) / Project Access 2 (PM peak hour only).

It should be noted the deficient operation of these study intersections, which are project driveways, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (190<sup>th</sup> Street and Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria.

### **7.2 City of Torrance Study Intersections Forecast Opening Year (2023) Without Project Conditions Level of Service**

Table 7-2 summarizes the results of the LOS analysis for the City of Torrance study intersections for Forecast Opening Year (2023) Without Project Conditions.

Detailed LOS analysis sheets for Forecast Opening Year (2023) Without Project Conditions are contained in Appendix E.

As shown in Table 7-2, the City of Torrance study intersections are forecast to operate at an acceptable level of service (LOS D or better) during the peak hours for Forecast Opening Year (2023) Without Project Conditions with the exception of the following study intersections which are forecast to operate at a deficient LOS (LOS E or F):

- Project Access 1 / 190<sup>th</sup> Street (both AM and PM peak hours); and
- Western Avenue (SR-213) / Project Access 2 (PM peak hour only).

It should be noted the deficient operation of these study intersections, which are project driveways, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (190<sup>th</sup> Street and Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria.

### **7.3 City of Torrance Study Intersections Forecast Opening Year (2023) With Project Conditions Level of Service**

Table 7-3 summarizes the results of the LOS analysis for the City of Torrance study intersections for Forecast Opening Year (2023) With Project Conditions.

Detailed LOS analysis sheets for Forecast Opening Year (2023) With Project Conditions are contained in Appendix F.

As shown in Table 7-6, the City of Torrance study intersections are forecast to operate at an acceptable level of service (LOS D or better) during the peak hours for Forecast Opening Year (2023) With Project Conditions with the exception of the following study intersections which are forecast to operate at a deficient LOS (LOS E or F):

- Project Access 1 / 190<sup>th</sup> Street (both AM and PM peak hours); and
- Western Avenue (SR-213) / Project Access 2 (both AM and PM peak hours).

It should be noted the deficient operation of these study intersections, which are project driveways, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (190<sup>th</sup> Street and Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria.



Since the Project Access 1 / 190<sup>th</sup> Street study intersection does not satisfy the traffic signal warrants, the project is not required to contribute to improvements at this intersection based on the City of Torrance thresholds for requiring level of service improvements.

The study intersection of Western Avenue (SR-213) / Project Access 2 does satisfy the traffic signal warrants for Opening Year (2023) With Project Conditions during the PM peak hour. However, based on the analysis conducted as part of this report, improvements at this study intersection are not required for the following reasons:

- The deficient operation of the study intersection, which is a project driveway, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria; and
- Due to the proximity of this intersection to the existing signalized intersection of Western Avenue (SR-213) / 190<sup>th</sup> Street, installation of a traffic signal at this location might not be feasible and recommended.

Hence, no improvements are identified and required for the City of Torrance study intersections for Opening Year (2023) With Project Conditions.

**Table 7-1  
City of Torrance - Study Intersection LOS Analysis Summary  
Existing Conditions**

Intersection		Traffic Control <sup>1</sup>	Methodology	Delay (Secs)		V/C Ratio		Level of Service	
				AM	PM	AM	PM	AM	PM
1.	Van Ness Avenue (NS) / 190th Street (EW)	TS	ICU	--	--	0.612	0.645	B	B
2.	Van Ness Avenue (NS) / 195th Street (EW)	TS	ICU	--	--	0.319	0.342	A	A
3.	Van Ness Avenue (NS) / Del Amo Boulevard (EW)	TS	ICU	--	--	0.558	0.682	A	B
4.	Gramercy Place (NS) / 190th Street (EW)	TS	ICU	--	--	0.446	0.483	A	A
5.	Gramercy Place (NS) / 195th Street (EW)	AWS	HCM	7.3	7.3	--	--	A	A
6.	I-405 Southbound Ramps (NS) / 190th Street (EW)	TS	ICU	--	--	0.728	0.584	C	A
7.	Western Avenue (SR-213) (NS) / I-405 Northbound Ramps (EW)	TS	ICU	--	--	0.654	0.745	B	C
8.	Western Avenue (SR-213) (NS) / 190th Street (EW)	TS	ICU	--	--	0.631	0.625	B	B
9.	Western Avenue (SR-213) (NS) / 195th Street (EW)	TS	ICU	--	--	0.456	0.476	A	A
10.	Western Avenue (SR-213) (NS) / Del Amo Boulevard (EW)	TS	ICU	--	--	0.693	0.718	B	C
11.	Project Access 1 (NS) / 190th Street (EW)	CSS	HCM	<b>44.2</b>	<b>42.7</b>	--	--	<b>E</b>	<b>E</b>
12.	Western Avenue (SR-213) (NS) / Project Access 2 (EW)	CSS	HCM	27.3	<b>37.6</b>	--	--	D	<b>E</b>
13.	Gramercy Place (NS) / Project Access 3 (EW)	CSS	HCM	8.4	8.5	--	--	A	A
14.	Project Access 4 (NS) / 195th Street (EW)	AWS	HCM	8.2	7.5	--	--	A	A
15.	Project Access 5 (NS) / 195th Street (EW)	AWS	HCM	6.8	7.7	--	--	A	A

Deficient operation shown in Bold.

HCM Analysis Software: Synchro, Version 10.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for int traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movement single lane) are shown.

ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to capacity ratio.

- <sup>1</sup> TS = Traffic Signal  
CSS = Cross-Street Stop  
AWS = All-Way Stop

**Table 7-2**  
**City of Torrance - Study Intersection LOS Analysis Summary**  
**Forecast Opening Year (2023) Without Project Conditions**

Intersection		Traffic Control <sup>1</sup>	Methodology	Delay (Secs)		V/C Ratio		Level of Service	
				AM	PM	AM	PM	AM	PM
1.	Van Ness Avenue (NS) / 190th Street (EW)	TS	ICU	--	--	0.617	0.650	B	B
2.	Van Ness Avenue (NS) / 195th Street (EW)	TS	ICU	--	--	0.321	0.344	A	A
3.	Van Ness Avenue (NS) / Del Amo Boulevard (EW)	TS	ICU	--	--	0.563	0.688	A	B
4.	Gramercy Place (NS) / 190th Street (EW)	TS	ICU	--	--	0.449	0.486	A	A
5.	Gramercy Place (NS) / 195th Street (EW)	AWS	HCM	7.3	7.3	--	--	A	A
6.	I-405 Southbound Ramps (NS) / 190th Street (EW)	TS	ICU	--	--	0.735	0.589	C	A
7.	Western Avenue (SR-213) (NS) / I-405 Northbound Ramps (EW)	TS	ICU	--	--	0.660	0.751	B	C
8.	Western Avenue (SR-213) (NS) / 190th Street (EW)	TS	ICU	--	--	0.637	0.630	B	B
9.	Western Avenue (SR-213) (NS) / 195th Street (EW)	TS	ICU	--	--	0.459	0.480	A	A
10.	Western Avenue (SR-213) (NS) / Del Amo Boulevard (EW)	TS	ICU	--	--	0.699	0.724	B	C
11.	Project Access 1 (NS) / 190th Street (EW)	CSS	HCM	<b>45.0</b>	<b>43.9</b>	--	--	<b>E</b>	<b>E</b>
12.	Western Avenue (SR-213) (NS) / Project Access 2 (EW)	CSS	HCM	28.0	<b>38.2</b>	--	--	D	<b>E</b>
13.	Gramercy Place (NS) / Project Access 3 (EW)	CSS	HCM	8.4	8.5	--	--	A	A
14.	Project Access 4 (NS) / 195th Street (EW)	AWS	HCM	8.2	7.5	--	--	A	A
15.	Project Access 5 (NS) / 195th Street (EW)	AWS	HCM	6.8	7.7	--	--	A	A

Deficient operation shown in **Bold**.

HCM Analysis Software: Synchro, Version 10.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for int traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movement single lane) are shown.

ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to capacity ratio.

- <sup>1</sup> TS = Traffic Signal  
 CSS = Cross-Street Stop  
 AWS = All-Way Stop

**Table 7-3  
City of Torrance - Study Intersection LOS Analysis Summary  
Forecast Opening Year (2023) With Project Conditions**

Intersection	Traffic Control <sup>1</sup>	Methodology	Forecast Opening Year (2023) Without Project Conditions							Forecast Opening Year (2023) With Project Conditions											
			Delay (Secs)		V/C Ratio		Level of Service		Delay (Secs)		V/C Ratio		Change in V/C Ratio		Level of Service		Traffic Signal Warrant Satisfied?		Requires Improvement?		
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1. Van Ness Avenue (NS) / 190th Street (EW)	TS	ICU	--	--	0.617	0.650	B	B	--	--	0.624	0.656	0.007	0.006	B	B	N/A	N/A	NO	NO	
2. Van Ness Avenue (NS) / 195th Street (EW)	TS	ICU	--	--	0.321	0.344	A	A	--	--	0.323	0.357	0.002	0.013	A	A	N/A	N/A	NO	NO	
3. Van Ness Avenue (NS) / Del Amo Boulevard (EW)	TS	ICU	--	--	0.563	0.688	A	B	--	--	0.553	0.689	-0.010	0.001	A	B	N/A	N/A	NO	NO	
4. Gramercy Place (NS) / 190th Street (EW)	TS	ICU	--	--	0.449	0.486	A	A	--	--	0.446	0.502	-0.003	0.016	A	A	N/A	N/A	NO	NO	
5. Gramercy Place (NS) / 195th Street (EW)	AWS	HCM	7.3	7.3	--	--	A	A	7.7	7.5	--	--	--	--	A	A	NO	NO	NO	NO	
6. I-405 Southbound Ramps (NS) / 190th Street (EW)	TS	ICU	--	--	0.735	0.589	C	A	--	--	0.762	0.611	0.027	0.022	C	B	N/A	N/A	NO	NO	
7. Western Avenue (SR-213) (NS) / I-405 Northbound Ramps (EW)	TS	ICU	--	--	0.660	0.751	B	C	--	--	0.687	0.767	0.027	0.016	B	C	N/A	N/A	NO	NO	
8. Western Avenue (SR-213) (NS) / 190th Street (EW)	TS	ICU	--	--	0.637	0.630	B	B	--	--	0.652	0.640	0.015	0.010	B	B	N/A	N/A	NO	NO	
9. Western Avenue (SR-213) (NS) / 195th Street (EW)	TS	ICU	--	--	0.459	0.480	A	A	--	--	0.468	0.485	0.009	0.005	A	A	N/A	N/A	NO	NO	
10. Western Avenue (SR-213) (NS) / Del Amo Boulevard (EW)	TS	ICU	--	--	0.699	0.724	B	C	--	--	0.699	0.730	0.000	0.006	B	C	N/A	N/A	NO	NO	
11. Project Access 1 (NS) / 190th Street (EW)	CSS	HCM	<b>45.0</b>	<b>43.9</b>	--	--	<b>E</b>	<b>E</b>	<b>121.2</b>	<b>291.4</b>	--	--	--	--	<b>F</b>	<b>F</b>	NO	NO	NO	NO	
12. Western Avenue (SR-213) (NS) / Project Access 2 (EW)	CSS	HCM	28.0	<b>38.2</b>	--	--	D	<b>E</b>	<b>272.1</b>	<b>802.8</b>	--	--	--	--	<b>F</b>	<b>F</b>	NO	YES <sup>2</sup>	NO	No	
13. Gramercy Place (NS) / Project Access 3 (EW)	CSS	HCM	8.4	8.5	--	--	A	A	8.5	8.8	--	--	--	--	A	A	NO	NO	NO	NO	
14. Project Access 4 (NS) / 195th Street (EW)	AWS	HCM	8.2	7.5	--	--	A	A	8.2	7.6	--	--	--	--	A	A	NO	NO	NO	NO	
15. Project Access 5 (NS) / 195th Street (EW)	AWS	HCM	6.8	7.7	--	--	A	A	7.8	7.8	--	--	--	--	A	A	NO	NO	NO	NO	

Deficient operation shown in **bold**.

HCM Analysis Software: Synchro, Version 10.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to capacity ratio.

- <sup>1</sup> TS = Traffic Signal  
 CSS = Cross-Street Stop  
 AWS = All-Way Stop

<sup>2</sup> Due to the proximity of this intersection to the existing signalized intersection of Western Avenue (SR-213) / 190th Street, installation of a traffic signal at this location might not be feasible and recommended.

## **8.0 State Highway Study Intersection LOS Analysis**

This section provides a discussion and summary of the level of service (LOS) analysis for the State Highway study intersections under the jurisdiction of Caltrans.

### **8.1 State Highway Study Intersections Existing Conditions Level of Service**

Table 8-1 summarizes the results of the LOS analysis for the State Highway study intersections for Existing Conditions.

Detailed LOS analysis sheets for Existing Conditions are contained in Appendix D.

As shown in Table 8-1, the State Highway study intersections are currently operating at an acceptable level of service (LOS C or better) during the peak hours for Existing Conditions with the exception of the following study intersection which is forecast to operate at a deficient LOS (LOS D, E, or F):

- Western Avenue (SR-213) / Project Access 2 (both AM and PM peak hours).

### **8.2 State Highway Study Intersections Forecast Opening Year (2023) Without Project Conditions Level of Service**

Table 8-2 summarizes the results of the LOS analysis for the State Highway study intersections for Forecast Opening Year (2023) Without Project Conditions.

Detailed LOS analysis sheets for Forecast Opening Year (2023) Without Project Conditions are contained in Appendix E.

As shown in Table 8-2, the State Highway study intersections are forecast to operate at an acceptable level of service (LOS C or better) during the peak hours for Forecast Opening Year (2023) Without Project Conditions with the exception of the following study intersection which is forecast to operate at a deficient LOS (LOS D, E or F):

- Western Avenue (SR-213) / Project Access 2 (both AM and PM peak hours).

### **8.3 State Highway Study Intersections Forecast Opening Year (2023) With Project Conditions Level of Service**

Table 8-3 summarizes the results of the LOS analysis for the State Highway study intersections for Forecast Opening Year (2023) With Project Conditions.

Detailed LOS analysis sheets for Forecast Opening Year (2023) With Project Conditions are contained in Appendix F.

As shown in Table 8-3, the State Highway study intersections are forecast to operate at an acceptable level of service (LOS C or better) during the peak hours for Forecast Opening Year (2023) With Project Conditions with the exception of the following study intersection which is forecast to operate at a deficient LOS (LOS D, E or F):

- Western Avenue (SR-213) / Project Access 2 (both AM and PM peak hours).

As also shown in Table 8-3, based on State Highway established thresholds, the proposed project is not required to contribute to level of service improvements at the State Highway study intersections for Forecast Opening Year (2023) With Project Conditions.

**Table 8-1**  
**State Highway - Study Intersection LOS Analysis Summary**  
**Existing Conditions**

	Intersection	Traffic Control <sup>1</sup>	Methodology	Delay (Secs)		Level of Service	
				AM	PM	AM	PM
6.	I-405 Southbound Ramps (NS) / 190th Street (EW)	TS	HCM	23.8	16.4	C	B
7.	Western Avenue (SR-213) (NS) / I-405 Northbound Ramps (EW)	TS	HCM	13.7	22.4	B	C
8.	Western Avenue (SR-213) (NS) / 190th Street (EW)	TS	HCM	23.3	23.0	C	C
9.	Western Avenue (SR-213) (NS) / 195th Street (EW)	TS	HCM	5.9	6.4	A	A
10.	Western Avenue (SR-213) (NS) / Del Amo Boulevard (EW)	TS	HCM	16.1	17.9	B	B
12.	Western Avenue (SR-213) (NS) / Project Access 2 (EW)	CSS	HCM	<b>27.3</b>	<b>37.6</b>	<b>D</b>	<b>E</b>

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Deficient operation shown in **Bold**.

HCM Analysis Software: Synchro, Version 10.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to capacity ratio.

<sup>1</sup> TS = Traffic Signal

CSS = Cross-Street Stop

**Table 8-2**  
**State Highway - Study Intersection LOS Analysis Summary**  
**Forecast Opening Year (2023) Without Project Conditions**

	Intersection	Traffic Control <sup>1</sup>	Methodology	Delay (Secs)		Level of Service	
				AM	PM	AM	PM
6.	I-405 Southbound Ramps (NS) / 190th Street (EW)	TS	HCM	24.1	16.5	C	B
7.	Western Avenue (SR-213) (NS) / I-405 Northbound Ramps (EW)	TS	HCM	13.9	23.0	B	C
8.	Western Avenue (SR-213) (NS) / 190th Street (EW)	TS	HCM	23.6	23.2	C	C
9.	Western Avenue (SR-213) (NS) / 195th Street (EW)	TS	HCM	5.9	6.5	A	A
10.	Western Avenue (SR-213) (NS) / Del Amo Boulevard (EW)	TS	HCM	16.4	18.1	B	B
12.	Western Avenue (SR-213) (NS) / Project Access 2 (EW)	CSS	HCM	<b>28.0</b>	<b>38.2</b>	<b>D</b>	<b>E</b>

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Deficient operation shown in **Bold**.

HCM Analysis Software: Synchro, Version 10.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to capacity ratio.

<sup>1</sup> TS = Traffic Signal

CSS = Cross-Street Stop



**Table 8-3**  
**State Highway - Study Intersection LOS Analysis Summary**  
**Forecast Opening Year (2023) With Project Conditions**

Intersection		Traffic Control <sup>1</sup>	Methodology	Forecast Opening Year (2023) Without Project Conditions				Forecast Opening Year (2023) With Project Conditions					
				Delay (Secs)		Level of Service		Delay (Secs)		Level of Service		Requires Improvement?	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
6.	I-405 Southbound Ramps (NS) / 190th Street (EW)	TS	HCM	24.1	16.5	C	B	26.4	17.3	C	B	NO	NO
7.	Western Avenue (SR-213) (NS) / I-405 Northbound Ramps (EW)	TS	HCM	13.9	23.0	B	C	15.2	24.4	B	C	NO	NO
8.	Western Avenue (SR-213) (NS) / 190th Street (EW)	TS	HCM	23.6	23.2	C	C	24.3	24.4	C	C	NO	NO
9.	Western Avenue (SR-213) (NS) / 195th Street (EW)	TS	HCM	5.9	6.5	A	A	6.3	6.7	A	A	NO	NO
10.	Western Avenue (SR-213) (NS) / Del Amo Boulevard (EW)	TS	HCM	16.4	18.1	B	B	16.4	18.2	B	B	NO	NO
12.	Western Avenue (SR-213) (NS) / Project Access 2 (EW)	CSS	HCM	<b>28.0</b>	<b>38.2</b>	<b>D</b>	<b>E</b>	<b>272.1</b>	<b>802.8</b>	<b>F</b>	<b>F</b>	NO	NO

Deficient operation shown in **Bold**.

HCM Analysis Software: Synchro, Version 10.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>1</sup> TS = Traffic Signal  
 CSS = Cross-Street Stop

## 9.0 Conclusions

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### **Project Trip Generation:**

Trip generation for the existing uses, and the proposed project is determined based on ITE 10<sup>th</sup> Edition trip generation rates for the proposed land uses.

To account for the large trucks, the trip generation for trucks has been converted to passenger car equivalents (PCE).

Without applying PCE-factors, the proposed project is forecast to generate approximately 2,460 daily trips which include approximately 292 AM peak hour trip and approximately 292 PM peak hour trips.

After applying PCE-factors, the proposed project is forecast to generate approximately 3,038 PCE-adjusted daily trips which include approximately 361 PCE-adjusted AM peak hour trip and approximately 360 PCE-adjusted PM peak hour trips.

*This analysis does not account for the existing land uses which will be displaced by the proposed project.*

### **Signal Warrant Analysis:**

Based on the traffic signal warrant analysis prepared for the unsignalized study intersections, the following unsignalized study intersection is forecast to satisfy the MUTCD peak hour traffic volume traffic signal warrant for the study scenarios evaluated as part of this report:

- Western Avenue (SR-213) / Project Access 2: Forecast Opening Year With Project Conditions (only PM peak hour warrant satisfied).

However, due to the proximity of this intersection to the existing signalized intersection of Western Avenue (SR-213) / 190<sup>th</sup> Street, installation of a traffic signal at this location might not be feasible and recommended.

## **City of Torrance Study Intersection Analysis - Level of Service & Mitigation Measures:**

Based on City of Torrance-established performance criteria, all of the study intersections are currently operating at an acceptable LOS (LOS D or better) for the analysis scenarios evaluated as part of this report with the exception of the following study intersections which are currently operating at a deficient level of service (LOS E or F) for Existing Conditions and are forecast to continue to operate at a deficient level of service for future analysis scenarios during one or more peak hours:

- Project Access 1 / 190<sup>th</sup> Street; and
- Western Avenue (SR-213) / Project Access 2.

It should be noted the deficient operation of these study intersections, which are project driveways, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (190<sup>th</sup> Street and Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria.

Since the Project Access 1 / 190<sup>th</sup> Street study intersection does not satisfy the traffic signal warrants, the project is not required to contribute to improvements at this intersection based on the City of Torrance thresholds for requiring level of service improvements.

The study intersection of Western Avenue (SR-213) / Project Access 2 does satisfy the traffic signal warrants for Opening Year (2023) With Project Conditions during the PM peak hour. However, based on the analysis conducted as part of this report, improvements at this study intersection are not required for the following reasons:

- The deficient operation of the study intersection, which is a project driveway, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (Western Avenue) have free flow movement and operate with acceptable level of service (LOS D or better) based on the City of Torrance performance criteria; and
- Due to the proximity of this intersection to the existing signalized intersection of Western Avenue (SR-213) / 190<sup>th</sup> Street, installation of a traffic signal at this location might not be feasible and recommended.

Hence, no improvements are identified and required for the City of Torrance study intersections.

**State Highway Study Intersection Analysis - Level of Service & Mitigation Measures:**

Based on Caltrans-established performance criteria, all of the study intersections are currently operating at an acceptable LOS (LOS C or better) for the analysis scenarios evaluated as part of this report with the exception of the following study intersection which is currently operating at a deficient level of service (LOS D or worse) for Existing Conditions and is forecast to continue to operate at a deficient level of service for future analysis scenarios during one or more peak hours:

- Western Avenue (SR-213) / Project Access 2.

It should be noted the deficient operation of these study intersection, which is a project driveway, is only associated with the vehicles exiting the driveway and making a left-turn maneuver to exit the site. The traffic flow and operation for the public roadway (Western Avenue) have free flow movement and operate with acceptable level of service (LOS C or better) based on Caltrans performance criteria.

Based on Caltrans-established thresholds, the proposed project is not required to contribute to any improvements at the State Highway study intersections.

## **Appendix A**

Approved Scope of Work

## TORRANCE COMMERCE CENTER PHASE III Traffic Study Scope of Work Updated September 23, 2020

The following provides information on the proposed project, summarizes the analysis scope, parameters, and assumptions for review and approval, and also includes request for information on items related to the study. *This scope has been prepared in accordance with the Traffic Circulation Analysis (TCA) Guidelines that applies to Land Use Projects sent out for public review on or after July 1, 2020.*

**A. Project Description:** The project site is located on the southwest corner of the Western Avenue / 190<sup>th</sup> Street intersection in the City of Torrance. The proposed project is planned to consist of up to 730,000 square feet of industrial park use that will displace the existing uses, which previously was a part of the Toyota Campus. The project site currently contains a total of ten buildings as shown and summarized in Table 1.

**Table 1 - Summary of Existing Uses on Project Site**

#	Site/ Building No.	Address	Site Name	Current/Previous Use	Building Gross Square Footage
1	5	19001 South Western Avenue	Toyota Headquarters	Office	330,389
2	6	19001 South Western Avenue	Campus Dining Center	Cafeteria	11,320
3	7	19001 South Western Avenue	Data Center	Data Center	88,307
4	8	19901 South Western Avenue	HQ Central Plant & Parking	Utility & Parking	22,794
5	9	1910 West 190th Street	Scion & Service Garage	Office & Garage	35,618
6	10	2000 West 190th Street	Lexus	Office	62,009
7	11	19200 South Gramercy Place	Toyota Administrative Center	Office	67,757
8	12	1900 West 190th Street	Helipad	Helipad	---
9	13	19300 South Gramercy Place	Project Center North	Office	69,719
10	14	2015 Toyota Way	Project Center South	Office	60,356
<b>Total Trip Generating Uses</b>				<b>Office</b>	<b>590,230</b>

Exhibit A shows the location of the proposed project. Exhibit B shows the proposed site plan.

**B. Forecast Project Trip Generation:** Trip generation for the proposed project land use is determined based on ITE 10<sup>th</sup> Edition trip generation rates as shown in Table 2.

**Table 2**  
**Proposed Project ITE Trip Generation Rates**

Land Use	Units	ITE Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Industrial Park (Project Land Use)	TSF	130	0.32	0.08	0.40	0.08	0.32	0.40	3.37

**Source:** 2017 ITE Trip Generation Manual, 10<sup>th</sup> Edition; TSF = Thousand Square Feet

Utilizing the ITE trip generation rates shown in Table 2, Table 3 summarizes the daily and peak hour trip generation for the Project.

The trip generation for Phase 3 has been calculated to be consistent in methodology with the previously prepared and approved traffic studies for Phase 1 and 2.

**Table 3  
Project Land Use Trip Generation**

Land Use (ITE Code)	Quantity	Units <sup>2</sup>	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Industrial Park (130) [Without PCE-Adjustment] <sup>1</sup>	730.000	TSF	237	55	292	61	231	292	2,460
PCE-Adjustment <sup>3</sup>	Passenger Vehicles (87%) [1.0 PCE]		206	48	254	53	201	254	2,140
	2-Axle Trucks (1%) [1.5 PCE]		4	1	5	1	3	4	37
	3-Axle Trucks (1%) [2.0 PCE]		5	1	6	1	5	6	49
	4 or more-Axle Trucks (11%) [3.0 PCE]		78	18	96	20	76	96	812
<b>Total (PCE-Adjusted)</b>			<b>293</b>	<b>68</b>	<b>361</b>	<b>75</b>	<b>285</b>	<b>360</b>	<b>3,038</b>

1 Source: 2017 ITE Trip Generation Manual, 10<sup>th</sup> Edition

2 TSF = Thousand Square Feet

3 The ITE Trip Generation Handbook documents that on average, approximately 13 percent of the trips generated by the Industrial Park land use category are truck trips. Since the ITE Trip Generation Handbook does not break down trucks by axle type, this analysis utilizes truck axle breakdown data documented in the Fontana Truck Trip Generation Study (2003).

Based on the Fontana Truck Trip Generation Study (2003), out of the 13 percent total truck traffic, 7.9 percent (equivalent to 1% of total traffic) of Industrial Park truck trips consist of 2 axle trucks, 7.1 percent (equivalent to 1% of total traffic) of Industrial Park truck trips consist of 3 axle trucks, and 85 percent (equivalent to 11% of total traffic) of Industrial Park truck trips consist of 4 or more axle trucks.

As shown in Table 3, to account for the large trucks, the trip generation for trucks has been converted to passenger car equivalents (PCE).

As shown in Table 3, without applying PCE-factors, the Project is forecast to generate approximately 2,460 daily trips which include approximately 292 AM peak hour trip and approximately 292 PM peak hour trips.

As also shown in Table 3, after applying PCE-factors, the Project is forecast to generate approximately 3,038 PCE-adjusted daily trips which include approximately 361 PCE-adjusted AM peak hour trip and approximately 360 PCE-adjusted PM peak hour trips.

*It should be noted, as requested by the City, the traffic study for the proposed project will not take trip credits for the existing land uses. Hence, the traffic study will utilize and be based on the trip generation for the proposed project as shown in Table 3.*



**C. Forecast Project Trip Distribution: Trip:** Exhibit C-1 shows the forecast *inbound* trip distribution and Exhibit C-2 shows the forecast *outbound* trip distribution.

The distribution is consistent with the previously approved Phase 1 and 2 project.

**D. Study Area:** Table 4 shows the study intersections proposed for evaluation:

**Table 4**  
**Study Intersections by Jurisdiction**

Study Intersection	Responsible Jurisdiction	
	City of Torrance	State Highway (Caltrans)
1. Van Ness Ave / 190 <sup>th</sup> St (Signalized)	X	
2. Van Ness Ave / 195 <sup>th</sup> St (Signalized)	X	
3. Van Ness Ave / Del Amo Blvd (Signalized)	X	
4. Gramercy Pl / 190 <sup>th</sup> St (Signalized)	X	
5. Gramercy Pl / 195 <sup>th</sup> St (Unsignalized)	X	
6. I-405 SB Ramp / 190 <sup>th</sup> St (Signalized)		X
7. Western Ave (SR-213) / I-405 NB Ramp (Signalized)		X
8. Western Ave (SR-213) / 190 <sup>th</sup> St (Signalized)		X
9. Western Ave (SR-213) / 195 <sup>th</sup> St (Signalized)		X
10. Western Ave (SR-213) / Del Amo Blvd (Signalized)		X

**Notes:** X = intersection within jurisdiction; NB = Northbound & SB = Southbound.

**The project driveway access locations will also be evaluated as part of the level of service analysis.**

Exhibit A shows the study intersections proposed for evaluation:

**E. Analysis Scenarios:** The analysis will evaluate traffic conditions for the following scenarios during the weekday AM and weekday PM peak hour conditions in accordance with the Traffic Circulation Analysis (TCA) Guidelines:

:

- Existing Conditions;
- Forecast Opening Year (Existing Traffic Plus Ambient Growth); and
- Forecast Opening Year With Project (Existing Traffic Plus Ambient Growth Plus Project-Generated Traffic).

Hence, no cumulative project analysis will be required and included.

**F. Traffic Analysis Parameters:** The analysis will utilize the following parameters for evaluation of:

City of Torrance:

The study will utilize the following methodologies for evaluation of the City of Torrance study intersections:

- Signalized intersections: The ICU level of service will be determined utilizing the Traffix analysis software.
- Unsignalized intersections: The HCM 2010 level of service will be determined utilizing the Synchro analysis software.

State Highway (Caltrans):

The study will utilize the following methodology for evaluation of the State Highway study intersections:

- The HCM level of service will be determined utilizing the HCM 2010 Methodology and the Synchro analysis software.

**G. Existing Traffic Volumes:** The analysis will utilize new traffic counts. The counts will not be collected by vehicle classification.

AM peak period counts will be collected during one typical weekday from 7:00 AM to 9:00 AM. PM peak period counts will be collected during one typical weekday from 4:00 PM to 6:00 PM.

**H. Forecast Opening Year Conditions Traffic Volumes:** Opening year background traffic volumes will be derived by applying an annual traffic growth rate of 0.525% per year to existing (2021) traffic volumes plus the addition of trips associated with specific cumulative projects in the area provided by City of Torrance staff.

**I. Performance Criteria:**

City of Torrance:

The acceptable Level of Service (LOS) for intersections within the City of Torrance is LOS D or better.

State Highway (Caltrans):

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities.

**J. Threshold for Requiring Level of Service Improvements:**

City of Torrance:

The need for identification of level of service improvements for City of Torrance Signalized locations will be determined through the following criteria per the City's guidelines:

<b>LOS Without Project</b>	<b>V/C Difference</b>
C	0.0400 or more
D	0.0200 or more
E,F	0.0100 or more

For City of Torrance unsignalized study intersections, identification of level of service improvements is needed if the level of service degrades to E or F and the intersection satisfies the traffic signal warrant.

State Highway (Caltrans):

While Caltrans has not established traffic thresholds for requiring level of service improvements, the previously prepared traffic studies have utilized the following traffic thresholds:

- Identification of level of service improvements at a State Highway study intersection is required when the addition of project-generated trips causes the peak hour level of service of the study intersection to change from acceptable operation (LOS A, B, or C) to deficient operation (LOS D, E or F).

**K. VMT:** Based on a previously prepared VMT screening memo reviewed and approved by the City, a VMT analysis is not required for the proposed project.

**L. Request for Information:** Please provide information on the following for use in the traffic study:

- Information on future roadway and circulation system modifications/improvements for the project opening year that are planned within the study area and would potentially affect the analysis.

If you have any questions, or would like further review, please call us at (949) 474-0809.

Sincerely,  
RK ENGINEERING GROUP, INC.



Alex Tabrizi, PE, TE  
Principal

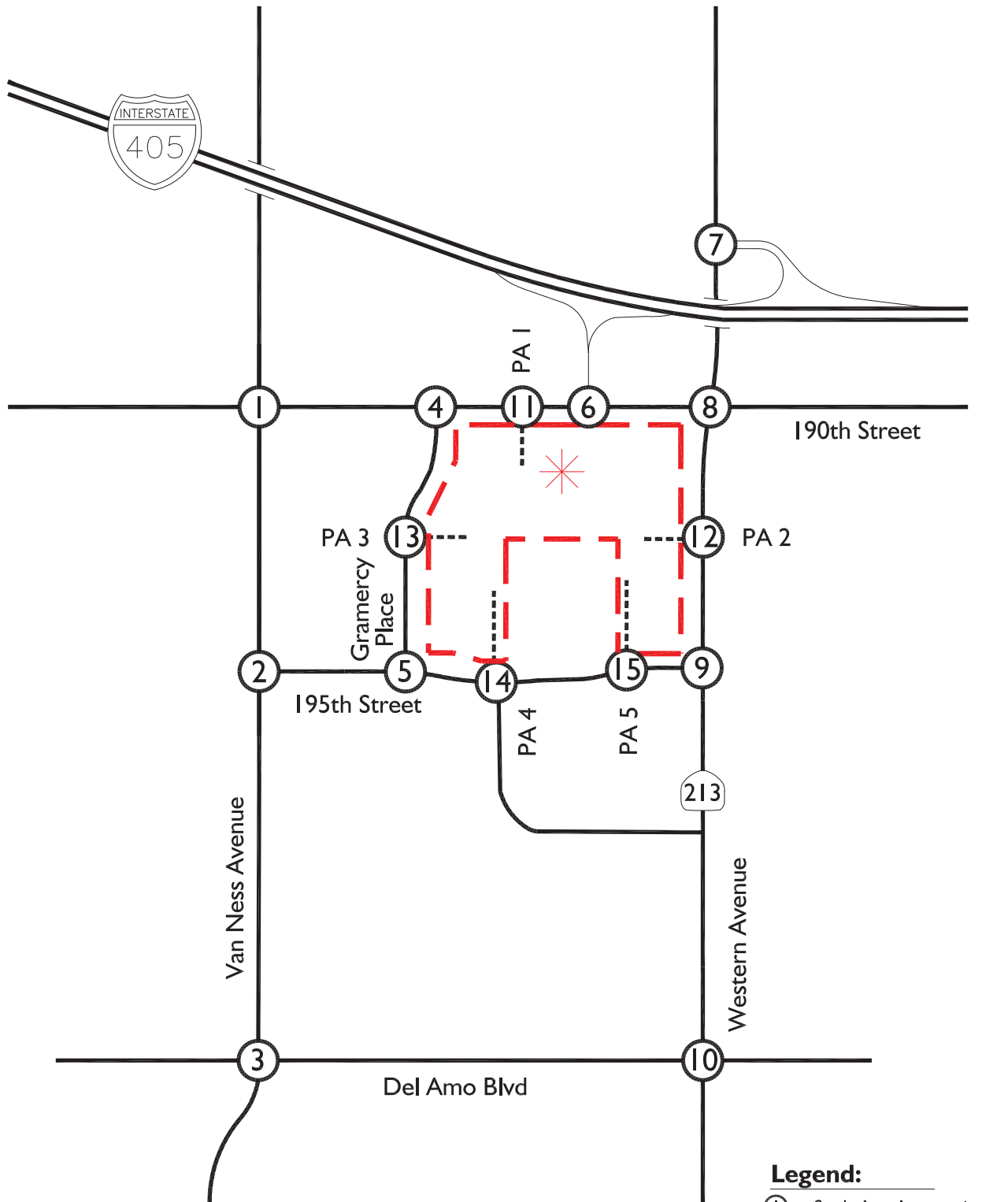
Attachments

Approved by:

\_\_\_\_\_  
City of Torrance

\_\_\_\_\_  
Date

## **Attachments**



**Legend:**

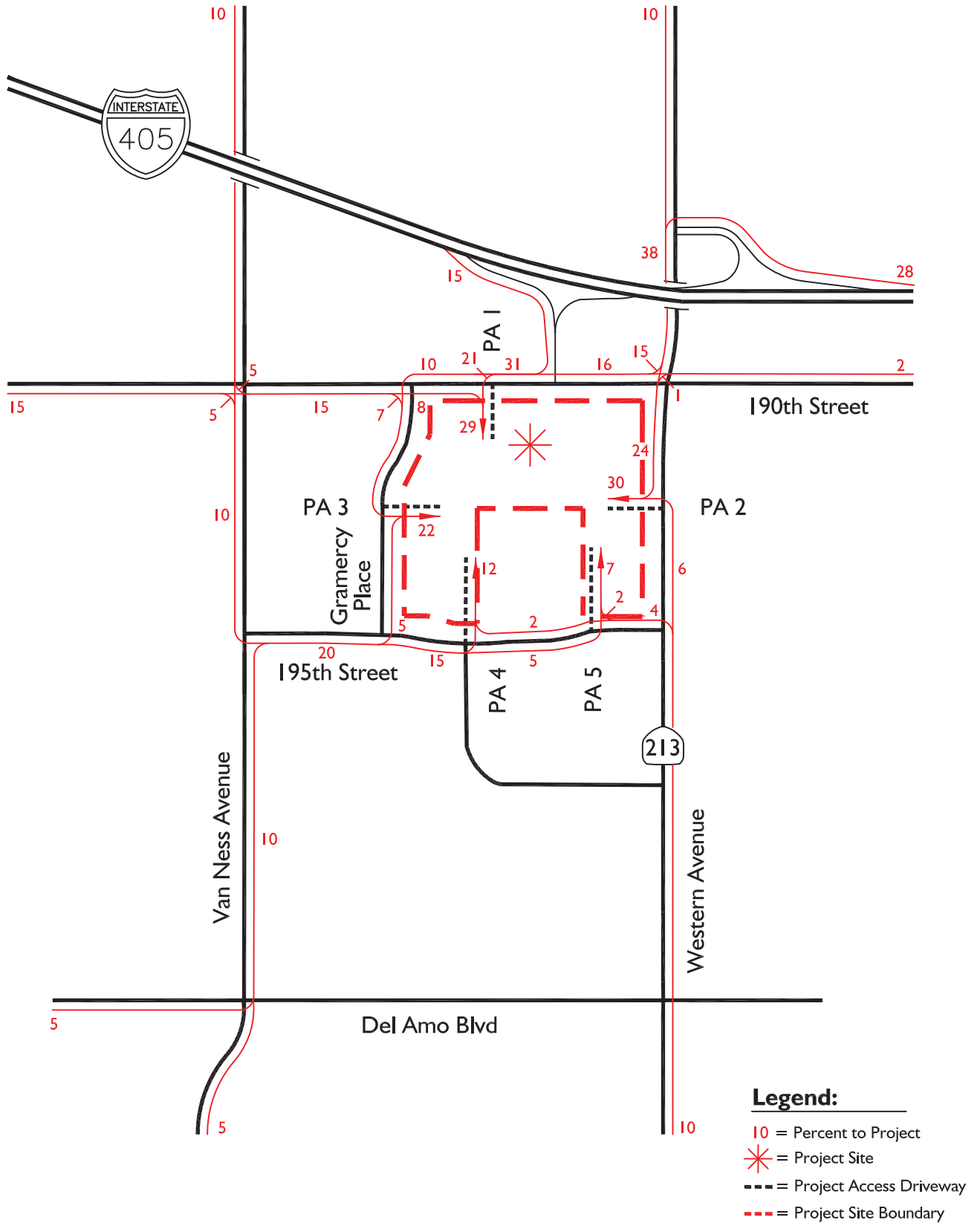
- ① = Study Area Intersection
- \* = Project Site
- = Project Access Driveway
- - - = Project Site Boundary



# Exhibit B Site Plan

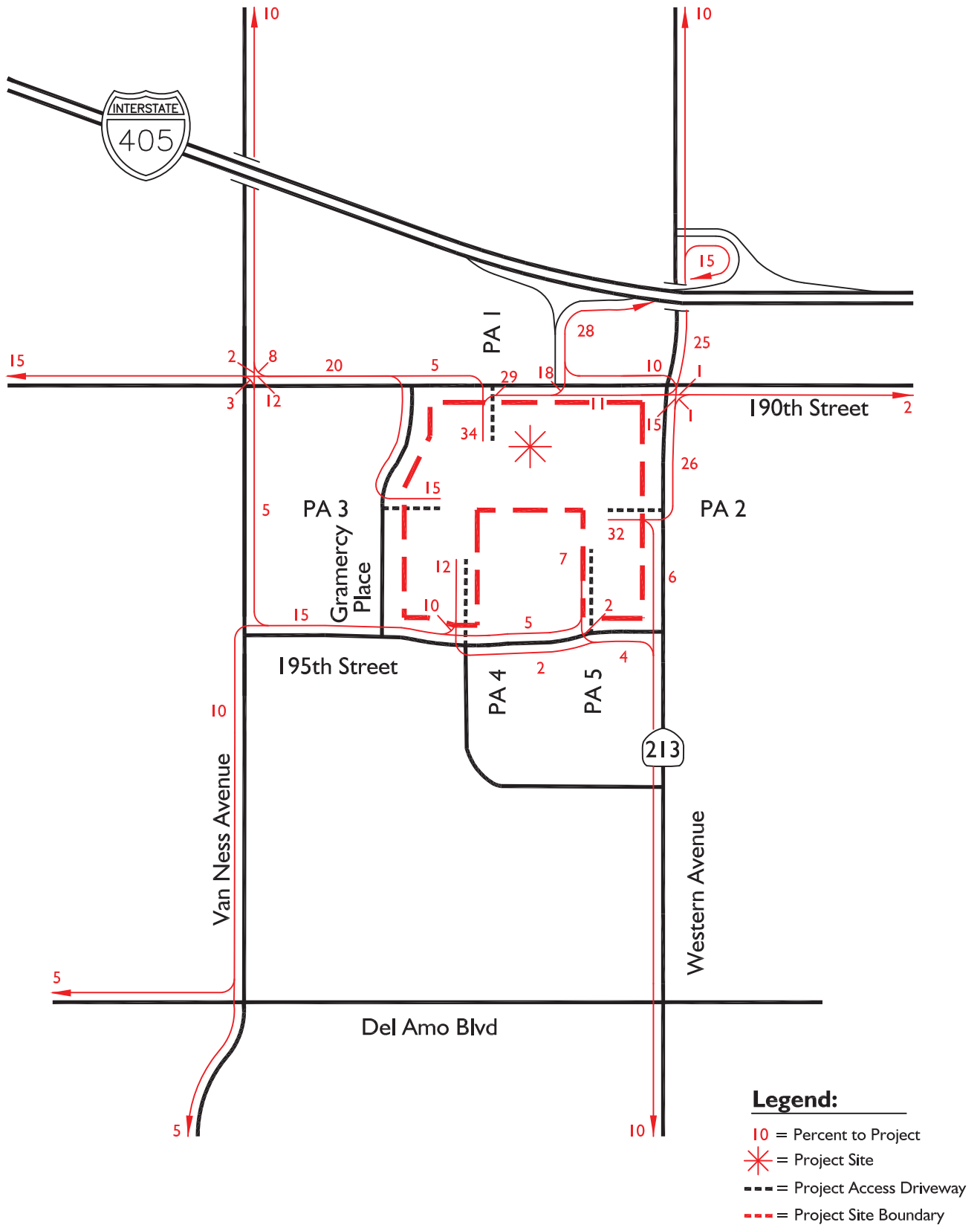


# Exhibit C-1 Inbound Project Trip Distribution





# Exhibit C-2 Outbound Project Trip Distribution



## **Appendix B**

Existing Traffic Count Worksheets

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 01\_TOR\_Van Ness\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

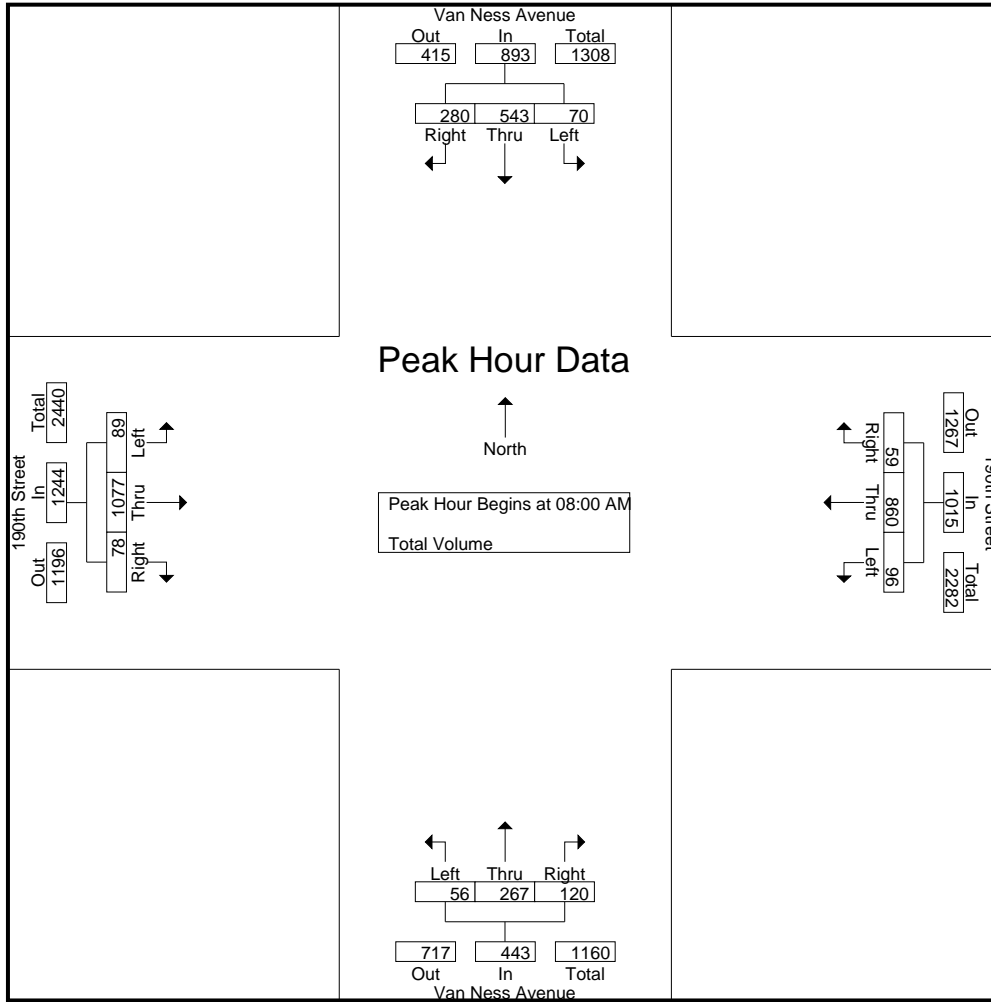
Groups Printed- Total Volume

Start Time	Van Ness Avenue Southbound				190th Street Westbound				Van Ness Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	5	71	19	95	18	129	11	158	4	44	25	73	4	177	8	189	515
07:15 AM	13	80	46	139	23	186	15	224	9	58	23	90	10	188	10	208	661
07:30 AM	15	93	62	170	21	220	10	251	16	57	34	107	13	254	13	280	808
07:45 AM	11	120	66	197	29	236	4	269	12	87	30	129	16	278	21	315	910
Total	44	364	193	601	91	771	40	902	41	246	112	399	43	897	52	992	2894
08:00 AM	22	123	44	189	26	159	10	195	7	55	30	92	14	282	13	309	785
08:15 AM	15	139	66	220	21	230	16	267	14	74	27	115	16	295	20	331	933
08:30 AM	11	150	94	255	30	233	19	282	12	67	32	111	22	235	14	271	919
08:45 AM	22	131	76	229	19	238	14	271	23	71	31	125	37	265	31	333	958
Total	70	543	280	893	96	860	59	1015	56	267	120	443	89	1077	78	1244	3595
Grand Total	114	907	473	1494	187	1631	99	1917	97	513	232	842	132	1974	130	2236	6489
Apprch %	7.6	60.7	31.7		9.8	85.1	5.2		11.5	60.9	27.6		5.9	88.3	5.8		
Total %	1.8	14	7.3	23	2.9	25.1	1.5	29.5	1.5	7.9	3.6	13	2	30.4	2	34.5	

Start Time	Van Ness Avenue Southbound				190th Street Westbound				Van Ness Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	<b>22</b>	123	44	189	26	159	10	195	7	55	30	92	14	282	13	309	785
08:15 AM	15	139	66	220	21	230	16	267	14	<b>74</b>	27	115	16	<b>295</b>	20	331	933
08:30 AM	11	<b>150</b>	<b>94</b>	<b>255</b>	<b>30</b>	233	<b>19</b>	<b>282</b>	12	67	<b>32</b>	111	22	235	14	271	919
08:45 AM	22	131	76	229	19	<b>238</b>	14	271	<b>23</b>	71	31	<b>125</b>	<b>37</b>	265	<b>31</b>	<b>333</b>	<b>958</b>
Total Volume	70	543	280	893	96	860	59	1015	56	267	120	443	89	1077	78	1244	3595
% App. Total	7.8	60.8	31.4		9.5	84.7	5.8		12.6	60.3	27.1		7.2	86.6	6.3		
PHF	.795	.905	.745	.875	.800	.903	.776	.900	.609	.902	.938	.886	.601	.913	.629	.934	.938

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 01\_TOR\_Van Ness\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:45 AM				08:00 AM			
+0 mins.	<b>22</b>	123	44	189	26	159	10	195	12	<b>87</b>	30	<b>129</b>	14	282	13	309
+15 mins.	15	139	66	220	21	230	16	267	7	55	30	92	16	<b>295</b>	20	331
+30 mins.	11	<b>150</b>	<b>94</b>	<b>255</b>	<b>30</b>	233	<b>19</b>	<b>282</b>	<b>14</b>	74	27	115	22	235	14	271
+45 mins.	22	131	76	229	19	<b>238</b>	14	271	12	67	<b>32</b>	111	<b>37</b>	265	<b>31</b>	<b>333</b>
Total Volume	70	543	280	893	96	860	59	1015	45	283	119	447	89	1077	78	1244
% App. Total	7.8	60.8	31.4		9.5	84.7	5.8		10.1	63.3	26.6		7.2	86.6	6.3	
PHF	.795	.905	.745	.875	.800	.903	.776	.900	.804	.813	.930	.866	.601	.913	.629	.934

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 01\_TOR\_Van Ness\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

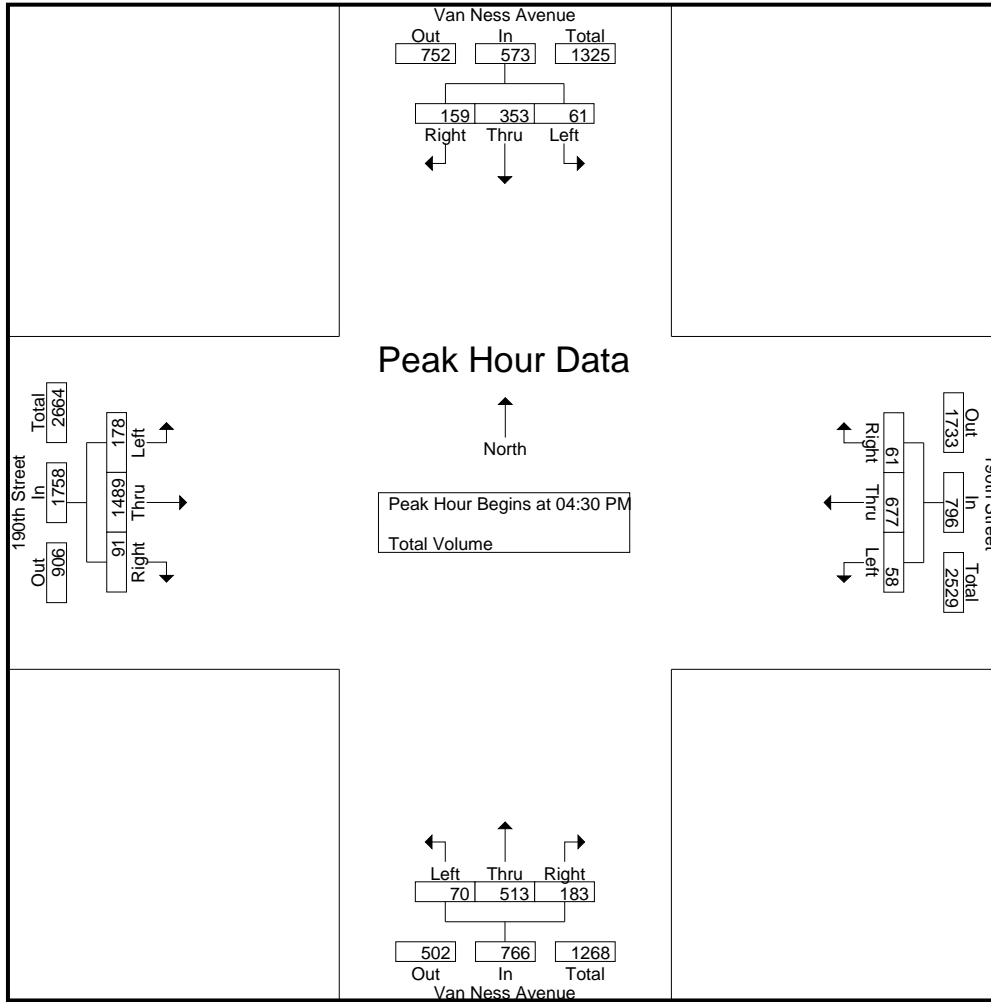
Groups Printed- Total Volume

Start Time	Van Ness Avenue Southbound				190th Street Westbound				Van Ness Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	15	78	38	131	18	155	19	192	17	120	41	178	34	332	22	388	889
04:15 PM	15	76	29	120	13	156	11	180	13	108	30	151	32	340	25	397	848
04:30 PM	21	91	38	150	18	160	9	187	14	121	67	202	39	370	24	433	972
04:45 PM	8	78	43	129	11	140	15	166	15	114	35	164	51	375	15	441	900
Total	59	323	148	530	60	611	54	725	59	463	173	695	156	1417	86	1659	3609
05:00 PM	18	103	36	157	12	167	15	194	25	148	42	215	40	346	23	409	975
05:15 PM	14	81	42	137	17	210	22	249	16	130	39	185	48	398	29	475	1046
05:30 PM	13	88	40	141	13	186	16	215	16	152	41	209	40	332	27	399	964
05:45 PM	13	85	48	146	17	194	15	226	9	102	26	137	41	270	19	330	839
Total	58	357	166	581	59	757	68	884	66	532	148	746	169	1346	98	1613	3824
Grand Total	117	680	314	1111	119	1368	122	1609	125	995	321	1441	325	2763	184	3272	7433
Apprch %	10.5	61.2	28.3		7.4	85	7.6		8.7	69	22.3		9.9	84.4	5.6		
Total %	1.6	9.1	4.2	14.9	1.6	18.4	1.6	21.6	1.7	13.4	4.3	19.4	4.4	37.2	2.5	44	

Start Time	Van Ness Avenue Southbound				190th Street Westbound				Van Ness Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	<b>21</b>	91	38	150	<b>18</b>	160	9	187	14	121	<b>67</b>	202	39	370	24	433	972
04:45 PM	8	78	<b>43</b>	129	11	140	15	166	15	114	35	164	<b>51</b>	375	15	441	900
05:00 PM	18	<b>103</b>	36	<b>157</b>	12	167	15	194	<b>25</b>	<b>148</b>	42	<b>215</b>	40	346	23	409	975
05:15 PM	14	81	42	137	17	<b>210</b>	<b>22</b>	<b>249</b>	16	130	39	185	48	<b>398</b>	<b>29</b>	<b>475</b>	<b>1046</b>
Total Volume	61	353	159	573	58	677	61	796	70	513	183	766	178	1489	91	1758	3893
% App. Total	10.6	61.6	27.7		7.3	85.1	7.7		9.1	67	23.9		10.1	84.7	5.2		
PHF	.726	.857	.924	.912	.806	.806	.693	.799	.700	.867	.683	.891	.873	.935	.784	.925	.930

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 01\_TOR\_Van Ness\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:45 PM				04:30 PM			
+0 mins.	18	103	36	157	12	167	15	194	15	114	35	164	39	370	24	433
+15 mins.	14	81	42	137	17	210	22	249	25	148	42	215	51	375	15	441
+30 mins.	13	88	40	141	13	186	16	215	16	130	39	185	40	346	23	409
+45 mins.	13	85	48	146	17	194	15	226	16	152	41	209	48	398	29	475
Total Volume	58	357	166	581	59	757	68	884	72	544	157	773	178	1489	91	1758
% App. Total	10	61.4	28.6		6.7	85.6	7.7		9.3	70.4	20.3		10.1	84.7	5.2	
PHF	.806	.867	.865	.925	.868	.901	.773	.888	.720	.895	.935	.899	.873	.935	.784	.925

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 02\_TOR\_Van Ness\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Van Ness Avenue Southbound			195th Street Westbound			Van Ness Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:00 AM	1	94	95	0	1	1	70	1	71	167
07:15 AM	1	109	110	1	2	3	94	1	95	208
07:30 AM	6	122	128	3	3	6	112	7	119	253
07:45 AM	9	160	169	2	4	6	132	9	141	316
Total	17	485	502	6	10	16	408	18	426	944
08:00 AM	3	150	153	3	2	5	90	6	96	254
08:15 AM	2	177	179	4	2	6	125	1	126	311
08:30 AM	1	192	193	3	3	6	106	3	109	308
08:45 AM	5	165	170	3	1	4	124	6	130	304
Total	11	684	695	13	8	21	445	16	461	1177
Grand Total	28	1169	1197	19	18	37	853	34	887	2121
Apprch %	2.3	97.7		51.4	48.6		96.2	3.8		
Total %	1.3	55.1	56.4	0.9	0.8	1.7	40.2	1.6	41.8	

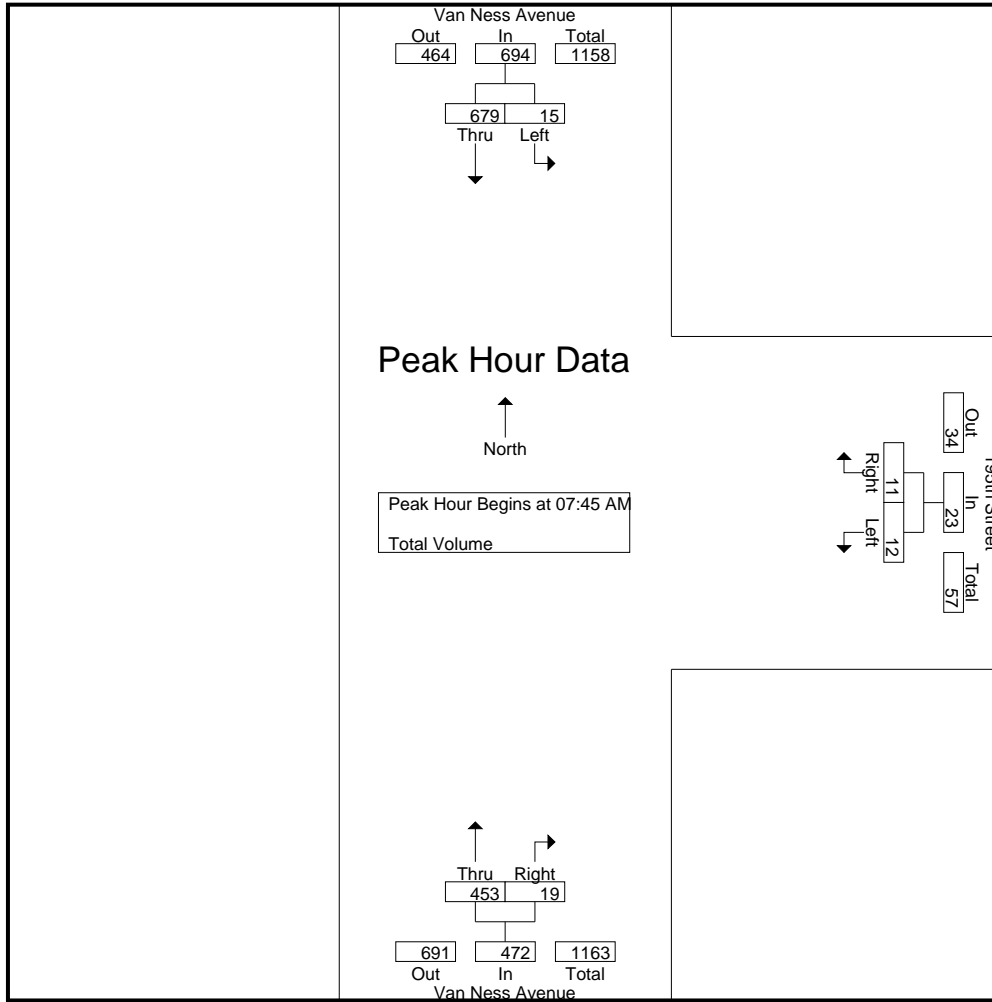
Start Time	Van Ness Avenue Southbound			195th Street Westbound			Van Ness Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:45 AM	9	160	169	2	4	6	132	9	141	316
08:00 AM	3	150	153	3	2	5	90	6	96	254
08:15 AM	2	177	179	4	2	6	125	1	126	311
08:30 AM	1	192	193	3	3	6	106	3	109	308
Total Volume	15	679	694	12	11	23	453	19	472	1189
% App. Total	2.2	97.8		52.2	47.8		96	4		
PHF	.417	.884	.899	.750	.688	.958	.858	.528	.837	.941

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45 AM

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 02\_TOR\_Van Ness\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	08:00 AM			07:30 AM			07:30 AM		
+0 mins.	3	150	153	3	3	6	112	7	119
+15 mins.	2	177	179	2	4	6	132	9	141
+30 mins.	1	192	193	3	2	5	90	6	96
+45 mins.	5	165	170	4	2	6	125	1	126
Total Volume	11	684	695	12	11	23	459	23	482
% App. Total	1.6	98.4		52.2	47.8		95.2	4.8	
PHF	.550	.891	.900	.750	.688	.958	.869	.639	.855



City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 02\_TOR\_Van Ness\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

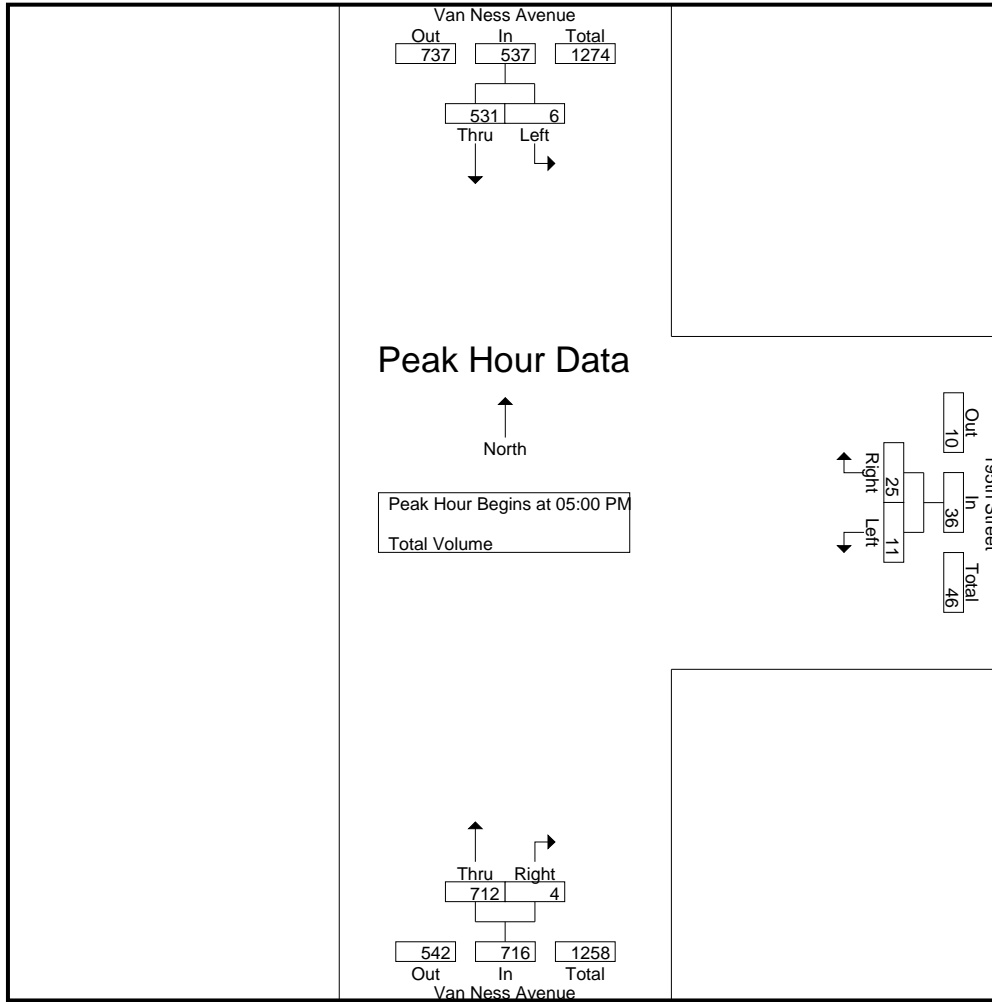
Start Time	Van Ness Avenue Southbound			195th Street Westbound			Van Ness Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:00 PM	1	127	128	5	7	12	156	4	160	300
04:15 PM	4	111	115	3	3	6	154	6	160	281
04:30 PM	3	132	135	1	3	4	182	1	183	322
04:45 PM	0	104	104	5	4	9	156	8	164	277
Total	8	474	482	14	17	31	648	19	667	1180
05:00 PM	1	132	133	1	10	11	201	1	202	346
05:15 PM	1	136	137	1	7	8	176	2	178	323
05:30 PM	2	131	133	6	6	12	196	0	196	341
05:45 PM	2	132	134	3	2	5	139	1	140	279
Total	6	531	537	11	25	36	712	4	716	1289
Grand Total	14	1005	1019	25	42	67	1360	23	1383	2469
Apprch %	1.4	98.6		37.3	62.7		98.3	1.7		
Total %	0.6	40.7	41.3	1	1.7	2.7	55.1	0.9	56	

Start Time	Van Ness Avenue Southbound			195th Street Westbound			Van Ness Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
05:00 PM	1	132	133	1	<b>10</b>	11	<b>201</b>	1	<b>202</b>	<b>346</b>
05:15 PM	1	<b>136</b>	<b>137</b>	1	7	8	176	2	178	323
05:30 PM	2	131	133	6	6	12	196	0	196	341
05:45 PM	2	132	134	3	2	5	139	1	140	279
Total Volume	6	531	537	11	25	36	712	4	716	1289
% App. Total	1.1	98.9		30.6	69.4		99.4	0.6		
PHF	.750	.976	.980	.458	.625	.750	.886	.500	.886	.931

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 05:00 PM

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 02\_TOR\_Van Ness\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM			04:45 PM			04:45 PM		
+0 mins.	1	132	133	5	4	9	156	8	164
+15 mins.	1	136	137	1	10	11	201	1	202
+30 mins.	2	131	133	1	7	8	176	2	178
+45 mins.	2	132	134	6	6	12	196	0	196
Total Volume	6	531	537	13	27	40	729	11	740
% App. Total	1.1	98.9		32.5	67.5		98.5	1.5	
PHF	.750	.976	.980	.542	.675	.833	.907	.344	.916

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 03\_TOR\_Van Ness\_Del Amo AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Van Ness Avenue Southbound				Del Amo Boulevard Westbound				Van Ness Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	7	56	23	86	12	101	5	118	11	44	4	59	23	23	1	47	310
07:15 AM	9	67	32	108	13	105	10	128	8	74	1	83	18	51	1	70	389
07:30 AM	3	73	46	122	16	122	8	146	9	86	7	102	31	60	10	101	471
07:45 AM	9	106	40	155	19	104	4	127	13	91	6	110	38	58	12	108	500
Total	28	302	141	471	60	432	27	519	41	295	18	354	110	192	24	326	1670
08:00 AM	5	107	32	144	21	122	3	146	8	57	8	73	25	65	10	100	463
08:15 AM	4	92	56	152	23	138	10	171	9	86	16	111	41	69	11	121	555
08:30 AM	8	143	71	222	21	121	6	148	11	71	6	88	28	66	12	106	564
08:45 AM	16	110	47	173	21	152	6	179	18	89	15	122	38	72	17	127	601
Total	33	452	206	691	86	533	25	644	46	303	45	394	132	272	50	454	2183
Grand Total	61	754	347	1162	146	965	52	1163	87	598	63	748	242	464	74	780	3853
Apprch %	5.2	64.9	29.9		12.6	83	4.5		11.6	79.9	8.4		31	59.5	9.5		
Total %	1.6	19.6	9	30.2	3.8	25	1.3	30.2	2.3	15.5	1.6	19.4	6.3	12	1.9	20.2	

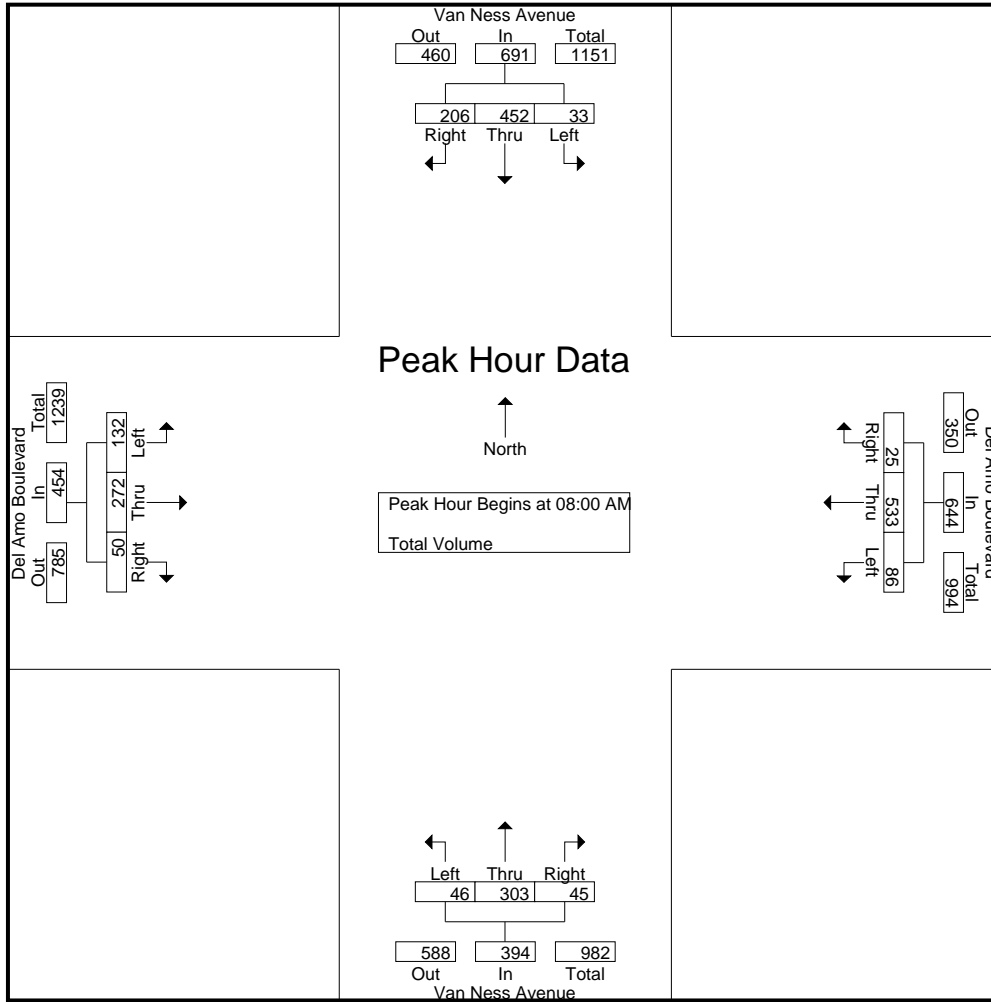
Start Time	Van Ness Avenue Southbound				Del Amo Boulevard Westbound				Van Ness Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
08:00 AM	5	107	32	144	21	122	3	146	8	57	8	73	25	65	10	100	463
08:15 AM	4	92	56	152	<b>23</b>	138	<b>10</b>	171	9	86	<b>16</b>	111	<b>41</b>	69	11	121	555
08:30 AM	8	<b>143</b>	<b>71</b>	<b>222</b>	21	121	6	148	11	71	6	88	28	66	12	106	564
08:45 AM	<b>16</b>	110	47	173	21	<b>152</b>	6	<b>179</b>	<b>18</b>	<b>89</b>	15	<b>122</b>	38	<b>72</b>	<b>17</b>	<b>127</b>	<b>601</b>
Total Volume	33	452	206	691	86	533	25	644	46	303	45	394	132	272	50	454	2183
% App. Total	4.8	65.4	29.8		13.4	82.8	3.9		11.7	76.9	11.4		29.1	59.9	11		
PHF	.516	.790	.725	.778	.935	.877	.625	.899	.639	.851	.703	.807	.805	.944	.735	.894	.908

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 03\_TOR\_Van Ness\_Del Amo AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:30 AM				08:00 AM			
+0 mins.	5	107	32	144	21	122	3	146	9	86	7	102	25	65	10	100
+15 mins.	4	92	56	152	<b>23</b>	138	<b>10</b>	171	<b>13</b>	<b>91</b>	6	110	<b>41</b>	69	11	121
+30 mins.	8	<b>143</b>	<b>71</b>	<b>222</b>	21	121	6	148	8	57	8	73	28	66	12	106
+45 mins.	<b>16</b>	110	47	173	21	<b>152</b>	6	<b>179</b>	9	86	<b>16</b>	<b>111</b>	38	<b>72</b>	<b>17</b>	<b>127</b>
Total Volume	33	452	206	691	86	533	25	644	39	320	37	396	132	272	50	454
% App. Total	4.8	65.4	29.8		13.4	82.8	3.9		9.8	80.8	9.3		29.1	59.9	11	
PHF	.516	.790	.725	.778	.935	.877	.625	.899	.750	.879	.578	.892	.805	.944	.735	.894

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 03\_TOR\_Van Ness\_Del Amo PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

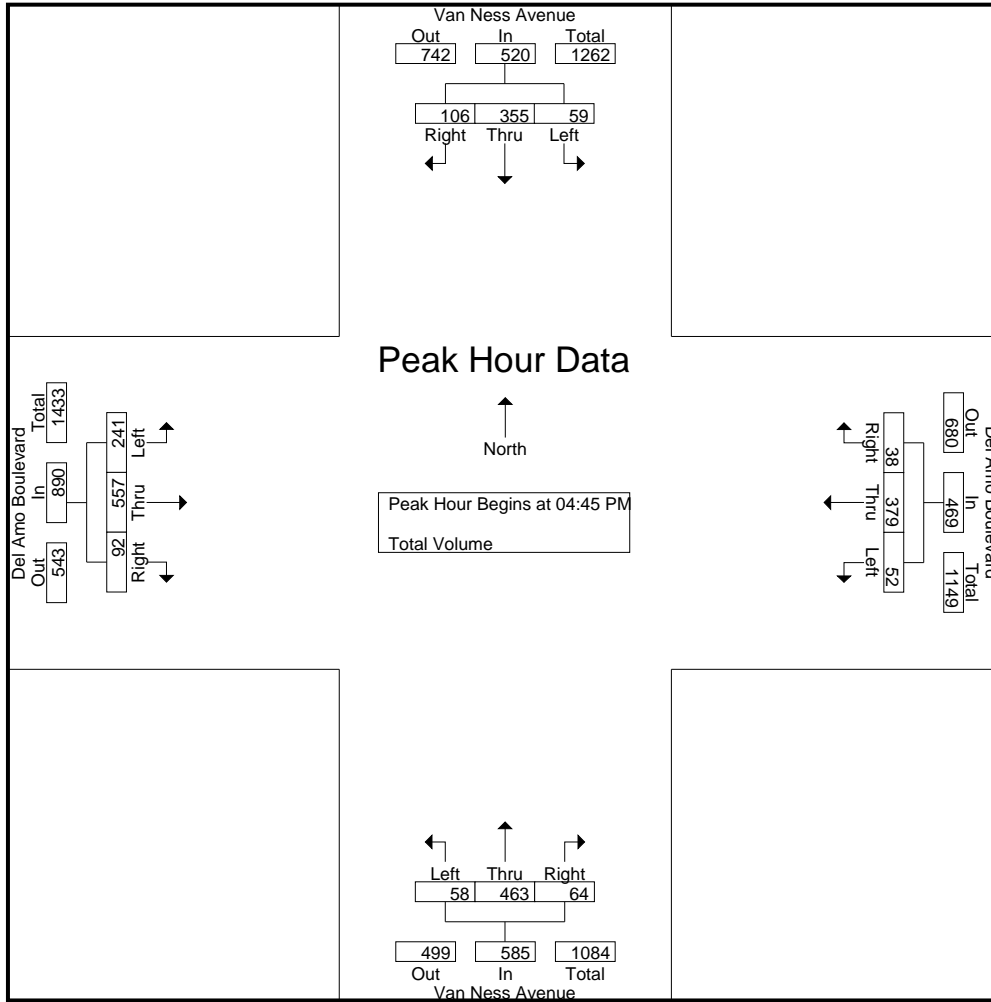
Groups Printed- Total Volume

Start Time	Van Ness Avenue Southbound				Del Amo Boulevard Westbound				Van Ness Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	14	89	35	138	12	73	8	93	21	111	14	146	45	94	19	158	535
04:15 PM	6	77	29	112	13	80	4	97	19	95	17	131	60	113	12	185	525
04:30 PM	14	85	32	131	15	97	6	118	13	116	15	144	47	142	22	211	604
04:45 PM	13	79	28	120	15	96	6	117	17	107	16	140	57	129	22	208	585
Total	47	330	124	501	55	346	24	425	70	429	62	561	209	478	75	762	2249
05:00 PM	15	86	32	133	12	107	16	135	15	131	22	168	62	149	19	230	666
05:15 PM	13	93	23	129	12	91	10	113	12	111	19	142	56	133	29	218	602
05:30 PM	18	97	23	138	13	85	6	104	14	114	7	135	66	146	22	234	611
05:45 PM	10	89	27	126	13	88	6	107	14	78	16	108	47	107	16	170	511
Total	56	365	105	526	50	371	38	459	55	434	64	553	231	535	86	852	2390
Grand Total	103	695	229	1027	105	717	62	884	125	863	126	1114	440	1013	161	1614	4639
Apprch %	10	67.7	22.3		11.9	81.1	7		11.2	77.5	11.3		27.3	62.8	10		
Total %	2.2	15	4.9	22.1	2.3	15.5	1.3	19.1	2.7	18.6	2.7	24	9.5	21.8	3.5	34.8	

Start Time	Van Ness Avenue Southbound				Del Amo Boulevard Westbound				Van Ness Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	13	79	28	120	<b>15</b>	96	6	117	<b>17</b>	107	16	140	57	129	22	208	585
05:00 PM	15	86	<b>32</b>	133	12	<b>107</b>	<b>16</b>	<b>135</b>	15	<b>131</b>	<b>22</b>	<b>168</b>	62	<b>149</b>	19	230	<b>666</b>
05:15 PM	13	93	23	129	12	91	10	113	12	111	19	142	56	133	<b>29</b>	218	602
05:30 PM	<b>18</b>	<b>97</b>	23	<b>138</b>	13	85	6	104	14	114	7	135	<b>66</b>	146	22	<b>234</b>	611
Total Volume	59	355	106	520	52	379	38	469	58	463	64	585	241	557	92	890	2464
% App. Total	11.3	68.3	20.4		11.1	80.8	8.1		9.9	79.1	10.9		27.1	62.6	10.3		
PHF	.819	.915	.828	.942	.867	.886	.594	.869	.853	.884	.727	.871	.913	.935	.793	.951	.925

City of Torrance  
 N/S: Van Ness Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 03\_TOR\_Van Ness\_Del Amo PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:30 PM				04:45 PM			
+0 mins.	15	86	<b>32</b>	133	<b>15</b>	97	6	118	13	116	15	144	57	129	22	208
+15 mins.	13	93	23	129	15	96	6	117	<b>17</b>	107	16	140	62	<b>149</b>	19	230
+30 mins.	<b>18</b>	<b>97</b>	23	<b>138</b>	12	<b>107</b>	<b>16</b>	<b>135</b>	15	<b>131</b>	<b>22</b>	<b>168</b>	56	133	<b>29</b>	218
+45 mins.	10	89	27	126	12	91	10	113	12	111	19	142	<b>66</b>	146	22	<b>234</b>
Total Volume	56	365	105	526	54	391	38	483	57	465	72	594	241	557	92	890
% App. Total	10.6	69.4	20		11.2	81	7.9		9.6	78.3	12.1		27.1	62.6	10.3	
PHF	.778	.941	.820	.953	.900	.914	.594	.894	.838	.887	.818	.884	.913	.935	.793	.951

City of Torrance  
 N/S: Gramercy Place  
 E/W: 190th Street  
 Weather: Clear

File Name : 04\_TOR\_Gramercy\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Gramercy Place Southbound				190th Street Westbound				Gramercy Place Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	4	165	0	169	1	2	5	8	0	205	1	206	383
07:15 AM	1	0	0	1	3	224	0	227	1	0	3	4	0	234	1	235	467
07:30 AM	0	0	0	0	2	251	0	253	2	0	3	5	0	288	0	288	546
07:45 AM	1	0	0	1	5	287	0	292	0	2	3	5	0	307	1	308	606
Total	2	0	0	2	14	927	0	941	4	4	14	22	0	1034	3	1037	2002
08:00 AM	1	0	0	1	6	206	0	212	1	0	3	4	0	352	1	353	570
08:15 AM	0	1	0	1	5	288	1	294	0	0	3	3	0	311	2	313	611
08:30 AM	0	1	0	1	4	287	0	291	0	0	6	6	0	280	1	281	579
08:45 AM	0	1	0	1	5	273	2	280	0	0	4	4	0	320	1	321	606
Total	1	3	0	4	20	1054	3	1077	1	0	16	17	0	1263	5	1268	2366
Grand Total	3	3	0	6	34	1981	3	2018	5	4	30	39	0	2297	8	2305	4368
Apprch %	50	50	0		1.7	98.2	0.1		12.8	10.3	76.9		0	99.7	0.3		
Total %	0.1	0.1	0	0.1	0.8	45.4	0.1	46.2	0.1	0.1	0.7	0.9	0	52.6	0.2	52.8	

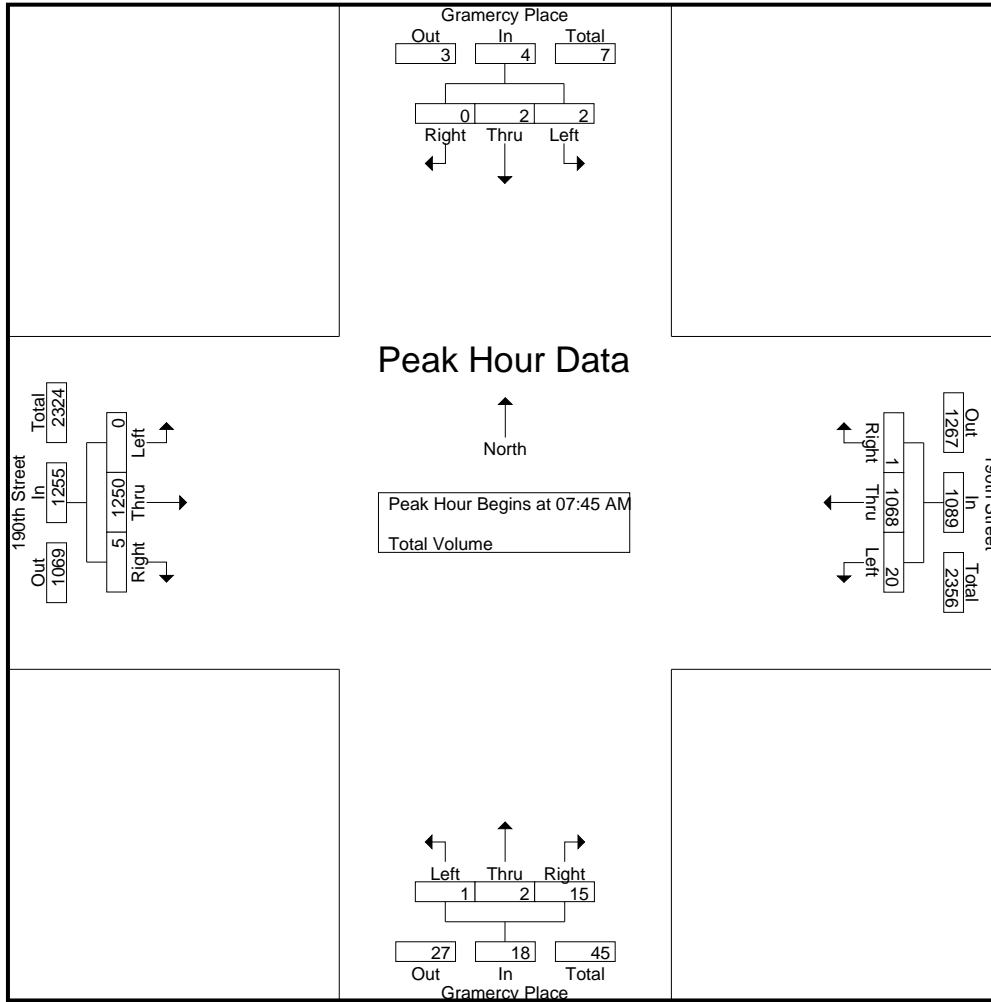
Start Time	Gramercy Place Southbound				190th Street Westbound				Gramercy Place Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:45 AM	1	0	0	1	5	287	0	292	0	2	3	5	0	307	1	308	606
08:00 AM	1	0	0	1	6	206	0	212	1	0	3	4	0	352	1	353	570
08:15 AM	0	1	0	1	5	288	1	294	0	0	3	3	0	311	2	313	611
08:30 AM	0	1	0	1	4	287	0	291	0	0	6	6	0	280	1	281	579
Total Volume	2	2	0	4	20	1068	1	1089	1	2	15	18	0	1250	5	1255	2366
% App. Total	50	50	0		1.8	98.1	0.1		5.6	11.1	83.3		0	99.6	0.4		
PHF	.500	.500	.000	1.00	.833	.927	.250	.926	.250	.250	.625	.750	.000	.888	.625	.889	.968

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45 AM

City of Torrance  
 N/S: Gramercy Place  
 E/W: 190th Street  
 Weather: Clear

File Name : 04\_TOR\_Gramercy\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:00 AM				08:00 AM			
+0 mins.	1	0	0	1	5	287	0	292	1	2	5	8	0	352	1	353
+15 mins.	1	0	0	1	6	206	0	212	1	0	3	4	0	311	2	313
+30 mins.	0	1	0	1	5	288	1	294	2	0	3	5	0	280	1	281
+45 mins.	0	1	0	1	4	287	0	291	0	2	3	5	0	320	1	321
Total Volume	2	2	0	4	20	1068	1	1089	4	4	14	22	0	1263	5	1268
% App. Total	50	50	0		1.8	98.1	0.1		18.2	18.2	63.6		0	99.6	0.4	
PHF	.500	.500	.000	1.000	.833	.927	.250	.926	.500	.500	.700	.688	.000	.897	.625	.898



City of Torrance  
 N/S: Gramercy Place  
 E/W: 190th Street  
 Weather: Clear

File Name : 04\_TOR\_Gramercy\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

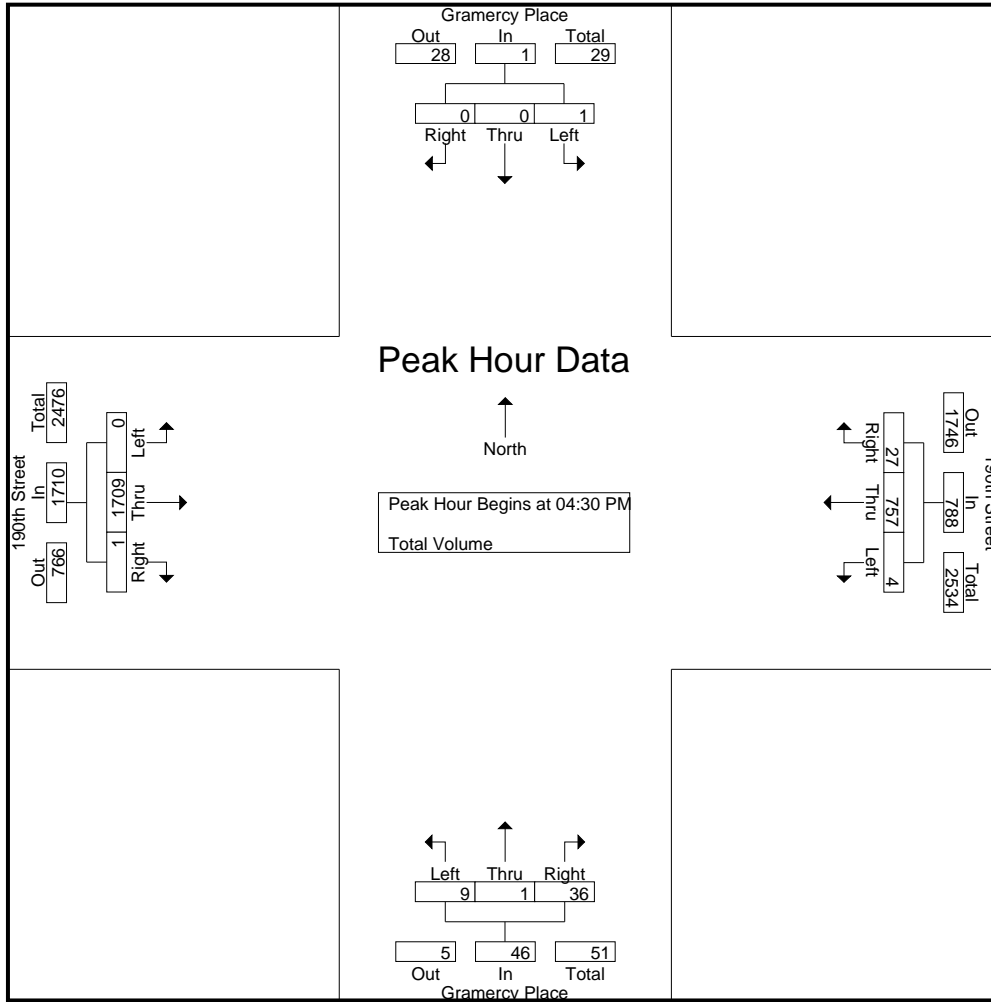
Start Time	Gramercy Place Southbound				190th Street Westbound				Gramercy Place Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	1	1	0	2	1	171	0	172	1	1	13	15	0	386	1	387	576
04:15 PM	0	1	0	1	2	192	0	194	0	0	8	8	0	388	1	389	592
04:30 PM	0	0	0	0	1	190	0	191	2	0	8	10	0	454	0	454	655
04:45 PM	0	0	0	0	0	167	0	167	4	0	4	8	0	420	0	420	595
Total	1	2	0	3	4	720	0	724	7	1	33	41	0	1648	2	1650	2418
05:00 PM	0	0	0	0	1	173	25	199	2	1	13	16	0	408	0	408	623
05:15 PM	1	0	0	1	2	227	2	231	1	0	11	12	0	427	1	428	672
05:30 PM	1	2	0	3	0	212	1	213	1	0	5	6	0	397	0	397	619
05:45 PM	0	0	1	1	0	229	1	230	0	0	8	8	0	306	1	307	546
Total	2	2	1	5	3	841	29	873	4	1	37	42	0	1538	2	1540	2460
Grand Total	3	4	1	8	7	1561	29	1597	11	2	70	83	0	3186	4	3190	4878
Apprch %	37.5	50	12.5		0.4	97.7	1.8		13.3	2.4	84.3		0	99.9	0.1		
Total %	0.1	0.1	0	0.2	0.1	32	0.6	32.7	0.2	0	1.4	1.7	0	65.3	0.1	65.4	

Start Time	Gramercy Place Southbound				190th Street Westbound				Gramercy Place Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:30 PM	0	0	0	0	1	190	0	191	2	0	8	10	0	<b>454</b>	0	<b>454</b>	655
04:45 PM	0	0	0	0	0	167	0	167	4	0	4	8	0	420	0	420	595
05:00 PM	0	0	0	0	1	173	<b>25</b>	199	2	<b>1</b>	<b>13</b>	<b>16</b>	0	408	0	408	623
05:15 PM	1	0	0	1	2	<b>227</b>	2	<b>231</b>	1	0	11	12	0	427	1	428	<b>672</b>
Total Volume	1	0	0	1	4	757	27	788	9	1	36	46	0	1709	1	1710	2545
% App. Total	100	0	0		0.5	96.1	3.4		19.6	2.2	78.3		0	99.9	0.1		
PHF	.250	.000	.000	.250	.500	.834	.270	.853	.563	.250	.692	.719	.000	.941	.250	.942	.947

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 04:30 PM

City of Torrance  
 N/S: Gramercy Place  
 E/W: 190th Street  
 Weather: Clear

File Name : 04\_TOR\_Gramercy\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	1	173	25	199	2	0	8	10	0	454	0	454
+15 mins.	1	0	0	1	2	227	2	231	4	0	4	8	0	420	0	420
+30 mins.	1	2	0	3	0	212	1	213	2	1	13	16	0	408	0	408
+45 mins.	0	0	1	1	0	229	1	230	1	0	11	12	0	427	1	428
Total Volume	2	2	1	5	3	841	29	873	9	1	36	46	0	1709	1	1710
% App. Total	40	40	20		0.3	96.3	3.3		19.6	2.2	78.3		0	99.9	0.1	
PHF	.500	.250	.250	.417	.375	.918	.290	.945	.563	.250	.692	.719	.000	.941	.250	.942

City of Torrance  
 N/S: Gramercy Place  
 E/W: 195th Street  
 Weather: Clear

File Name : 05\_TOR\_Gramercy\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Gramercy Place Southbound				195th Street Westbound				MOL Logistics Driveway Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	1	1	2	4	5	2	3	10	1	1	1	3	1	4	0	5	22
07:15 AM	1	0	1	2	4	5	1	10	0	1	1	2	3	0	0	3	17
07:30 AM	1	1	1	3	6	6	1	13	0	0	0	0	3	4	3	10	26
07:45 AM	1	2	2	5	11	6	6	23	2	0	1	3	3	1	8	12	43
Total	4	4	6	14	26	19	11	56	3	2	3	8	10	9	11	30	108
08:00 AM	0	6	1	7	12	4	3	19	2	2	1	5	3	1	6	10	41
08:15 AM	0	3	3	6	3	11	1	15	0	0	0	0	1	1	1	3	24
08:30 AM	1	0	0	1	6	9	4	19	0	2	0	2	1	3	0	4	26
08:45 AM	2	2	0	4	6	8	3	17	1	0	1	2	3	4	1	8	31
Total	3	11	4	18	27	32	11	70	3	4	2	9	8	9	8	25	122
Grand Total	7	15	10	32	53	51	22	126	6	6	5	17	18	18	19	55	230
Apprch %	21.9	46.9	31.2		42.1	40.5	17.5		35.3	35.3	29.4		32.7	32.7	34.5		
Total %	3	6.5	4.3	13.9	23	22.2	9.6	54.8	2.6	2.6	2.2	7.4	7.8	7.8	8.3	23.9	

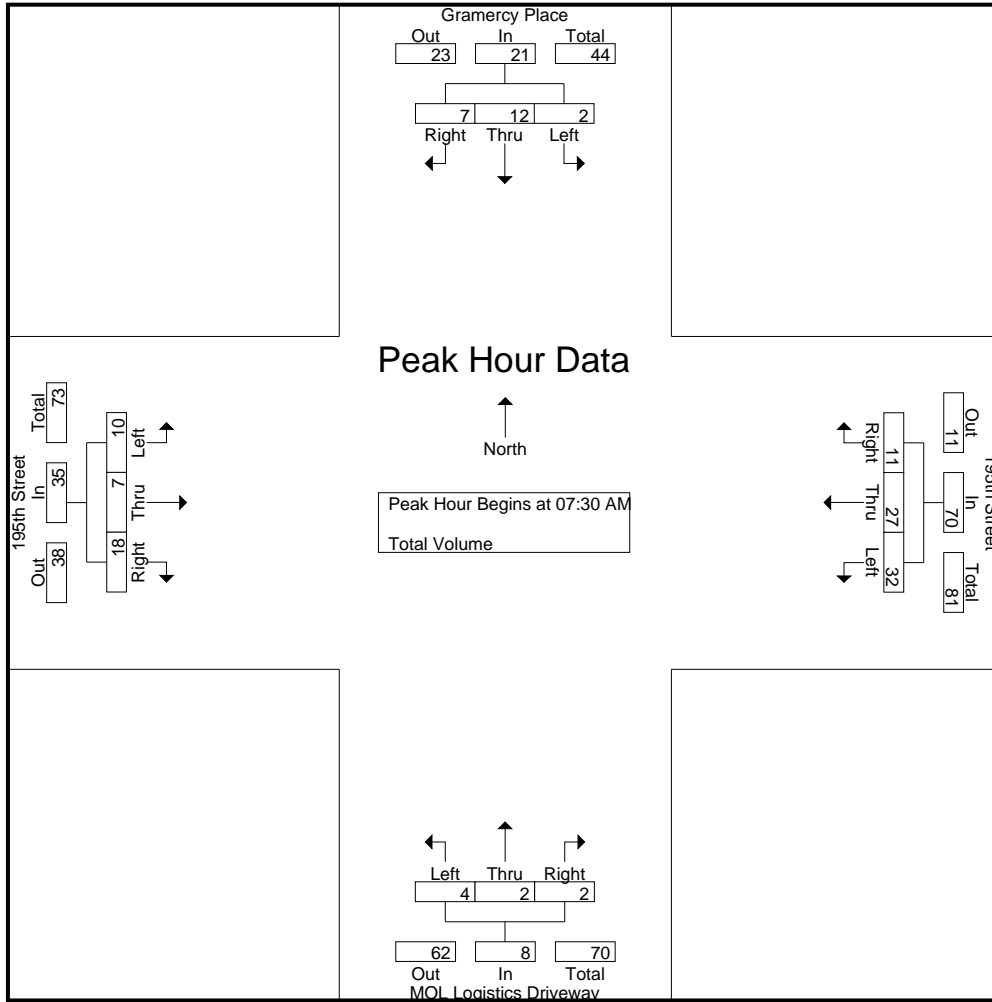
Start Time	Gramercy Place Southbound				195th Street Westbound				MOL Logistics Driveway Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:30 AM	1	1	1	3	6	6	1	13	0	0	0	0	3	4	3	10	26
07:45 AM	1	2	2	5	11	6	6	23	2	0	1	3	3	1	8	12	43
08:00 AM	0	6	1	7	12	4	3	19	2	2	1	5	3	1	6	10	41
08:15 AM	0	3	3	6	3	11	1	15	0	0	0	0	1	1	1	3	24
Total Volume	2	12	7	21	32	27	11	70	4	2	2	8	10	7	18	35	134
% App. Total	9.5	57.1	33.3		45.7	38.6	15.7		50	25	25		28.6	20	51.4		
PHF	.500	.500	.583	.750	.667	.614	.458	.761	.500	.250	.500	.400	.833	.438	.563	.729	.779

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

City of Torrance  
 N/S: Gramercy Place  
 E/W: 195th Street  
 Weather: Clear

File Name : 05\_TOR\_Gramercy\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:15 AM				07:15 AM			
+0 mins.	1	1	1	3	11	6	6	23	0	1	1	2	3	0	0	3
+15 mins.	1	2	2	5	12	4	3	19	0	0	0	0	3	4	3	10
+30 mins.	0	6	1	7	3	11	1	15	2	0	1	3	3	1	8	12
+45 mins.	0	3	3	6	6	9	4	19	2	2	1	5	3	1	6	10
Total Volume	2	12	7	21	32	30	14	76	4	3	3	10	12	6	17	35
% App. Total	9.5	57.1	33.3		42.1	39.5	18.4		40	30	30		34.3	17.1	48.6	
PHF	.500	.500	.583	.750	.667	.682	.583	.826	.500	.375	.750	.500	1.000	.375	.531	.729

City of Torrance  
 N/S: Gramercy Place  
 E/W: 195th Street  
 Weather: Clear

File Name : 05\_TOR\_Gramercy\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Gramercy Place Southbound				195th Street Westbound				MOL Logistics Driveway Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	1	3	2	6	3	7	1	11	0	3	0	3	5	8	0	13	33
04:15 PM	4	1	2	7	3	3	2	8	1	3	2	6	6	4	0	10	31
04:30 PM	1	1	1	3	1	3	0	4	1	2	4	7	1	3	1	5	19
04:45 PM	2	0	3	5	2	4	3	9	2	1	1	4	2	6	0	8	26
<b>Total</b>	<b>8</b>	<b>5</b>	<b>8</b>	<b>21</b>	<b>9</b>	<b>17</b>	<b>6</b>	<b>32</b>	<b>4</b>	<b>9</b>	<b>7</b>	<b>20</b>	<b>14</b>	<b>21</b>	<b>1</b>	<b>36</b>	<b>109</b>
05:00 PM	2	0	1	3	1	5	0	6	4	6	6	16	5	4	0	9	34
05:15 PM	3	0	1	4	0	2	1	3	4	2	1	7	6	3	0	9	23
05:30 PM	3	0	0	3	1	9	0	10	5	3	4	12	0	3	1	4	29
05:45 PM	2	0	2	4	0	0	0	0	0	4	2	6	0	2	1	3	13
<b>Total</b>	<b>10</b>	<b>0</b>	<b>4</b>	<b>14</b>	<b>2</b>	<b>16</b>	<b>1</b>	<b>19</b>	<b>13</b>	<b>15</b>	<b>13</b>	<b>41</b>	<b>11</b>	<b>12</b>	<b>2</b>	<b>25</b>	<b>99</b>
<b>Grand Total</b>	<b>18</b>	<b>5</b>	<b>12</b>	<b>35</b>	<b>11</b>	<b>33</b>	<b>7</b>	<b>51</b>	<b>17</b>	<b>24</b>	<b>20</b>	<b>61</b>	<b>25</b>	<b>33</b>	<b>3</b>	<b>61</b>	<b>208</b>
Apprch %	51.4	14.3	34.3		21.6	64.7	13.7		27.9	39.3	32.8		41	54.1	4.9		
Total %	8.7	2.4	5.8	16.8	5.3	15.9	3.4	24.5	8.2	11.5	9.6	29.3	12	15.9	1.4	29.3	

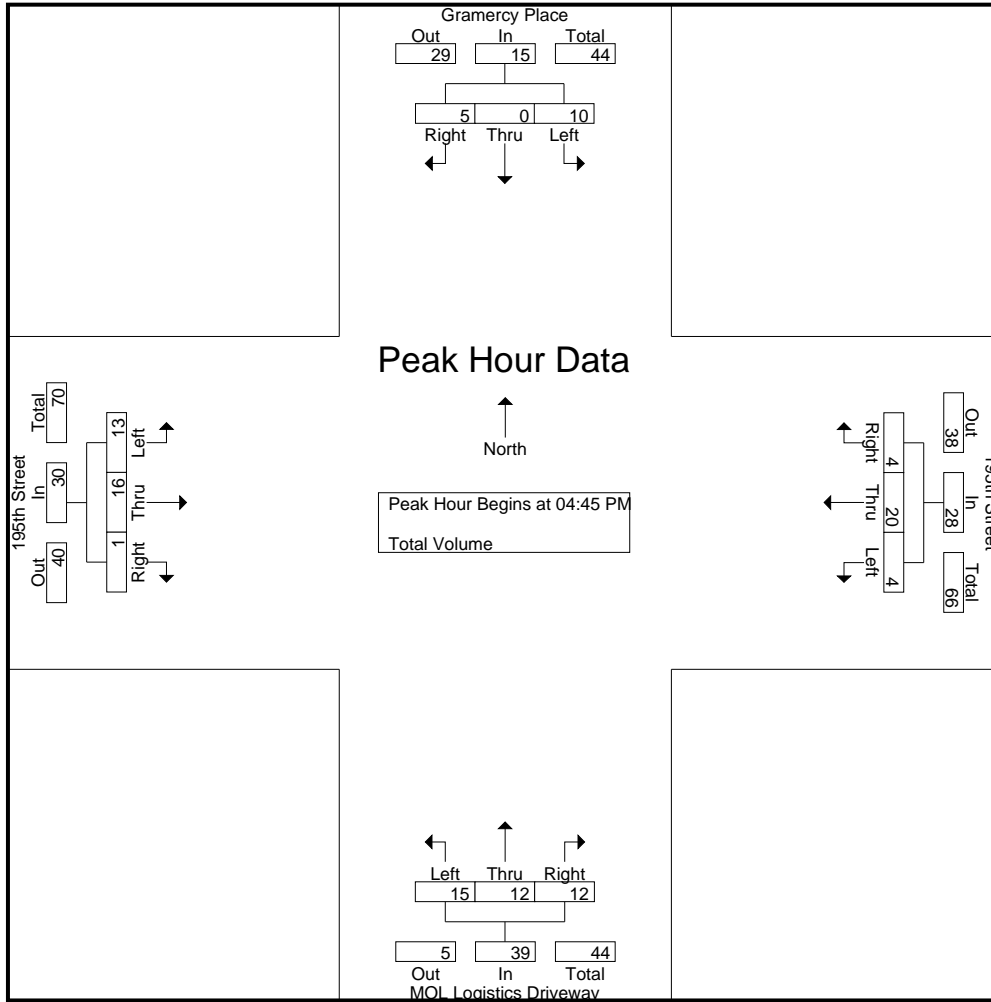
Start Time	Gramercy Place Southbound				195th Street Westbound				MOL Logistics Driveway Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:45 PM	2	0	3	5	2	4	3	9	2	1	1	4	2	6	0	8	26
05:00 PM	2	0	1	3	1	5	0	6	4	6	6	16	5	4	0	9	34
05:15 PM	3	0	1	4	0	2	1	3	4	2	1	7	6	3	0	9	23
05:30 PM	3	0	0	3	1	9	0	10	5	3	4	12	0	3	1	4	29
<b>Total Volume</b>	<b>10</b>	<b>0</b>	<b>5</b>	<b>15</b>	<b>4</b>	<b>20</b>	<b>4</b>	<b>28</b>	<b>15</b>	<b>12</b>	<b>12</b>	<b>39</b>	<b>13</b>	<b>16</b>	<b>1</b>	<b>30</b>	<b>112</b>
% App. Total	66.7	0	33.3		14.3	71.4	14.3		38.5	30.8	30.8		43.3	53.3	3.3		
PHF	.833	.000	.417	.750	.500	.556	.333	.700	.750	.500	.500	.609	.542	.667	.250	.833	.824

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

City of Torrance  
 N/S: Gramercy Place  
 E/W: 195th Street  
 Weather: Clear

File Name : 05\_TOR\_Gramercy\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	1	3	2	6	3	7	1	11	4	6	6	16	5	8	0	13
+15 mins.	4	1	2	7	3	3	2	8	4	2	1	7	6	4	0	10
+30 mins.	1	1	1	3	1	3	0	4	5	3	4	12	1	3	1	5
+45 mins.	2	0	3	5	2	4	3	9	0	4	2	6	2	6	0	8
Total Volume	8	5	8	21	9	17	6	32	13	15	13	41	14	21	1	36
% App. Total	38.1	23.8	38.1		28.1	53.1	18.8		31.7	36.6	31.7		38.9	58.3	2.8	
PHF	.500	.417	.667	.750	.750	.607	.500	.727	.650	.625	.542	.641	.583	.656	.250	.692

City of Torrance  
 N/S: I-405 Southbound Ramps  
 E/W: 190th Street  
 Weather: Clear

File Name : 06\_TOR\_405S\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	I-405 Southbound Ramps Southbound			190th Street Westbound			190th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	81	9	90	181	34	215	155	51	206	511
07:15 AM	70	14	84	196	31	227	166	71	237	548
07:30 AM	96	12	108	242	35	277	213	79	292	677
07:45 AM	135	19	154	262	24	286	181	135	316	756
Total	382	54	436	881	124	1005	715	336	1051	2492
08:00 AM	125	22	147	242	44	286	216	133	349	782
08:15 AM	118	14	132	270	30	300	213	123	336	768
08:30 AM	114	18	132	275	34	309	153	109	262	703
08:45 AM	129	17	146	253	37	290	178	145	323	759
Total	486	71	557	1040	145	1185	760	510	1270	3012
Grand Total	868	125	993	1921	269	2190	1475	846	2321	5504
Apprch %	87.4	12.6		87.7	12.3		63.6	36.4		
Total %	15.8	2.3	18	34.9	4.9	39.8	26.8	15.4	42.2	

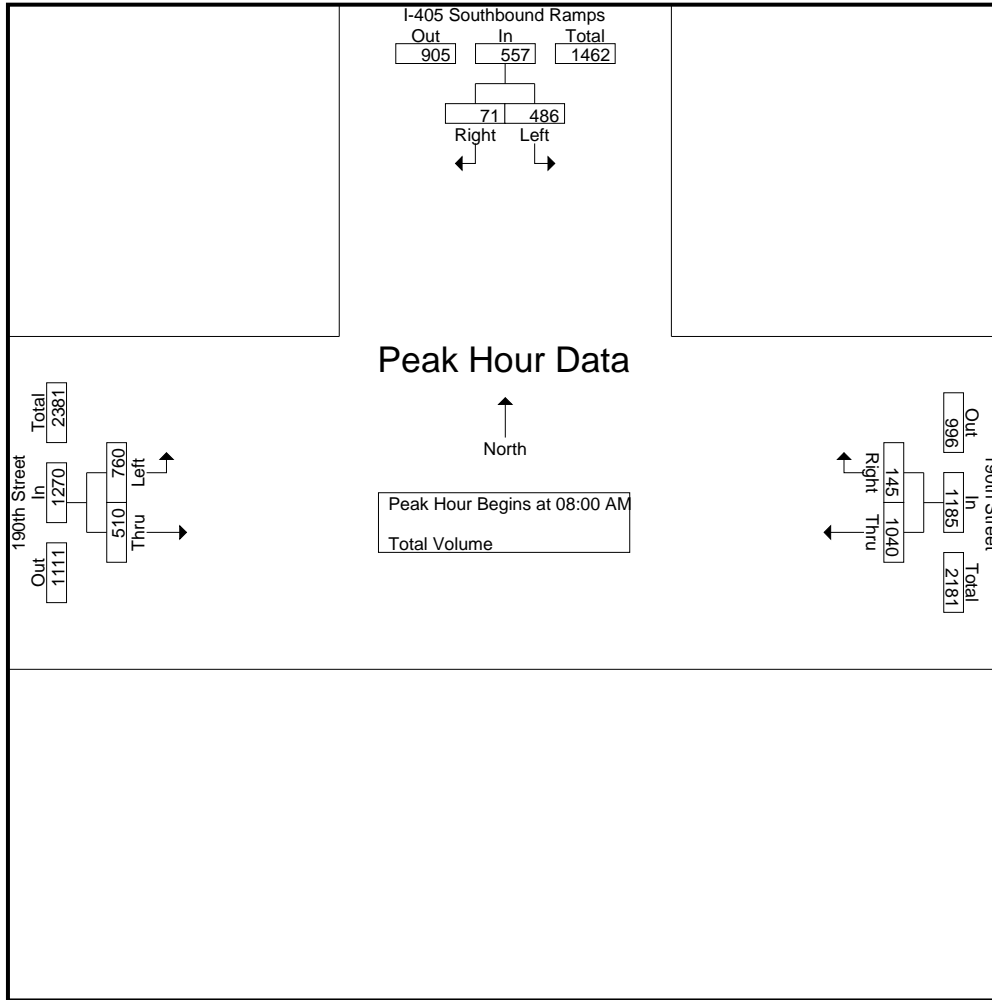
Start Time	I-405 Southbound Ramps Southbound			190th Street Westbound			190th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
08:00 AM	125	<b>22</b>	<b>147</b>	242	<b>44</b>	286	<b>216</b>	133	<b>349</b>	<b>782</b>
08:15 AM	118	14	132	270	30	300	213	123	336	768
08:30 AM	114	18	132	<b>275</b>	34	<b>309</b>	153	109	262	703
08:45 AM	<b>129</b>	17	146	253	37	290	178	<b>145</b>	323	759
Total Volume	486	71	557	1040	145	1185	760	510	1270	3012
% App. Total	87.3	12.7		87.8	12.2		59.8	40.2		
PHF	.942	.807	.947	.945	.824	.959	.880	.879	.910	.963

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

City of Torrance  
 N/S: I-405 Southbound Ramps  
 E/W: 190th Street  
 Weather: Clear

File Name : 06\_TOR\_405S\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			07:30 AM		
+0 mins.	<b>135</b>	<b>19</b>	<b>154</b>	242	<b>44</b>	286	213	79	292
+15 mins.	125	<b>22</b>	147	270	30	300	181	<b>135</b>	316
+30 mins.	118	14	132	<b>275</b>	34	<b>309</b>	<b>216</b>	133	<b>349</b>
+45 mins.	114	18	132	253	37	290	213	123	336
Total Volume	492	73	565	1040	145	1185	823	470	1293
% App. Total	87.1	12.9		87.8	12.2		63.7	36.3	
PHF	.911	.830	.917	.945	.824	.959	.953	.870	.926



City of Torrance  
 N/S: I-405 Southbound Ramps  
 E/W: 190th Street  
 Weather: Clear

File Name : 06\_TOR\_405S\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	I-405 Southbound Ramps Southbound			190th Street Westbound			190th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	111	2	113	175	39	214	142	250	392	719
04:15 PM	110	5	115	179	43	222	142	252	394	731
04:30 PM	106	4	110	184	31	215	150	311	461	786
04:45 PM	114	4	118	167	33	200	139	291	430	748
Total	441	15	456	705	146	851	573	1104	1677	2984
05:00 PM	109	2	111	195	35	230	178	253	431	772
05:15 PM	89	4	93	229	31	260	133	306	439	792
05:30 PM	126	2	128	227	26	253	131	251	382	763
05:45 PM	125	4	129	213	29	242	101	227	328	699
Total	449	12	461	864	121	985	543	1037	1580	3026
Grand Total	890	27	917	1569	267	1836	1116	2141	3257	6010
Apprch %	97.1	2.9		85.5	14.5		34.3	65.7		
Total %	14.8	0.4	15.3	26.1	4.4	30.5	18.6	35.6	54.2	

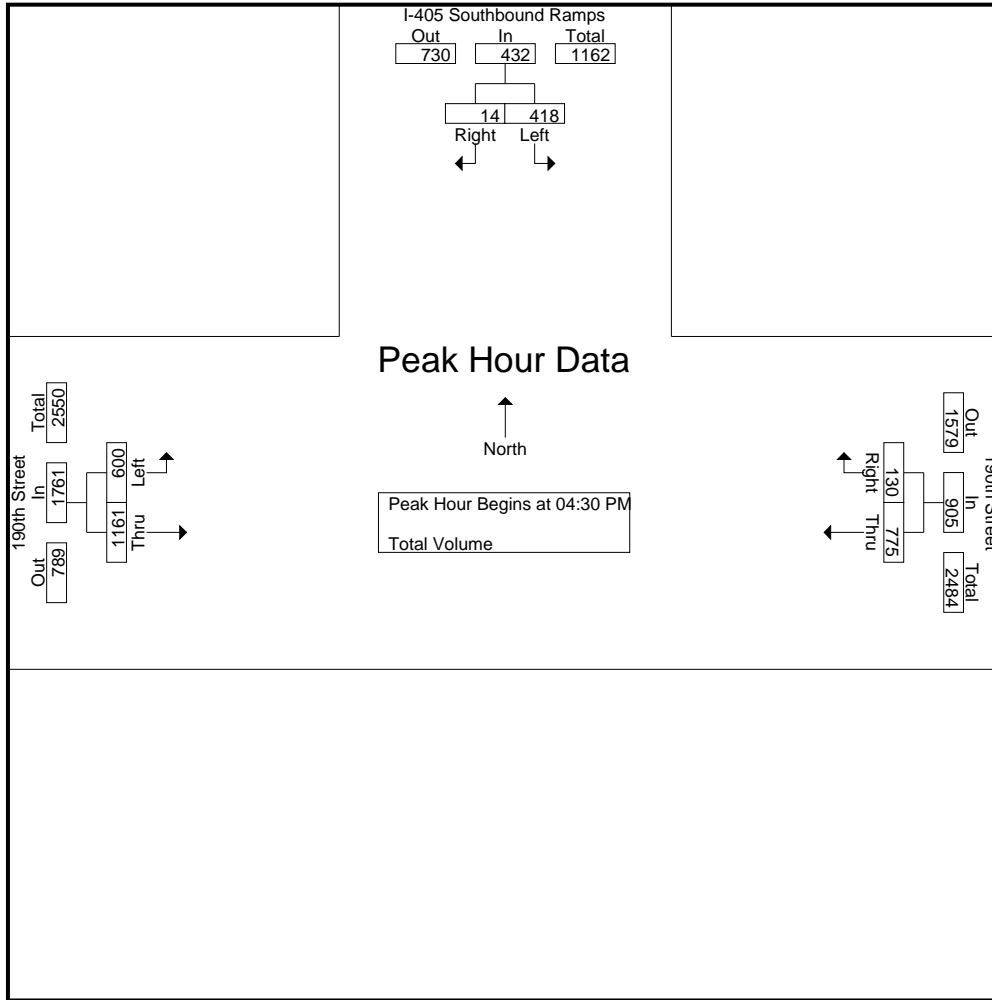
Start Time	I-405 Southbound Ramps Southbound			190th Street Westbound			190th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:30 PM	106	<b>4</b>	110	184	31	215	150	<b>311</b>	<b>461</b>	786
04:45 PM	<b>114</b>	4	<b>118</b>	167	33	200	139	291	430	748
05:00 PM	109	2	111	195	<b>35</b>	230	<b>178</b>	253	431	772
05:15 PM	89	4	93	<b>229</b>	31	<b>260</b>	133	306	439	<b>792</b>
Total Volume	418	14	432	775	130	905	600	1161	1761	3098
% App. Total	96.8	3.2		85.6	14.4		34.1	65.9		
PHF	.917	.875	.915	.846	.929	.870	.843	.933	.955	.978

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of Torrance  
 N/S: I-405 Southbound Ramps  
 E/W: 190th Street  
 Weather: Clear

File Name : 06\_TOR\_405S\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			04:30 PM		
+0 mins.	109	2	111	195	<b>35</b>	230	150	<b>311</b>	<b>461</b>
+15 mins.	89	<b>4</b>	93	<b>229</b>	31	<b>260</b>	139	291	430
+30 mins.	<b>126</b>	2	128	227	26	253	<b>178</b>	253	431
+45 mins.	125	4	<b>129</b>	213	29	242	133	306	439
Total Volume	449	12	461	864	121	985	600	1161	1761
% App. Total	97.4	2.6		87.7	12.3		34.1	65.9	
PHF	.891	.750	.893	.943	.864	.947	.843	.933	.955

City of Torrance  
 N/S: Western Avenue  
 E/W: I-405 Northbound Ramps  
 Weather: Clear

File Name : 07\_TOR\_Western\_405N AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

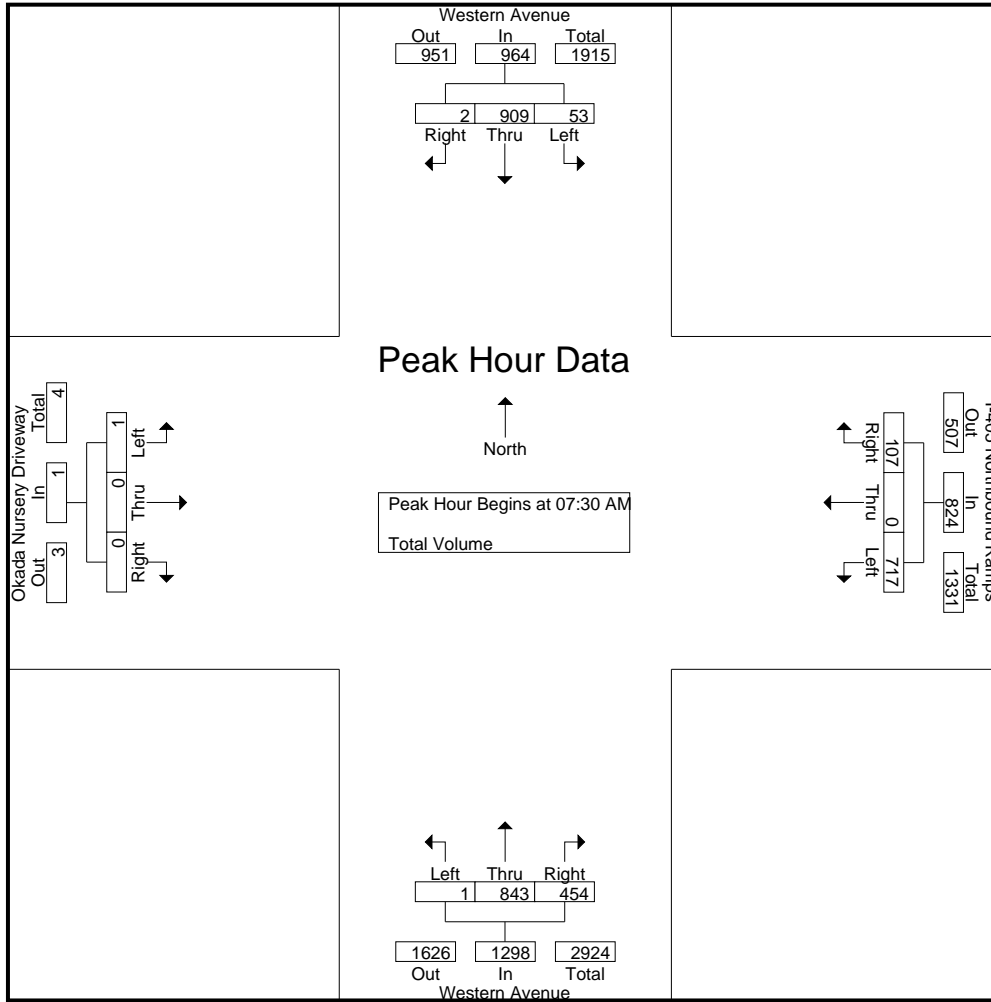
Groups Printed- Total Volume

Start Time	Western Avenue Southbound				I-405 Northbound Ramps Westbound				Western Avenue Northbound				Okada Nursery Driveway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	10	169	1	180	131	0	20	151	0	109	91	200	0	0	1	1	532
07:15 AM	11	190	0	201	126	0	20	146	0	152	142	294	0	0	0	0	641
07:30 AM	17	226	1	244	143	0	20	163	0	198	106	304	0	0	0	0	711
07:45 AM	15	220	0	235	199	0	33	232	0	249	127	376	0	0	0	0	843
Total	53	805	2	860	599	0	93	692	0	708	466	1174	0	0	1	1	2727
08:00 AM	9	244	1	254	186	0	20	206	1	213	122	336	0	0	0	0	796
08:15 AM	12	219	0	231	189	0	34	223	0	183	99	282	1	0	0	1	737
08:30 AM	7	219	2	228	204	1	36	241	2	146	74	222	1	0	0	1	692
08:45 AM	10	228	0	238	208	0	43	251	0	200	85	285	0	0	1	1	775
Total	38	910	3	951	787	1	133	921	3	742	380	1125	2	0	1	3	3000
Grand Total	91	1715	5	1811	1386	1	226	1613	3	1450	846	2299	2	0	2	4	5727
Apprch %	5	94.7	0.3		85.9	0.1	14		0.1	63.1	36.8		50	0	50		
Total %	1.6	29.9	0.1	31.6	24.2	0	3.9	28.2	0.1	25.3	14.8	40.1	0	0	0	0.1	

Start Time	Western Avenue Southbound				I-405 Northbound Ramps Westbound				Western Avenue Northbound				Okada Nursery Driveway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:30 AM	17	226	1	244	143	0	20	163	0	198	106	304	0	0	0	0	711
07:45 AM	15	220	0	235	199	0	33	232	0	249	127	376	0	0	0	0	843
08:00 AM	9	244	1	254	186	0	20	206	1	213	122	336	0	0	0	0	796
08:15 AM	12	219	0	231	189	0	34	223	0	183	99	282	1	0	0	1	737
Total Volume	53	909	2	964	717	0	107	824	1	843	454	1298	1	0	0	1	3087
% App. Total	5.5	94.3	0.2		87	0	13		0.1	64.9	35		100	0	0		
PHF	.779	.931	.500	.949	.901	.000	.787	.888	.250	.846	.894	.863	.250	.000	.000	.250	.915

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM				08:00 AM				07:15 AM				08:00 AM			
+0 mins.	17	226	1	244	186	0	20	206	0	152	<b>142</b>	294	0	0	0	0
+15 mins.	15	220	0	235	189	0	34	223	0	198	106	304	1	0	0	1
+30 mins.	9	<b>244</b>	1	<b>254</b>	204	1	36	241	0	<b>249</b>	127	<b>376</b>	1	0	0	1
+45 mins.	12	219	0	231	<b>208</b>	0	<b>43</b>	<b>251</b>	1	213	122	336	0	0	1	1
Total Volume	53	909	2	964	787	1	133	921	1	812	497	1310	2	0	1	3
% App. Total	5.5	94.3	0.2		85.5	0.1	14.4		0.1	62	37.9		66.7	0	33.3	
PHF	.779	.931	.500	.949	.946	.250	.773	.917	.250	.815	.875	.871	.500	.000	.250	.750

City of Torrance  
 N/S: Western Avenue  
 E/W: I-405 Northbound Ramps  
 Weather: Clear

File Name : 07\_TOR\_Western\_405N PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

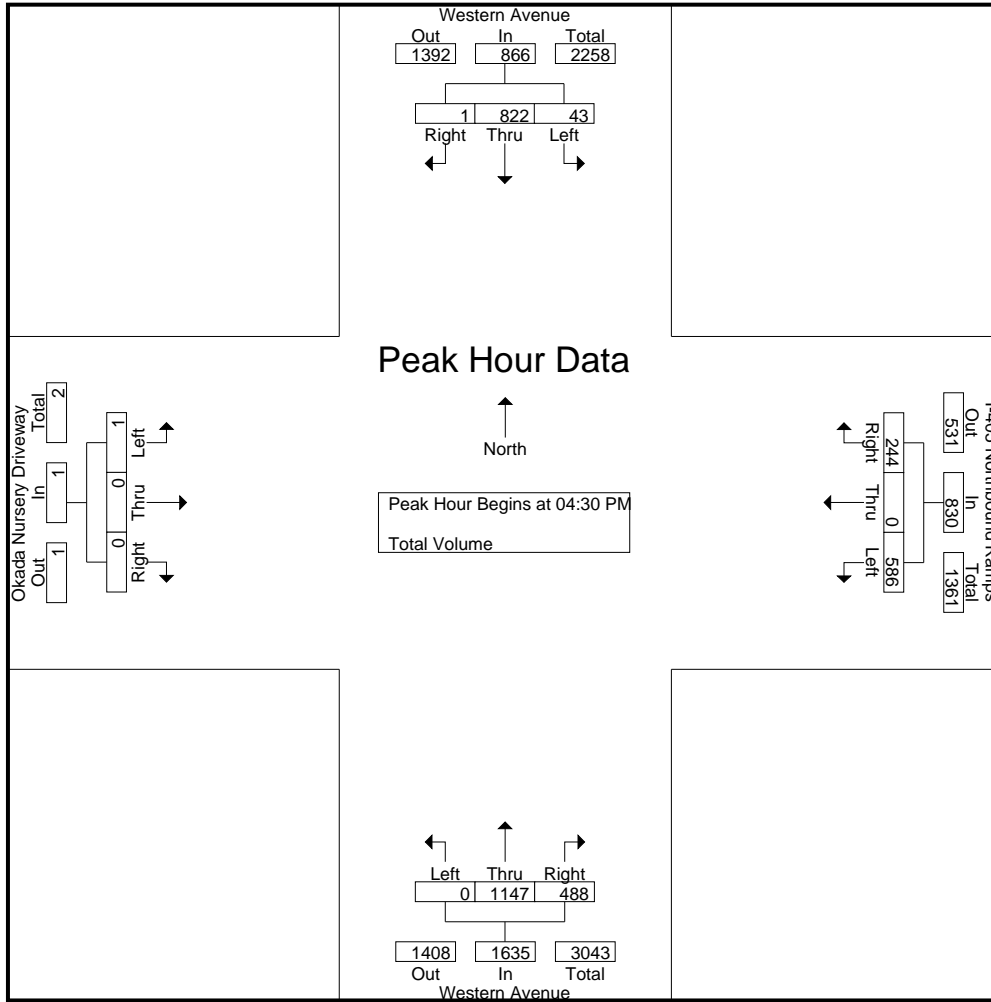
Groups Printed- Total Volume

Start Time	Western Avenue Southbound				I-405 Northbound Ramps Westbound				Western Avenue Northbound				Okada Nursery Driveway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	9	231	0	240	155	1	52	208	0	281	120	401	0	0	0	0	849
04:15 PM	21	216	0	237	151	0	60	211	0	245	102	347	0	0	0	0	795
04:30 PM	17	226	0	243	125	0	68	193	0	262	106	368	0	0	0	0	804
04:45 PM	6	183	0	189	142	0	50	192	0	288	118	406	0	0	0	0	787
Total	53	856	0	909	573	1	230	804	0	1076	446	1522	0	0	0	0	3235
05:00 PM	10	226	0	236	164	0	68	232	0	301	144	445	1	0	0	1	914
05:15 PM	10	187	1	198	155	0	58	213	0	296	120	416	0	0	0	0	827
05:30 PM	12	204	0	216	139	0	34	173	1	268	103	372	0	0	1	1	762
05:45 PM	18	195	0	213	156	0	44	200	0	249	111	360	1	0	1	2	775
Total	50	812	1	863	614	0	204	818	1	1114	478	1593	2	0	2	4	3278
Grand Total	103	1668	1	1772	1187	1	434	1622	1	2190	924	3115	2	0	2	4	6513
Apprch %	5.8	94.1	0.1		73.2	0.1	26.8		0	70.3	29.7		50	0	50		
Total %	1.6	25.6	0	27.2	18.2	0	6.7	24.9	0	33.6	14.2	47.8	0	0	0	0.1	

Start Time	Western Avenue Southbound				I-405 Northbound Ramps Westbound				Western Avenue Northbound				Okada Nursery Driveway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:30 PM	17	226	0	243	125	0	68	193	0	262	106	368	0	0	0	0	804
04:45 PM	6	183	0	189	142	0	50	192	0	288	118	406	0	0	0	0	787
05:00 PM	10	226	0	236	164	0	68	232	0	301	144	445	1	0	0	1	914
05:15 PM	10	187	1	198	155	0	58	213	0	296	120	416	0	0	0	0	827
Total Volume	43	822	1	866	586	0	244	830	0	1147	488	1635	1	0	0	1	3332
% App. Total	5	94.9	0.1		70.6	0	29.4		0	70.2	29.8		100	0	0		
PHF	.632	.909	.250	.891	.893	.000	.897	.894	.000	.953	.847	.919	.250	.000	.000	.250	.911

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				05:00 PM			
+0 mins.	9	<b>231</b>	0	240	125	0	<b>68</b>	193	0	288	118	406	<b>1</b>	0	0	1
+15 mins.	<b>21</b>	216	0	237	142	0	50	192	0	<b>301</b>	<b>144</b>	<b>445</b>	0	0	0	0
+30 mins.	17	226	0	<b>243</b>	<b>164</b>	0	68	<b>232</b>	0	296	120	416	0	0	<b>1</b>	1
+45 mins.	6	183	0	189	155	0	58	213	<b>1</b>	268	103	372	1	0	1	<b>2</b>
Total Volume	53	856	0	909	586	0	244	830	1	1153	485	1639	2	0	2	4
% App. Total	5.8	94.2	0		70.6	0	29.4		0.1	70.3	29.6		50	0	50	
PHF	.631	.926	.000	.935	.893	.000	.897	.894	.250	.958	.842	.921	.500	.000	.500	.500

City of Torrance  
 N/S: Western Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 08\_TOR\_Western\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

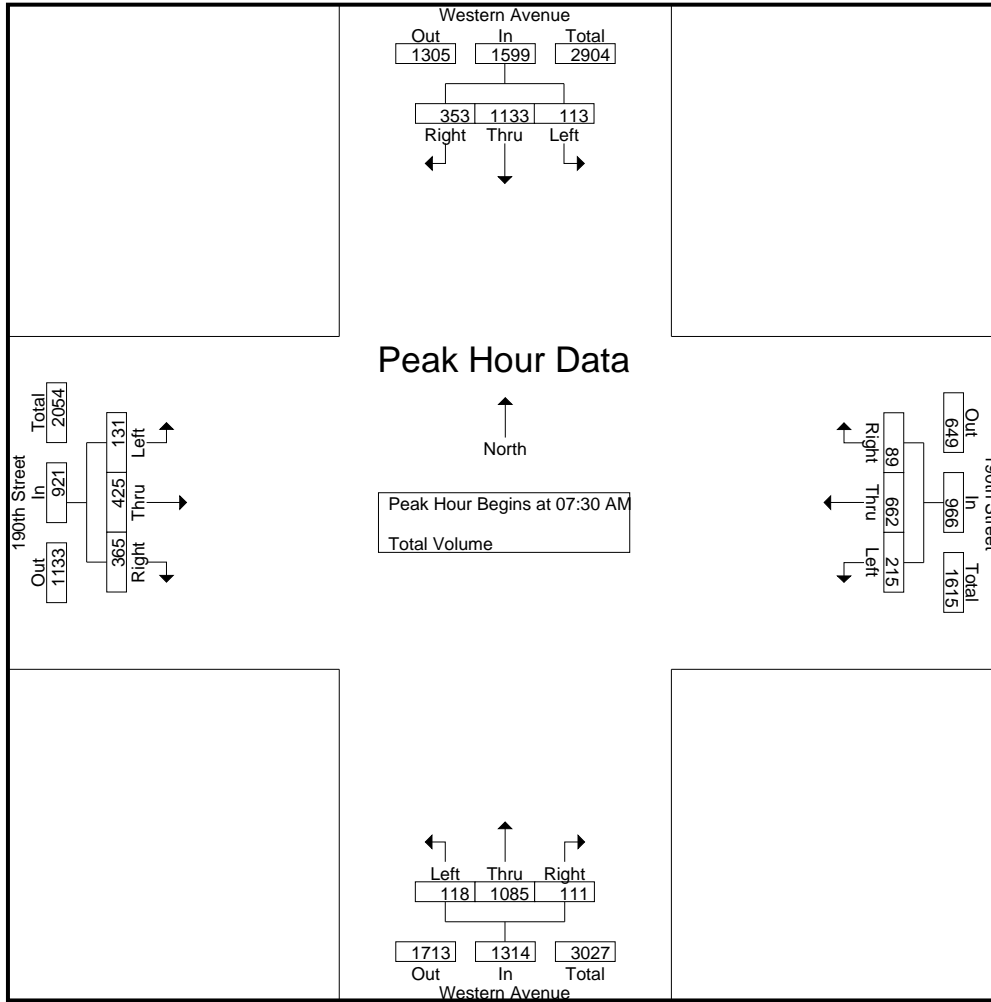
Groups Printed- Total Volume

Start Time	Western Avenue Southbound				190th Street Westbound				Western Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	14	204	65	283	29	123	12	164	28	179	15	222	18	63	51	132	801
07:15 AM	10	226	69	305	53	154	16	223	24	245	20	289	16	73	56	145	962
07:30 AM	27	266	79	372	48	181	22	251	29	281	25	335	26	69	72	167	1125
07:45 AM	24	287	84	395	56	147	24	227	26	299	32	357	37	109	109	255	1234
Total	75	983	297	1355	186	605	74	865	107	1004	92	1203	97	314	288	699	4122
08:00 AM	33	303	97	433	44	143	23	210	27	283	33	343	29	113	93	235	1221
08:15 AM	29	277	93	399	67	191	20	278	36	222	21	279	39	134	91	264	1220
08:30 AM	34	278	89	401	54	165	22	241	49	178	23	250	23	110	87	220	1112
08:45 AM	30	285	113	428	65	145	30	240	38	207	23	268	46	115	103	264	1200
Total	126	1143	392	1661	230	644	95	969	150	890	100	1140	137	472	374	983	4753
Grand Total	201	2126	689	3016	416	1249	169	1834	257	1894	192	2343	234	786	662	1682	8875
Apprch %	6.7	70.5	22.8		22.7	68.1	9.2		11	80.8	8.2		13.9	46.7	39.4		
Total %	2.3	24	7.8	34	4.7	14.1	1.9	20.7	2.9	21.3	2.2	26.4	2.6	8.9	7.5	19	

Start Time	Western Avenue Southbound				190th Street Westbound				Western Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	27	266	79	372	48	181	22	251	29	281	25	335	26	69	72	167	1125
07:45 AM	24	287	84	395	56	147	<b>24</b>	227	26	<b>299</b>	32	<b>357</b>	37	109	<b>109</b>	255	<b>1234</b>
08:00 AM	<b>33</b>	<b>303</b>	<b>97</b>	<b>433</b>	44	143	23	210	27	283	<b>33</b>	343	29	113	93	235	1221
08:15 AM	29	277	93	399	<b>67</b>	<b>191</b>	20	<b>278</b>	<b>36</b>	222	21	279	<b>39</b>	<b>134</b>	91	<b>264</b>	1220
Total Volume	113	1133	353	1599	215	662	89	966	118	1085	111	1314	131	425	365	921	4800
% App. Total	7.1	70.9	22.1		22.3	68.5	9.2		9	82.6	8.4		14.2	46.1	39.6		
PHF	.856	.935	.910	.923	.802	.866	.927	.869	.819	.907	.841	.920	.840	.793	.837	.872	.972

City of Torrance  
 N/S: Western Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 08\_TOR\_Western\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:15 AM				08:00 AM			
+0 mins.	33	<b>303</b>	97	<b>433</b>	44	143	23	210	24	245	20	289	29	113	93	235
+15 mins.	29	277	93	399	<b>67</b>	<b>191</b>	20	<b>278</b>	<b>29</b>	281	25	335	39	<b>134</b>	91	<b>264</b>
+30 mins.	<b>34</b>	278	89	401	54	165	22	241	26	<b>299</b>	32	<b>357</b>	23	110	87	220
+45 mins.	30	285	<b>113</b>	428	65	145	<b>30</b>	240	27	283	<b>33</b>	343	<b>46</b>	115	<b>103</b>	264
Total Volume	126	1143	392	1661	230	644	95	969	106	1108	110	1324	137	472	374	983
% App. Total	7.6	68.8	23.6		23.7	66.5	9.8		8	83.7	8.3		13.9	48	38	
PHF	.926	.943	.867	.959	.858	.843	.792	.871	.914	.926	.833	.927	.745	.881	.908	.931



City of Torrance  
 N/S: Western Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 08\_TOR\_Western\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

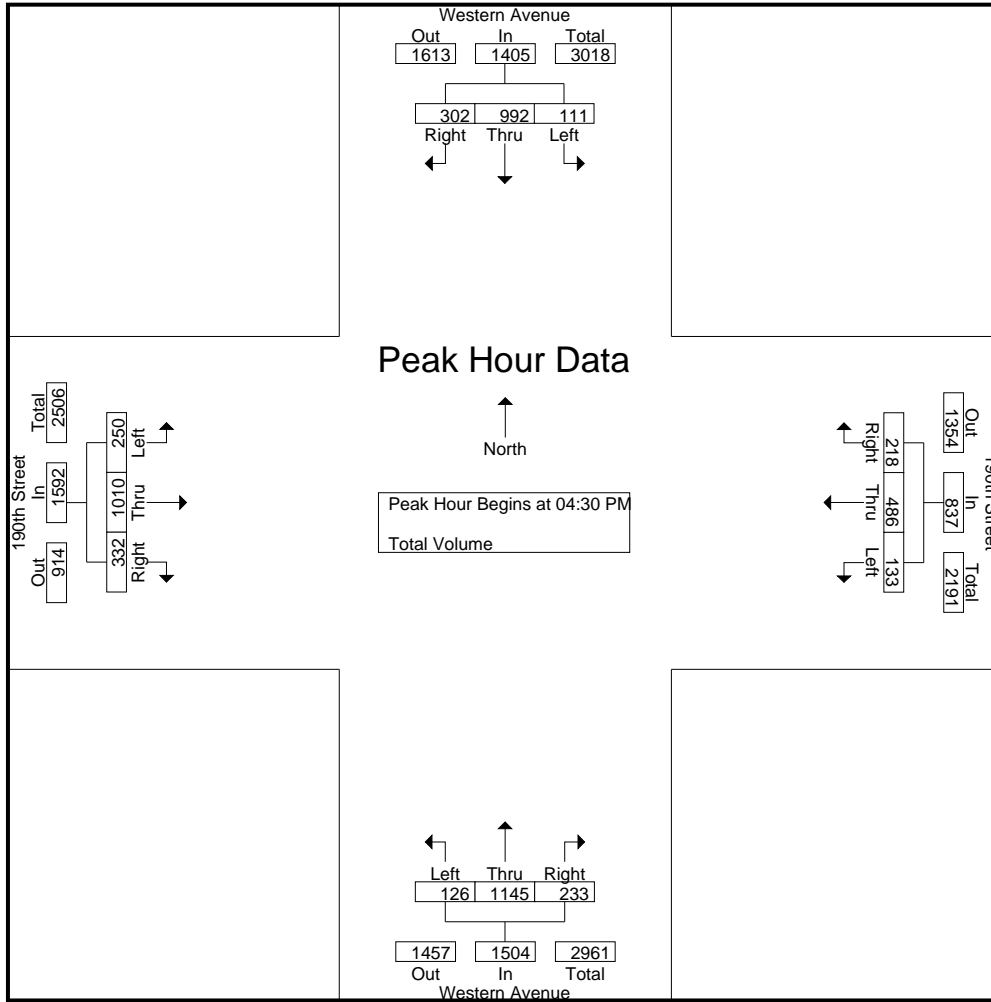
Groups Printed- Total Volume

Start Time	Western Avenue Southbound				190th Street Westbound				Western Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	33	264	75	372	42	115	57	214	32	284	76	392	39	228	82	349	1327
04:15 PM	26	264	83	373	33	101	37	171	20	238	54	312	60	214	90	364	1220
04:30 PM	37	238	71	346	28	113	53	194	30	259	69	358	55	284	88	427	1325
04:45 PM	24	235	66	325	39	104	49	192	34	303	51	388	71	260	79	410	1315
Total	120	1001	295	1416	142	433	196	771	116	1084	250	1450	225	986	339	1550	5187
05:00 PM	22	280	90	392	28	126	51	205	37	314	64	415	57	208	85	350	1362
05:15 PM	28	239	75	342	38	143	65	246	25	269	49	343	67	258	80	405	1336
05:30 PM	23	265	69	357	33	137	42	212	31	262	65	358	44	241	99	384	1311
05:45 PM	28	234	76	338	30	127	58	215	21	259	35	315	51	220	85	356	1224
Total	101	1018	310	1429	129	533	216	878	114	1104	213	1431	219	927	349	1495	5233
Grand Total	221	2019	605	2845	271	966	412	1649	230	2188	463	2881	444	1913	688	3045	10420
Apprch %	7.8	71	21.3		16.4	58.6	25		8	75.9	16.1		14.6	62.8	22.6		
Total %	2.1	19.4	5.8	27.3	2.6	9.3	4	15.8	2.2	21	4.4	27.6	4.3	18.4	6.6	29.2	

Start Time	Western Avenue Southbound				190th Street Westbound				Western Avenue Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	<b>37</b>	238	71	346	28	113	53	194	30	259	<b>69</b>	358	55	<b>284</b>	<b>88</b>	<b>427</b>	1325
04:45 PM	24	235	66	325	<b>39</b>	104	49	192	34	303	51	388	<b>71</b>	260	79	410	1315
05:00 PM	22	<b>280</b>	<b>90</b>	<b>392</b>	28	126	51	205	<b>37</b>	<b>314</b>	64	<b>415</b>	57	208	85	350	<b>1362</b>
05:15 PM	28	239	75	342	38	<b>143</b>	<b>65</b>	<b>246</b>	25	269	49	343	67	258	80	405	1336
Total Volume	111	992	302	1405	133	486	218	837	126	1145	233	1504	250	1010	332	1592	5338
% App. Total	7.9	70.6	21.5		15.9	58.1	26		8.4	76.1	15.5		15.7	63.4	20.9		
PHF	.750	.886	.839	.896	.853	.850	.838	.851	.851	.912	.844	.906	.880	.889	.943	.932	.980

City of Torrance  
 N/S: Western Avenue  
 E/W: 190th Street  
 Weather: Clear

File Name : 08\_TOR\_Western\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:15 PM				05:00 PM				04:30 PM				04:30 PM			
+0 mins.	26	264	83	373	28	126	51	205	30	259	<b>69</b>	358	55	<b>284</b>	<b>88</b>	<b>427</b>
+15 mins.	<b>37</b>	238	71	346	<b>38</b>	<b>143</b>	<b>65</b>	<b>246</b>	34	303	51	388	<b>71</b>	260	79	410
+30 mins.	24	235	66	325	33	137	42	212	<b>37</b>	<b>314</b>	64	<b>415</b>	57	208	85	350
+45 mins.	22	<b>280</b>	<b>90</b>	<b>392</b>	30	127	58	215	25	269	49	343	67	258	80	405
Total Volume	109	1017	310	1436	129	533	216	878	126	1145	233	1504	250	1010	332	1592
% App. Total	7.6	70.8	21.6		14.7	60.7	24.6		8.4	76.1	15.5		15.7	63.4	20.9	
PHF	.736	.908	.861	.916	.849	.932	.831	.892	.851	.912	.844	.906	.880	.889	.943	.932

City of Torrance  
 N/S: Western Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 09\_TOR\_Western\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Western Avenue Southbound				195th Street Westbound				Western Avenue Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	12	266	16	294	1	0	0	1	1	221	1	223	3	0	1	4	522
07:15 AM	4	326	19	349	0	0	1	1	2	277	1	280	1	0	1	2	632
07:30 AM	4	340	18	362	0	0	2	2	1	351	4	356	5	0	2	7	727
07:45 AM	11	430	29	470	1	0	1	2	8	355	2	365	1	0	1	2	839
Total	31	1362	82	1475	2	0	4	6	12	1204	8	1224	10	0	5	15	2720
08:00 AM	15	405	19	439	0	0	1	1	8	325	6	339	2	0	2	4	783
08:15 AM	5	407	16	428	2	0	2	4	6	277	0	283	2	0	0	2	717
08:30 AM	7	381	15	403	1	0	3	4	4	208	2	214	2	0	0	2	623
08:45 AM	6	463	14	483	0	0	4	4	8	279	6	293	3	1	5	9	789
Total	33	1656	64	1753	3	0	10	13	26	1089	14	1129	9	1	7	17	2912
Grand Total	64	3018	146	3228	5	0	14	19	38	2293	22	2353	19	1	12	32	5632
Apprch %	2	93.5	4.5		26.3	0	73.7		1.6	97.5	0.9		59.4	3.1	37.5		
Total %	1.1	53.6	2.6	57.3	0.1	0	0.2	0.3	0.7	40.7	0.4	41.8	0.3	0	0.2	0.6	

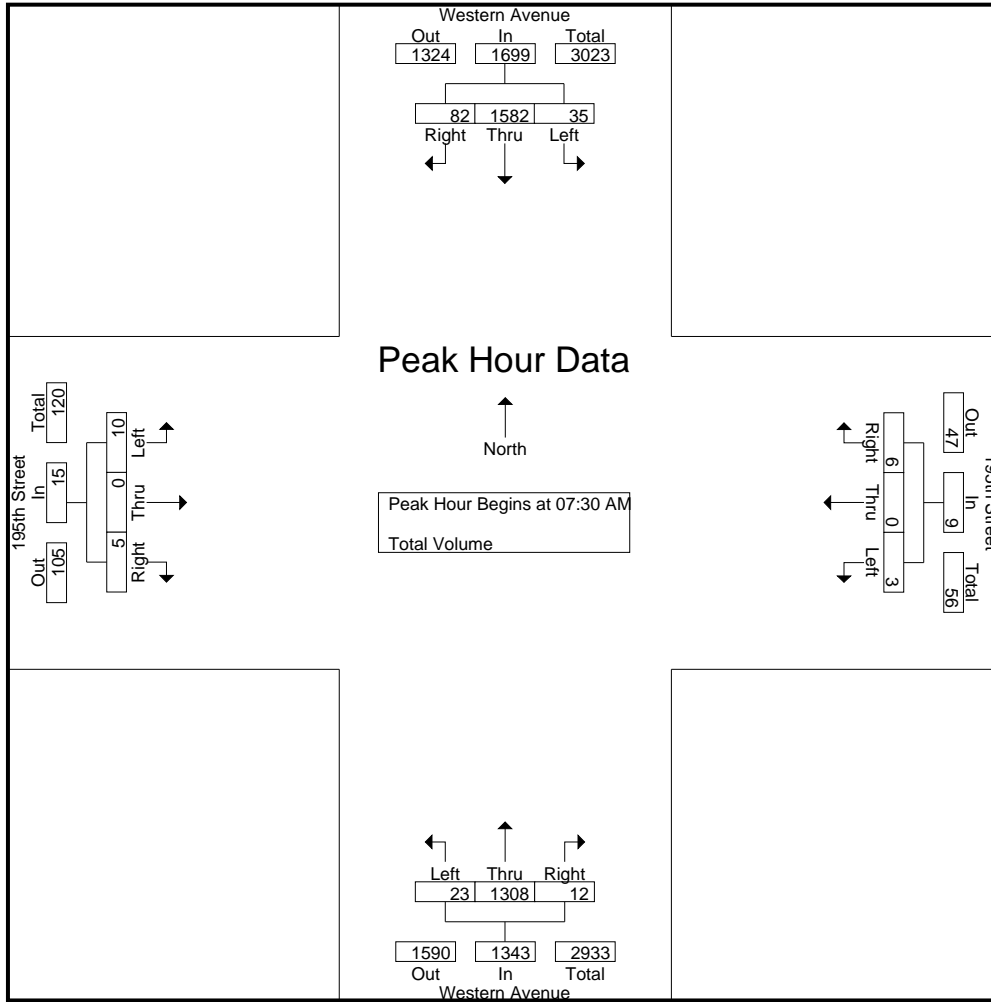
Start Time	Western Avenue Southbound				195th Street Westbound				Western Avenue Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:30 AM	4	340	18	362	0	0	2	2	1	351	4	356	5	0	2	7	727
07:45 AM	11	<b>430</b>	<b>29</b>	<b>470</b>	1	0	1	2	8	<b>355</b>	2	<b>365</b>	1	0	1	2	<b>839</b>
08:00 AM	15	405	19	439	0	0	1	1	8	325	6	339	2	0	2	4	783
08:15 AM	5	407	16	428	2	0	2	4	6	277	0	283	2	0	0	2	717
Total Volume	35	1582	82	1699	3	0	6	9	23	1308	12	1343	10	0	5	15	3066
% App. Total	2.1	93.1	4.8		33.3	0	66.7		1.7	97.4	0.9		66.7	0	33.3		
PHF	.583	.920	.707	.904	.375	.000	.750	.563	.719	.921	.500	.920	.500	.000	.625	.536	.914

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

City of Torrance  
 N/S: Western Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 09\_TOR\_Western\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:30 AM				08:00 AM			
+0 mins.	15	405	19	439	0	0	1	1	1	351	4	356	2	0	2	4
+15 mins.	5	407	16	428	2	0	2	4	8	355	2	365	2	0	0	2
+30 mins.	7	381	15	403	1	0	3	4	8	325	6	339	2	0	0	2
+45 mins.	6	463	14	483	0	0	4	4	6	277	0	283	3	1	5	9
Total Volume	33	1656	64	1753	3	0	10	13	23	1308	12	1343	9	1	7	17
% App. Total	1.9	94.5	3.7		23.1	0	76.9		1.7	97.4	0.9		52.9	5.9	41.2	
PHF	.550	.894	.842	.907	.375	.000	.625	.813	.719	.921	.500	.920	.750	.250	.350	.472

City of Torrance  
 N/S: Western Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 09\_TOR\_Western\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Western Avenue Southbound				195th Street Westbound				Western Avenue Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	4	360	23	387	3	0	10	13	8	373	1	382	8	0	12	20	802
04:15 PM	6	373	15	394	0	0	6	6	1	291	3	295	6	0	1	7	702
04:30 PM	5	335	5	345	1	0	10	11	0	347	2	349	9	0	5	14	719
04:45 PM	1	367	6	374	3	0	9	12	2	365	0	367	8	0	5	13	766
Total	16	1435	49	1500	7	0	35	42	11	1376	6	1393	31	0	23	54	2989
05:00 PM	3	391	2	396	4	0	11	15	2	363	2	367	18	0	3	21	799
05:15 PM	7	388	3	398	2	0	3	5	2	347	1	350	9	0	4	13	766
05:30 PM	1	383	6	390	3	0	3	6	0	342	0	342	13	0	1	14	752
05:45 PM	5	362	3	370	3	0	5	8	0	285	1	286	2	0	4	6	670
Total	16	1524	14	1554	12	0	22	34	4	1337	4	1345	42	0	12	54	2987
Grand Total	32	2959	63	3054	19	0	57	76	15	2713	10	2738	73	0	35	108	5976
Apprch %	1	96.9	2.1		25	0	75		0.5	99.1	0.4		67.6	0	32.4		
Total %	0.5	49.5	1.1	51.1	0.3	0	1	1.3	0.3	45.4	0.2	45.8	1.2	0	0.6	1.8	

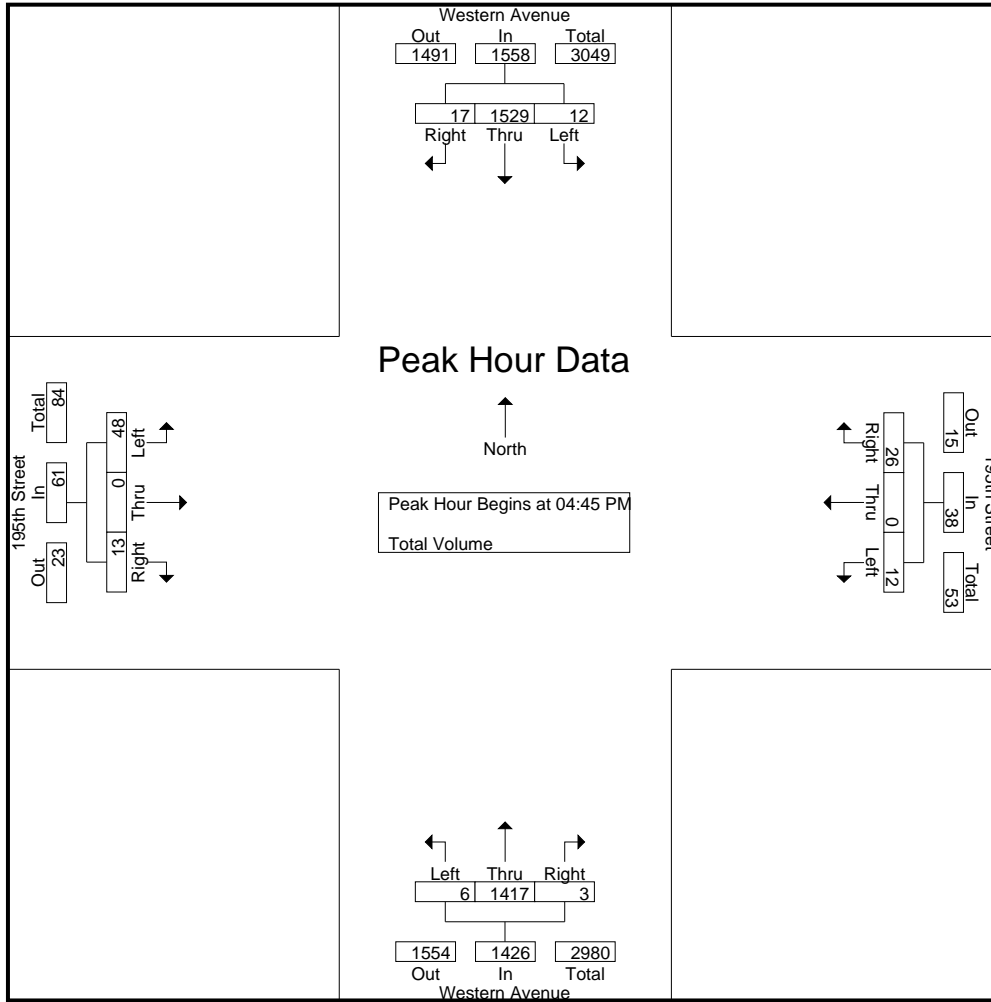
Start Time	Western Avenue Southbound				195th Street Westbound				Western Avenue Northbound				195th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:45 PM	1	367	6	374	3	0	9	12	2	365	0	367	8	0	5	13	766
05:00 PM	3	391	2	396	4	0	11	15	2	363	2	367	18	0	3	21	799
05:15 PM	7	388	3	398	2	0	3	5	2	347	1	350	9	0	4	13	766
05:30 PM	1	383	6	390	3	0	3	6	0	342	0	342	13	0	1	14	752
Total Volume	12	1529	17	1558	12	0	26	38	6	1417	3	1426	48	0	13	61	3083
% App. Total	0.8	98.1	1.1		31.6	0	68.4		0.4	99.4	0.2		78.7	0	21.3		
PHF	.429	.978	.708	.979	.750	.000	.591	.633	.750	.971	.375	.971	.667	.000	.650	.726	.965

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

City of Torrance  
 N/S: Western Avenue  
 E/W: 195th Street  
 Weather: Clear

File Name : 09\_TOR\_Western\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:45 PM				04:15 PM				04:30 PM				04:30 PM			
+0 mins.	1	367	6	374	0	0	6	6	0	347	2	349	9	0	5	14
+15 mins.	3	<b>391</b>	2	396	1	0	10	11	2	<b>365</b>	0	<b>367</b>	8	0	5	13
+30 mins.	7	388	3	<b>398</b>	3	0	9	12	2	363	2	367	<b>18</b>	0	3	<b>21</b>
+45 mins.	1	383	6	390	4	0	<b>11</b>	<b>15</b>	2	347	1	350	9	0	4	13
Total Volume	12	1529	17	1558	8	0	36	44	6	1422	5	1433	44	0	17	61
% App. Total	0.8	98.1	1.1		18.2	0	81.8		0.4	99.2	0.3		72.1	0	27.9	
PHF	.429	.978	.708	.979	.500	.000	.818	.733	.750	.974	.625	.976	.611	.000	.850	.726

City of Torrance  
 N/S: Western Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 10\_TOR\_Western\_Del Amo AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Western Avenue Southbound				Del Amo Boulevard Westbound				Western Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	2	179	102	283	3	15	15	33	19	196	0	215	24	2	7	33	564
07:15 AM	1	220	85	306	9	17	25	51	35	254	0	289	29	3	18	50	696
07:30 AM	5	219	110	334	9	19	12	40	45	277	0	322	40	2	20	62	758
07:45 AM	4	250	130	384	6	23	27	56	24	301	0	325	39	1	19	59	824
Total	12	868	427	1307	27	74	79	180	123	1028	0	1151	132	8	64	204	2842
08:00 AM	6	260	129	395	6	21	15	42	27	280	5	312	44	4	17	65	814
08:15 AM	9	288	143	440	3	16	11	30	46	213	3	262	40	3	28	71	803
08:30 AM	1	256	144	401	6	16	7	29	33	215	1	249	38	3	28	69	748
08:45 AM	1	300	156	457	5	15	5	25	38	219	2	259	56	5	34	95	836
Total	17	1104	572	1693	20	68	38	126	144	927	11	1082	178	15	107	300	3201
Grand Total	29	1972	999	3000	47	142	117	306	267	1955	11	2233	310	23	171	504	6043
Apprch %	1	65.7	33.3		15.4	46.4	38.2		12	87.6	0.5		61.5	4.6	33.9		
Total %	0.5	32.6	16.5	49.6	0.8	2.3	1.9	5.1	4.4	32.4	0.2	37	5.1	0.4	2.8	8.3	

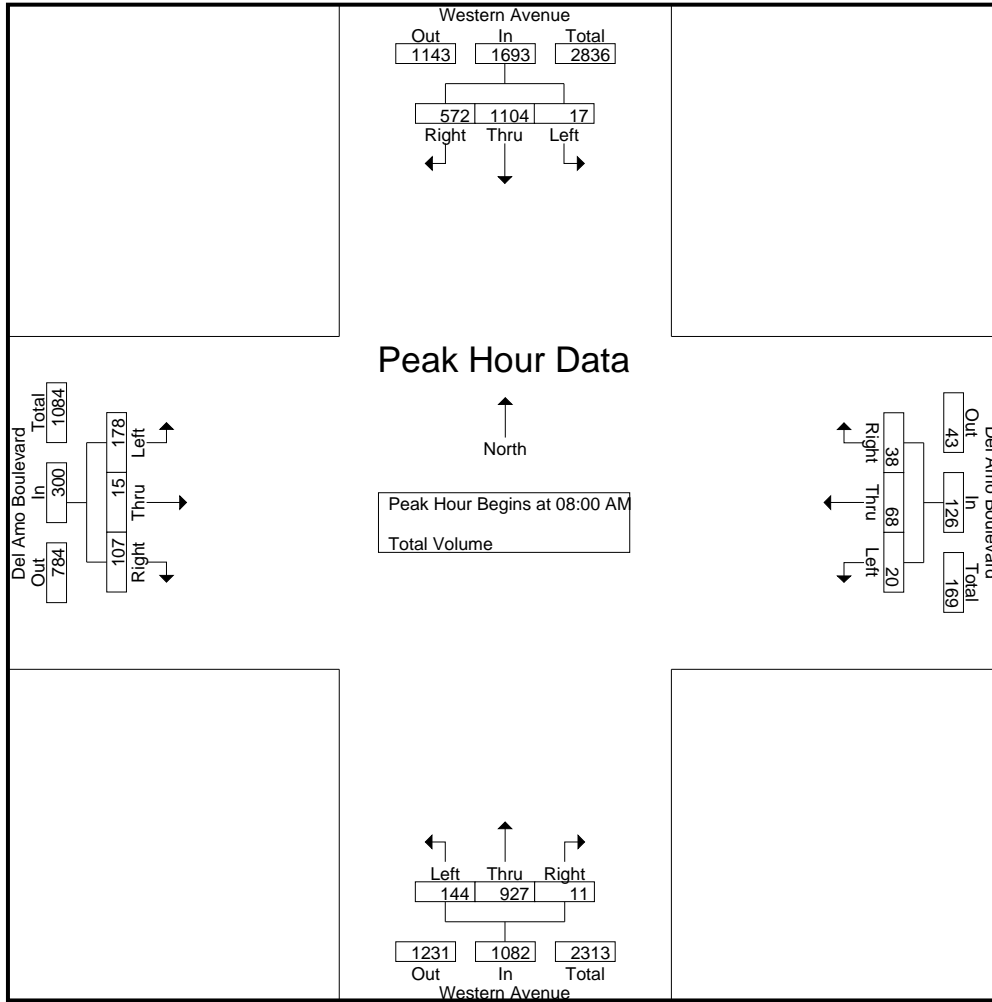
Start Time	Western Avenue Southbound				Del Amo Boulevard Westbound				Western Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
08:00 AM	6	260	129	395	<b>6</b>	<b>21</b>	<b>15</b>	<b>42</b>	27	<b>280</b>	<b>5</b>	<b>312</b>	44	4	17	65	814
08:15 AM	<b>9</b>	288	143	440	3	16	11	30	<b>46</b>	213	3	262	40	3	28	71	803
08:30 AM	1	256	144	401	6	16	7	29	33	215	1	249	38	3	28	69	748
08:45 AM	1	<b>300</b>	<b>156</b>	<b>457</b>	5	15	5	25	38	219	2	259	<b>56</b>	<b>5</b>	<b>34</b>	<b>95</b>	<b>836</b>
Total Volume	17	1104	572	1693	20	68	38	126	144	927	11	1082	178	15	107	300	3201
% App. Total	1	65.2	33.8		15.9	54	30.2		13.3	85.7	1		59.3	5	35.7		
PHF	.472	.920	.917	.926	.833	.810	.633	.750	.783	.828	.550	.867	.795	.750	.787	.789	.957

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

City of Torrance  
 N/S: Western Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 10\_TOR\_Western\_Del Amo AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	08:00 AM				07:15 AM				07:15 AM				08:00 AM			
+0 mins.	6	260	129	395	9	17	25	51	35	254	0	289	44	4	17	65
+15 mins.	9	288	143	440	9	19	12	40	45	277	0	322	40	3	28	71
+30 mins.	1	256	144	401	6	23	27	56	24	301	0	325	38	3	28	69
+45 mins.	1	300	156	457	6	21	15	42	27	280	5	312	56	5	34	95
Total Volume	17	1104	572	1693	30	80	79	189	131	1112	5	1248	178	15	107	300
% App. Total	1	65.2	33.8		15.9	42.3	41.8		10.5	89.1	0.4		59.3	5	35.7	
PHF	.472	.920	.917	.926	.833	.870	.731	.844	.728	.924	.250	.960	.795	.750	.787	.789



City of Torrance  
 N/S: Western Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 10\_TOR\_Western\_Del Amo PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

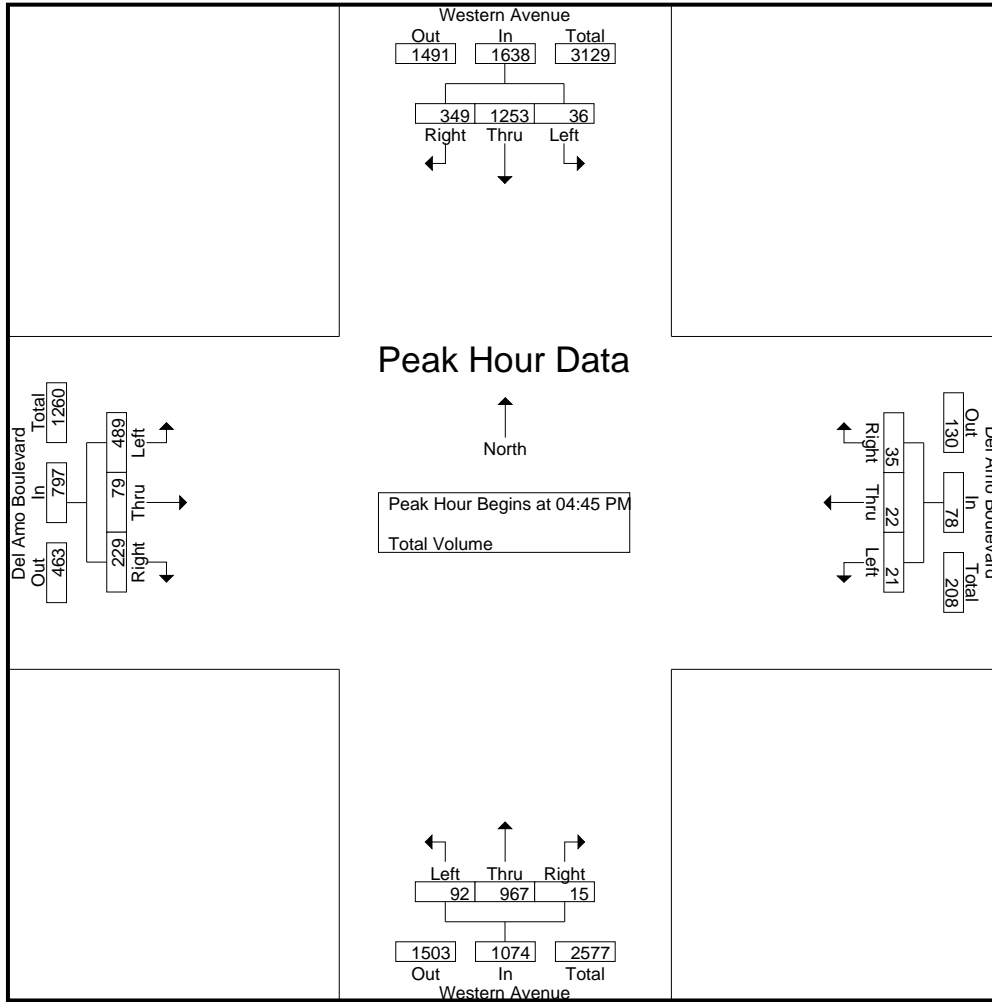
Start Time	Western Avenue Southbound				Del Amo Boulevard Westbound				Western Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	6	326	72	404	2	4	13	19	23	252	1	276	111	10	42	163	862
04:15 PM	14	287	78	379	4	6	9	19	22	214	5	241	89	10	50	149	788
04:30 PM	7	283	68	358	2	10	7	19	30	227	1	258	131	7	54	192	827
04:45 PM	9	309	84	402	8	5	8	21	26	256	2	284	103	21	64	188	895
Total	36	1205	302	1543	16	25	37	78	101	949	9	1059	434	48	210	692	3372
05:00 PM	4	335	106	445	3	3	6	12	22	235	5	262	133	22	62	217	936
05:15 PM	11	284	78	373	7	6	8	21	24	243	5	272	144	18	52	214	880
05:30 PM	12	325	81	418	3	8	13	24	20	233	3	256	109	18	51	178	876
05:45 PM	9	308	62	379	5	4	7	16	24	193	7	224	92	16	60	168	787
Total	36	1252	327	1615	18	21	34	73	90	904	20	1014	478	74	225	777	3479
Grand Total	72	2457	629	3158	34	46	71	151	191	1853	29	2073	912	122	435	1469	6851
Apprch %	2.3	77.8	19.9		22.5	30.5	47		9.2	89.4	1.4		62.1	8.3	29.6		
Total %	1.1	35.9	9.2	46.1	0.5	0.7	1	2.2	2.8	27	0.4	30.3	13.3	1.8	6.3	21.4	

Start Time	Western Avenue Southbound				Del Amo Boulevard Westbound				Western Avenue Northbound				Del Amo Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:45 PM	9	309	84	402	<b>8</b>	5	8	21	<b>26</b>	<b>256</b>	2	<b>284</b>	103	21	<b>64</b>	188	895
05:00 PM	4	<b>335</b>	<b>106</b>	<b>445</b>	3	3	6	12	22	235	<b>5</b>	262	133	<b>22</b>	62	<b>217</b>	<b>936</b>
05:15 PM	11	284	78	373	7	6	8	21	24	243	5	272	<b>144</b>	18	52	214	880
05:30 PM	<b>12</b>	325	81	418	3	<b>8</b>	<b>13</b>	<b>24</b>	20	233	3	256	109	18	51	178	876
Total Volume	36	1253	349	1638	21	22	35	78	92	967	15	1074	489	79	229	797	3587
% App. Total	2.2	76.5	21.3		26.9	28.2	44.9		8.6	90	1.4		61.4	9.9	28.7		
PHF	.750	.935	.823	.920	.656	.688	.673	.813	.885	.944	.750	.945	.849	.898	.895	.918	.958

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 04:45 PM

City of Torrance  
 N/S: Western Avenue  
 E/W: Del Amo Boulevard  
 Weather: Clear

File Name : 10\_TOR\_Western\_Del Amo PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				04:30 PM				04:30 PM			
+0 mins.	9	309	84	402	2	4	<b>13</b>	19	<b>30</b>	227	1	258	131	7	54	192
+15 mins.	4	<b>335</b>	<b>106</b>	<b>445</b>	4	6	9	19	26	<b>256</b>	2	<b>284</b>	103	21	<b>64</b>	188
+30 mins.	11	284	78	373	2	<b>10</b>	7	19	22	235	<b>5</b>	262	133	<b>22</b>	62	<b>217</b>
+45 mins.	<b>12</b>	325	81	418	<b>8</b>	5	8	<b>21</b>	24	243	5	272	<b>144</b>	18	52	214
Total Volume	36	1253	349	1638	16	25	37	78	102	961	13	1076	511	68	232	811
% App. Total	2.2	76.5	21.3		20.5	32.1	47.4		9.5	89.3	1.2		63	8.4	28.6	
PHF	.750	.935	.823	.920	.500	.625	.712	.929	.850	.938	.650	.947	.887	.773	.906	.934

City of Torrance  
 N/S: PA 1  
 E/W: 190th Street  
 Weather: Clear

File Name : 11\_TOR\_PA1\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	PA 1 Southbound				190th Street Westbound				PA 1 Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	0	171	2	173	0	0	0	0	3	212	0	215	388
07:15 AM	0	0	0	0	0	223	2	225	0	0	0	0	2	241	0	243	468
07:30 AM	0	0	0	0	1	249	0	250	0	0	0	0	1	284	0	285	535
07:45 AM	0	0	0	0	0	295	2	297	0	0	0	0	3	308	0	311	608
Total	0	0	0	0	1	938	6	945	0	0	0	0	9	1045	0	1054	1999
08:00 AM	1	0	0	1	1	227	2	230	0	0	1	1	1	354	1	356	588
08:15 AM	0	0	0	0	1	300	3	304	0	0	0	0	3	311	0	314	618
08:30 AM	1	0	0	1	1	284	0	285	0	0	0	0	1	285	0	286	572
08:45 AM	1	0	1	2	0	284	2	286	0	0	0	0	3	330	0	333	621
Total	3	0	1	4	3	1095	7	1105	0	0	1	1	8	1280	1	1289	2399
Grand Total	3	0	1	4	4	2033	13	2050	0	0	1	1	17	2325	1	2343	4398
Apprch %	75	0	25		0.2	99.2	0.6		0	0	100		0.7	99.2	0		
Total %	0.1	0	0	0.1	0.1	46.2	0.3	46.6	0	0	0	0	0.4	52.9	0	53.3	

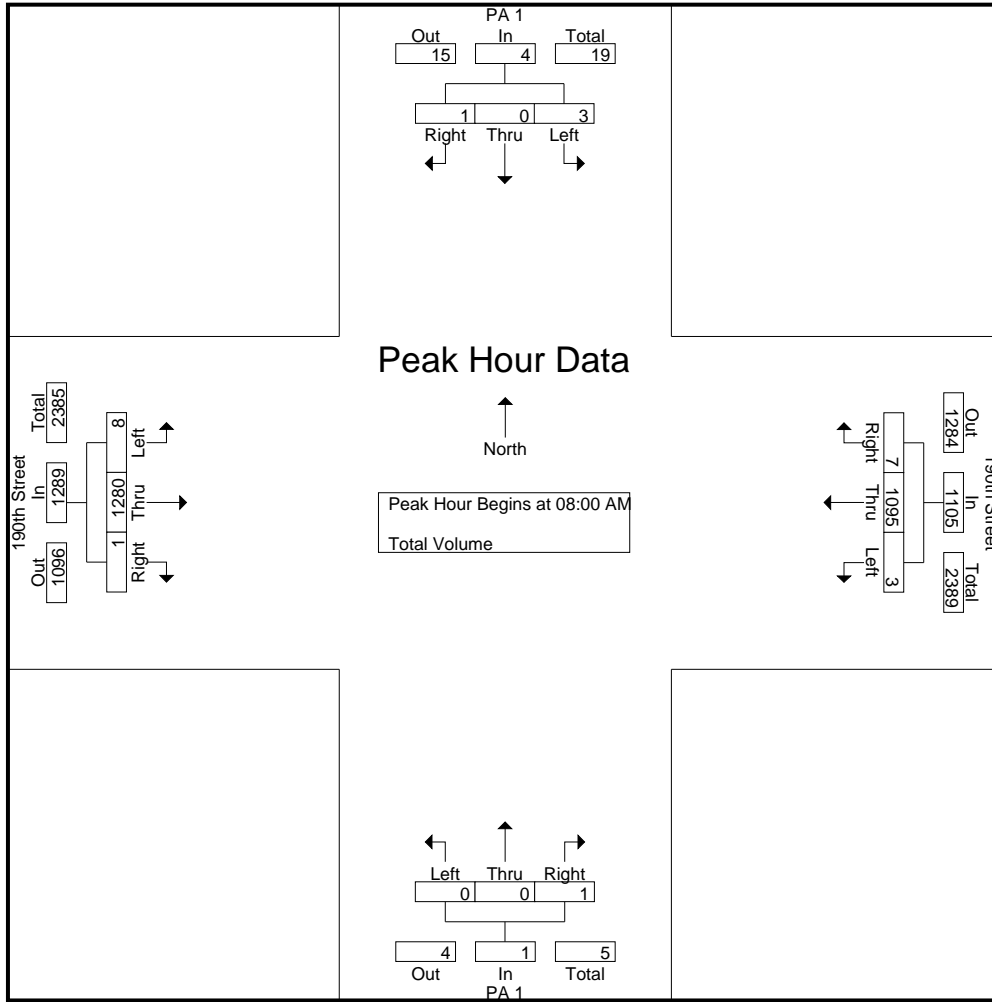
Start Time	PA 1 Southbound				190th Street Westbound				PA 1 Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
08:00 AM	1	0	0	1	1	227	2	230	0	0	1	1	1	354	1	356	588
08:15 AM	0	0	0	0	1	<b>300</b>	<b>3</b>	<b>304</b>	0	0	0	0	3	311	0	314	618
08:30 AM	1	0	0	1	1	284	0	285	0	0	0	0	1	285	0	286	572
08:45 AM	1	0	1	2	0	284	2	286	0	0	0	0	3	330	0	333	<b>621</b>
Total Volume	3	0	1	4	3	1095	7	1105	0	0	1	1	8	1280	1	1289	2399
% App. Total	75	0	25		0.3	99.1	0.6		0	0	100		0.6	99.3	0.1		
PHF	.750	.000	.250	.500	.750	.913	.583	.909	.000	.000	.250	.250	.667	.904	.250	.905	.966

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

City of Torrance  
 N/S: PA 1  
 E/W: 190th Street  
 Weather: Clear

File Name : 11\_TOR\_PA1\_190th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:15 AM				08:00 AM			
+0 mins.	1	0	0	1	0	295	2	297	0	0	0	0	1	<b>354</b>	1	<b>356</b>
+15 mins.	0	0	0	0	1	227	2	230	0	0	0	0	3	311	0	314
+30 mins.	1	0	0	1	1	<b>300</b>	3	<b>304</b>	0	0	0	0	1	285	0	286
+45 mins.	1	0	1	2	1	284	0	285	0	0	1	1	3	330	0	333
Total Volume	3	0	1	4	3	1106	7	1116	0	0	1	1	8	1280	1	1289
% App. Total	75	0	25		0.3	99.1	0.6		0	0	100		0.6	99.3	0.1	
PHF	.750	.000	.250	.500	.750	.922	.583	.918	.000	.000	.250	.250	.667	.904	.250	.905

City of Torrance  
 N/S: PA 1  
 E/W: 190th Street  
 Weather: Clear

File Name : 11\_TOR\_PA1\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	PA 1 Southbound				190th Street Westbound				PA 1 Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	3	0	2	5	0	172	0	172	0	0	0	0	0	396	0	396	573
04:15 PM	7	0	5	12	0	194	0	194	0	0	0	0	0	402	0	402	608
04:30 PM	5	0	3	8	0	192	0	192	0	0	0	0	1	463	0	464	664
04:45 PM	2	0	0	2	0	167	0	167	0	0	0	0	3	424	0	427	596
Total	17	0	10	27	0	725	0	725	0	0	0	0	4	1685	0	1689	2441
05:00 PM	11	0	6	17	0	189	0	189	0	0	0	0	1	421	0	422	628
05:15 PM	5	0	6	11	1	229	0	230	0	0	0	0	1	441	0	442	683
05:30 PM	3	0	3	6	0	220	1	221	0	0	0	0	2	407	0	409	636
05:45 PM	4	0	4	8	0	216	0	216	0	0	0	0	1	316	0	317	541
Total	23	0	19	42	1	854	1	856	0	0	0	0	5	1585	0	1590	2488
Grand Total	40	0	29	69	1	1579	1	1581	0	0	0	0	9	3270	0	3279	4929
Apprch %	58	0	42		0.1	99.9	0.1		0	0	0		0.3	99.7	0		
Total %	0.8	0	0.6	1.4	0	32	0	32.1	0	0	0	0	0.2	66.3	0	66.5	

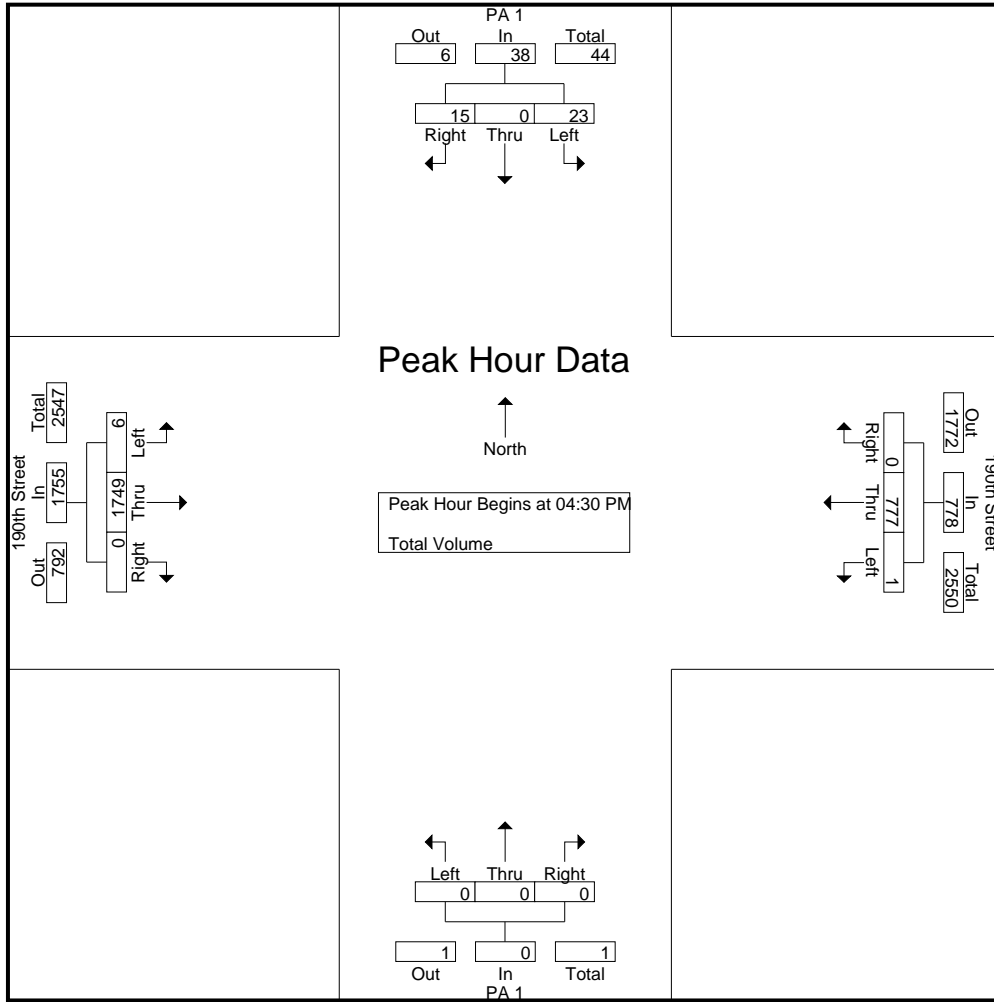
Start Time	PA 1 Southbound				190th Street Westbound				PA 1 Northbound				190th Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:30 PM	5	0	3	8	0	192	0	192	0	0	0	0	1	<b>463</b>	0	<b>464</b>	664
04:45 PM	2	0	0	2	0	167	0	167	0	0	0	0	3	424	0	427	596
05:00 PM	11	0	6	17	0	189	0	189	0	0	0	0	1	421	0	422	628
05:15 PM	5	0	6	11	1	<b>229</b>	0	<b>230</b>	0	0	0	0	1	441	0	442	<b>683</b>
Total Volume	23	0	15	38	1	777	0	778	0	0	0	0	6	1749	0	1755	2571
% App. Total	60.5	0	39.5		0.1	99.9	0		0	0	0		0.3	99.7	0		
PHF	.523	.000	.625	.559	.250	.848	.000	.846	.000	.000	.000	.000	.500	.944	.000	.946	.941

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of Torrance  
 N/S: PA 1  
 E/W: 190th Street  
 Weather: Clear

File Name : 11\_TOR\_PA1\_190th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:00 PM				04:30 PM			
+0 mins.	11	0	6	17	0	189	0	189	0	0	0	0	1	463	0	464
+15 mins.	5	0	6	11	1	229	0	230	0	0	0	0	3	424	0	427
+30 mins.	3	0	3	6	0	220	1	221	0	0	0	0	1	421	0	422
+45 mins.	4	0	4	8	0	216	0	216	0	0	0	0	1	441	0	442
Total Volume	23	0	19	42	1	854	1	856	0	0	0	0	6	1749	0	1755
% App. Total	54.8	0	45.2		0.1	99.8	0.1		0	0	0		0.3	99.7	0	
PHF	.523	.000	.792	.618	.250	.932	.250	.930	.000	.000	.000	.000	.500	.944	.000	.946

City of Torrance  
 N/S: Western Avenue  
 E/W: PA 2  
 Weather: Clear

File Name : 12\_TOR\_Western\_PA 2 AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

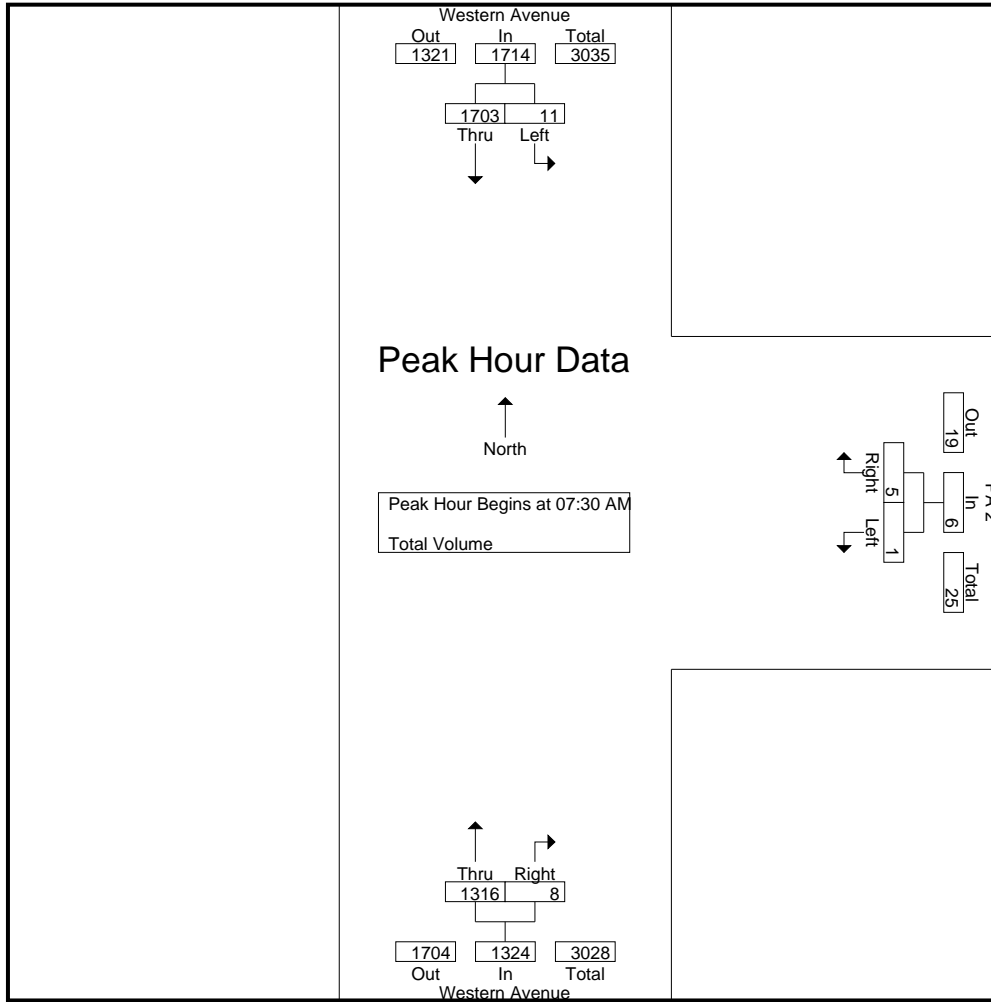
Groups Printed- Total Volume

Start Time	Western Avenue Southbound			PA 2 Westbound			Western Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:00 AM	3	285	288	1	3	4	228	0	228	520
07:15 AM	2	335	337	0	3	3	281	1	282	622
07:30 AM	1	378	379	0	1	1	346	1	347	727
07:45 AM	4	457	461	0	0	0	346	1	347	808
Total	10	1455	1465	1	7	8	1201	3	1204	2677
08:00 AM	3	429	432	1	0	1	341	3	344	777
08:15 AM	3	439	442	0	4	4	283	3	286	732
08:30 AM	0	425	425	0	5	5	238	0	238	668
08:45 AM	2	448	450	1	3	4	272	1	273	727
Total	8	1741	1749	2	12	14	1134	7	1141	2904
Grand Total	18	3196	3214	3	19	22	2335	10	2345	5581
Apprch %	0.6	99.4		13.6	86.4		99.6	0.4		
Total %	0.3	57.3	57.6	0.1	0.3	0.4	41.8	0.2	42	

Start Time	Western Avenue Southbound			PA 2 Westbound			Western Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:30 AM	1	378	379	0	1	1	346	1	347	727
07:45 AM	4	457	461	0	0	0	346	1	347	808
08:00 AM	3	429	432	1	0	1	341	3	344	777
08:15 AM	3	439	442	0	4	4	283	3	286	732
Total Volume	11	1703	1714	1	5	6	1316	8	1324	3044
% App. Total	0.6	99.4		16.7	83.3		99.4	0.6		
PHF	.688	.932	.930	.250	.313	.375	.951	.667	.954	.942

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			07:30 AM		
+0 mins.	4	457	461	1	0	1	346	1	347
+15 mins.	3	429	432	0	4	4	346	1	347
+30 mins.	3	439	442	0	5	5	341	3	344
+45 mins.	0	425	425	1	3	4	283	3	286
Total Volume	10	1750	1760	2	12	14	1316	8	1324
% App. Total	0.6	99.4		14.3	85.7		99.4	0.6	
PHF	.625	.957	.954	.500	.600	.700	.951	.667	.954



City of Torrance  
 N/S: Western Avenue  
 E/W: PA 2  
 Weather: Clear

File Name : 12\_TOR\_Western\_PA 2 PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Western Avenue Southbound			PA 2 Westbound			Western Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:00 PM	1	389	390	0	5	5	383	1	384	779
04:15 PM	2	396	398	0	4	4	307	0	307	709
04:30 PM	1	343	344	0	0	0	369	1	370	714
04:45 PM	0	364	364	0	3	3	374	0	374	741
Total	4	1492	1496	0	12	12	1433	2	1435	2943
05:00 PM	4	402	406	1	2	3	404	0	404	813
05:15 PM	3	376	379	1	1	2	353	0	353	734
05:30 PM	1	397	398	1	4	5	353	0	353	756
05:45 PM	0	364	364	0	3	3	302	0	302	669
Total	8	1539	1547	3	10	13	1412	0	1412	2972
Grand Total	12	3031	3043	3	22	25	2845	2	2847	5915
Apprch %	0.4	99.6		12	88		99.9	0.1		
Total %	0.2	51.2	51.4	0.1	0.4	0.4	48.1	0	48.1	

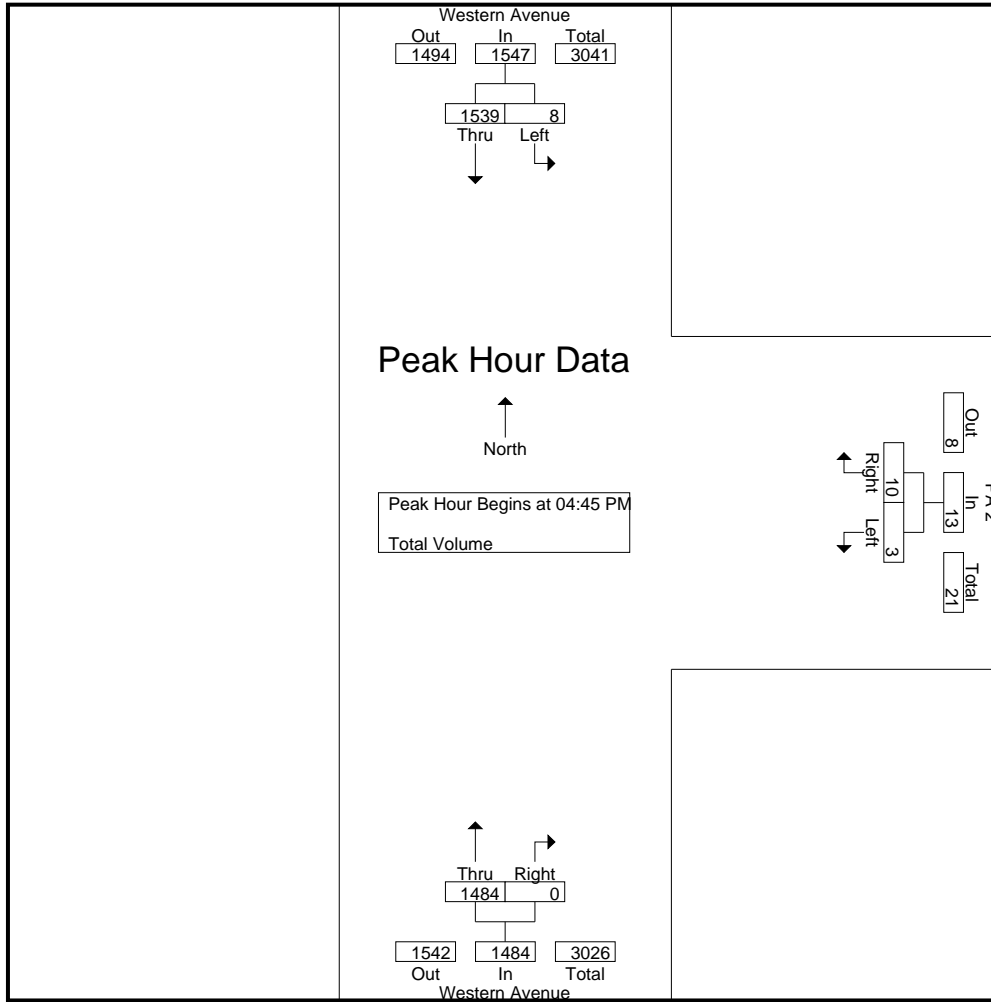
Start Time	Western Avenue Southbound			PA 2 Westbound			Western Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:45 PM	0	364	364	0	3	3	374	0	374	741
05:00 PM	<b>4</b>	<b>402</b>	<b>406</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>404</b>	<b>0</b>	<b>404</b>	<b>813</b>
05:15 PM	3	376	379	1	1	2	353	0	353	734
05:30 PM	1	397	398	1	<b>4</b>	<b>5</b>	353	0	353	756
Total Volume	8	1539	1547	3	10	13	1484	0	1484	3044
% App. Total	0.5	99.5		23.1	76.9		100	0		
PHF	.500	.957	.953	.750	.625	.650	.918	.000	.918	.936

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

City of Torrance  
 N/S: Western Avenue  
 E/W: PA 2  
 Weather: Clear

File Name : 12\_TOR\_Western\_PA 2 PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:30 PM		
+0 mins.	0	364	364	0	3	3	369	1	370
+15 mins.	4	<b>402</b>	<b>406</b>	1	2	3	374	0	374
+30 mins.	3	376	379	1	1	2	<b>404</b>	0	<b>404</b>
+45 mins.	1	397	398	1	4	5	353	0	353
Total Volume	8	1539	1547	3	10	13	1500	1	1501
% App. Total	0.5	99.5		23.1	76.9		99.9	0.1	
PHF	.500	.957	.953	.750	.625	.650	.928	.250	.929

City of Torrance  
 N/S: Gramercy Place  
 E/W: PA 3  
 Weather: Clear

File Name : 13\_TOR\_Gramercy\_PA 3 AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	Gramercy Place Southbound			PA 3 Westbound			Gramercy Place Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:00 AM	0	4	4	0	1	1	7	0	7	12
07:15 AM	1	2	3	0	0	0	4	0	4	7
07:30 AM	0	3	3	0	0	0	4	0	4	7
07:45 AM	0	6	6	0	1	1	7	0	7	14
Total	1	15	16	0	2	2	22	0	22	40
08:00 AM	0	8	8	0	0	0	5	0	5	13
08:15 AM	1	6	7	0	0	0	2	0	2	9
08:30 AM	1	2	3	0	0	0	6	0	6	9
08:45 AM	0	5	5	0	0	0	5	0	5	10
Total	2	21	23	0	0	0	18	0	18	41
Grand Total	3	36	39	0	2	2	40	0	40	81
Apprch %	7.7	92.3		0	100		100	0		
Total %	3.7	44.4	48.1	0	2.5	2.5	49.4	0	49.4	

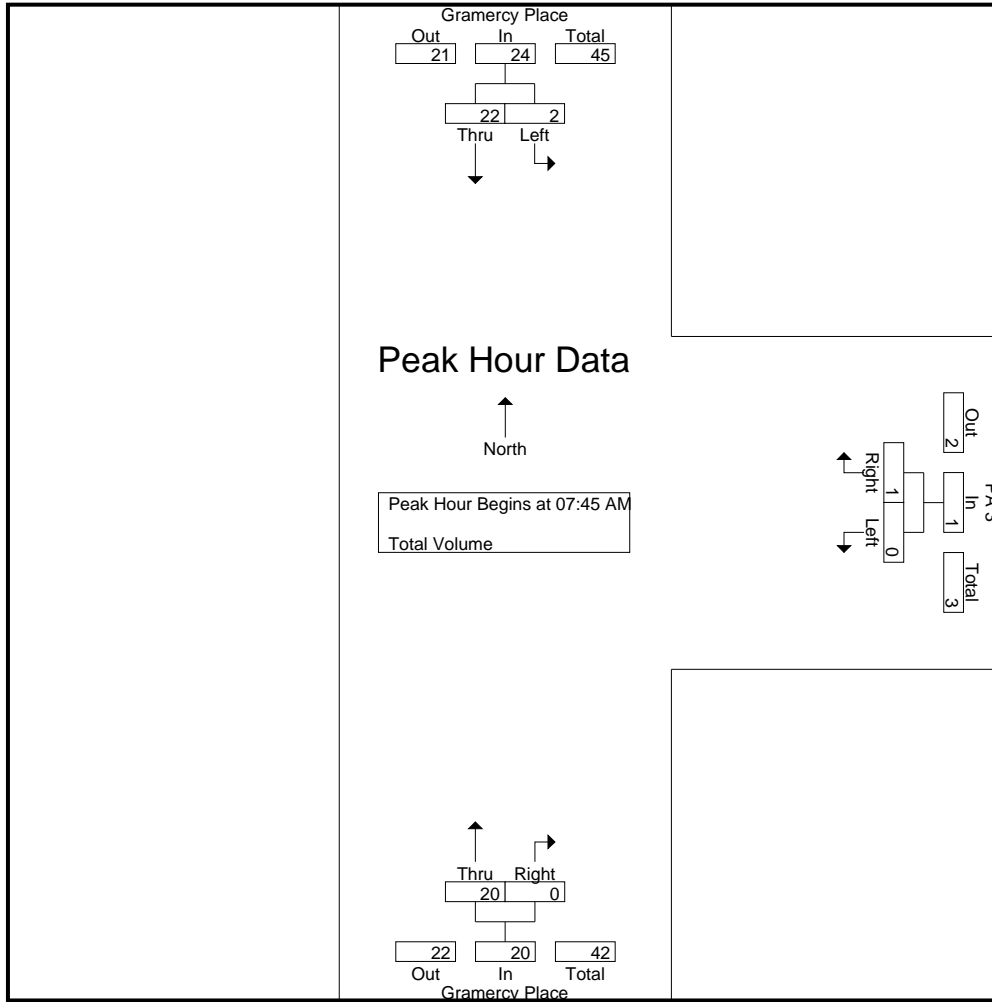
Start Time	Gramercy Place Southbound			PA 3 Westbound			Gramercy Place Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:45 AM	0	6	6	0	1	1	7	0	7	14
08:00 AM	0	8	8	0	0	0	5	0	5	13
08:15 AM	1	6	7	0	0	0	2	0	2	9
08:30 AM	1	2	3	0	0	0	6	0	6	9
Total Volume	2	22	24	0	1	1	20	0	20	45
% App. Total	8.3	91.7		0	100		100	0		
PHF	.500	.688	.750	.000	.250	.250	.714	.000	.714	.804

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45 AM

City of Torrance  
 N/S: Gramercy Place  
 E/W: PA 3  
 Weather: Clear

File Name : 13\_TOR\_Gramercy\_PA 3 AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			07:00 AM		
+0 mins.	0	3	3	0	1	1	7	0	7
+15 mins.	0	6	6	0	0	0	4	0	4
+30 mins.	0	8	8	0	0	0	4	0	4
+45 mins.	1	6	7	0	1	1	7	0	7
Total Volume	1	23	24	0	2	2	22	0	22
% App. Total	4.2	95.8		0	100		100	0	
PHF	.250	.719	.750	.000	.500	.500	.786	.000	.786

City of Torrance  
 N/S: Gramercy Place  
 E/W: PA 3  
 Weather: Clear

File Name : 13\_TOR\_Gramercy\_PA 3 PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

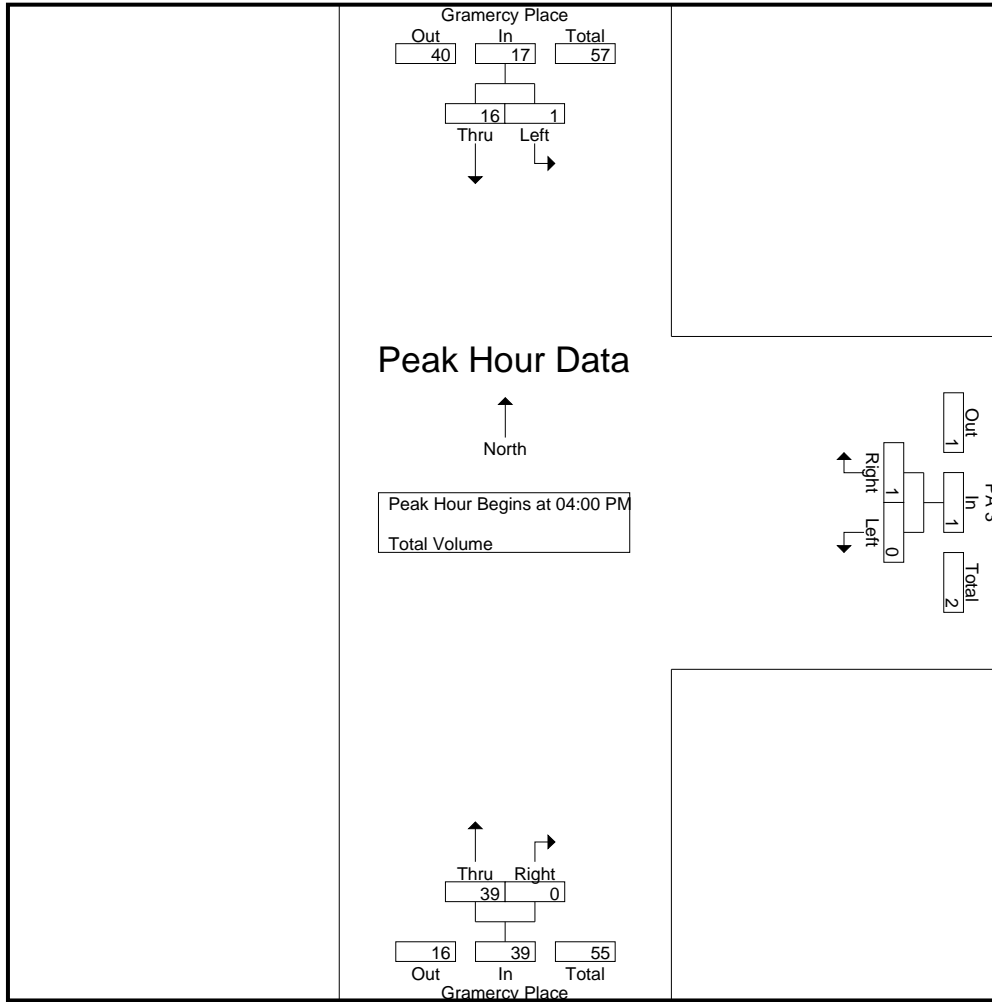
Groups Printed- Total Volume

Start Time	Gramercy Place Southbound			PA 3 Westbound			Gramercy Place Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:00 PM	0	3	3	0	1	1	15	0	15	19
04:15 PM	0	5	5	0	0	0	11	0	11	16
04:30 PM	1	3	4	0	0	0	7	0	7	11
04:45 PM	0	5	5	0	0	0	6	0	6	11
<b>Total</b>	<b>1</b>	<b>16</b>	<b>17</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>39</b>	<b>0</b>	<b>39</b>	<b>57</b>
05:00 PM	0	2	2	0	1	1	13	0	13	16
05:15 PM	0	4	4	0	0	0	10	0	10	14
05:30 PM	0	2	2	0	0	0	1	0	1	3
05:45 PM	0	4	4	0	0	0	6	0	6	10
<b>Total</b>	<b>0</b>	<b>12</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>30</b>	<b>0</b>	<b>30</b>	<b>43</b>
<b>Grand Total</b>	<b>1</b>	<b>28</b>	<b>29</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>69</b>	<b>0</b>	<b>69</b>	<b>100</b>
Apprch %	3.4	96.6		0	100		100	0		
Total %	1	28	29	0	2	2	69	0	69	

Start Time	Gramercy Place Southbound			PA 3 Westbound			Gramercy Place Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:00 PM	0	3	3	0	1	1	15	0	15	19
04:15 PM	0	5	5	0	0	0	11	0	11	16
04:30 PM	1	3	4	0	0	0	7	0	7	11
04:45 PM	0	5	5	0	0	0	6	0	6	11
<b>Total Volume</b>	<b>1</b>	<b>16</b>	<b>17</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>39</b>	<b>0</b>	<b>39</b>	<b>57</b>
<b>% App. Total</b>	<b>5.9</b>	<b>94.1</b>		<b>0</b>	<b>100</b>		<b>100</b>	<b>0</b>		
<b>PHF</b>	<b>.250</b>	<b>.800</b>	<b>.850</b>	<b>.000</b>	<b>.250</b>	<b>.250</b>	<b>.650</b>	<b>.000</b>	<b>.650</b>	<b>.750</b>

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	3	3	0	1	1	15	0	15
+15 mins.	0	5	5	0	0	0	11	0	11
+30 mins.	1	3	4	0	0	0	7	0	7
+45 mins.	0	5	5	0	0	0	6	0	6
Total Volume	1	16	17	0	1	1	39	0	39
% App. Total	5.9	94.1		0	100		100	0	
PHF	.250	.800	.850	.000	.250	.250	.650	.000	.650

City of Torrance  
 N/S: PA 4  
 E/W: 195th Street  
 Weather: Clear

File Name : 14\_TOR\_PA 4\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	PA 4 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	1	1	13	1	14	0	6	6	21
07:15 AM	1	0	1	18	4	22	0	1	1	24
07:30 AM	0	0	0	18	2	20	0	5	5	25
07:45 AM	2	1	3	34	4	38	0	5	5	46
Total	3	2	5	83	11	94	0	17	17	116
08:00 AM	1	0	1	27	2	29	0	2	2	32
08:15 AM	0	0	0	21	0	21	0	1	1	22
08:30 AM	1	1	2	20	1	21	1	4	5	28
08:45 AM	0	0	0	18	1	19	2	6	8	27
Total	2	1	3	86	4	90	3	13	16	109
Grand Total	5	3	8	169	15	184	3	30	33	225
Apprch %	62.5	37.5		91.8	8.2		9.1	90.9		
Total %	2.2	1.3	3.6	75.1	6.7	81.8	1.3	13.3	14.7	

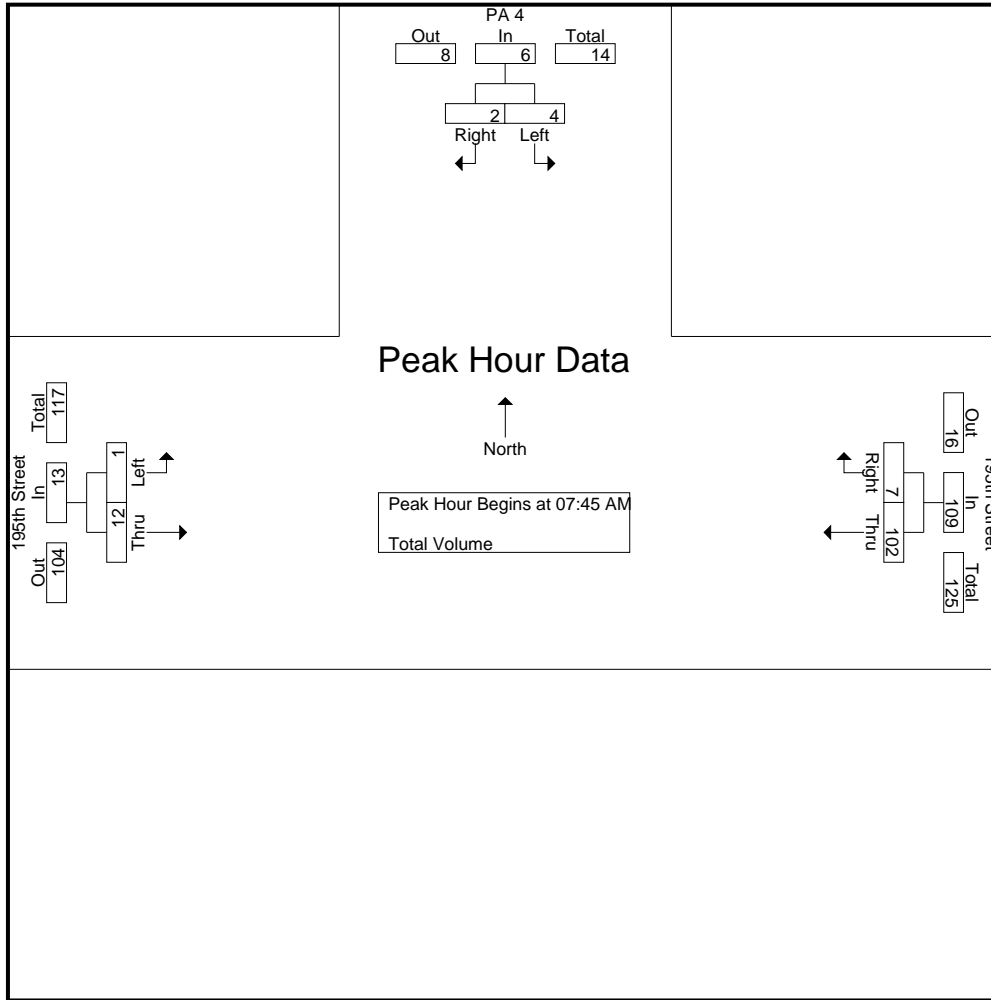
Start Time	PA 4 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:45 AM	2	1	3	34	4	38	0	5	5	46
08:00 AM	1	0	1	27	2	29	0	2	2	32
08:15 AM	0	0	0	21	0	21	0	1	1	22
08:30 AM	1	1	2	20	1	21	1	4	5	28
Total Volume	4	2	6	102	7	109	1	12	13	128
% App. Total	66.7	33.3		93.6	6.4		7.7	92.3		
PHF	.500	.500	.500	.750	.438	.717	.250	.600	.650	.696

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45 AM

City of Torrance  
 N/S: PA 4  
 E/W: 195th Street  
 Weather: Clear

File Name : 14\_TOR\_PA 4\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:45 AM			07:15 AM			07:00 AM		
+0 mins.	2	1	3	18	4	22	0	6	6
+15 mins.	1	0	1	18	2	20	0	1	1
+30 mins.	0	0	0	34	4	38	0	5	5
+45 mins.	1	1	2	27	2	29	0	5	5
Total Volume	4	2	6	97	12	109	0	17	17
% App. Total	66.7	33.3		89	11		0	100	
PHF	.500	.500	.500	.713	.750	.717	.000	.708	.708



City of Torrance  
 N/S: PA 4  
 E/W: 195th Street  
 Weather: Clear

File Name : 14\_TOR\_PA 4\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	PA 4 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	6	0	6	9	11	20	0	11	11	37
04:15 PM	3	0	3	9	7	16	0	10	10	29
04:30 PM	1	0	1	5	2	7	0	13	13	21
04:45 PM	1	0	1	7	1	8	0	12	12	21
<b>Total</b>	<b>11</b>	<b>0</b>	<b>11</b>	<b>30</b>	<b>21</b>	<b>51</b>	<b>0</b>	<b>46</b>	<b>46</b>	<b>108</b>
05:00 PM	1	0	1	5	0	5	0	18	18	24
05:15 PM	2	0	2	3	0	3	0	10	10	15
05:30 PM	1	1	2	8	0	8	2	13	15	25
05:45 PM	0	0	0	1	1	2	0	7	7	9
<b>Total</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>17</b>	<b>1</b>	<b>18</b>	<b>2</b>	<b>48</b>	<b>50</b>	<b>73</b>
<b>Grand Total</b>	<b>15</b>	<b>1</b>	<b>16</b>	<b>47</b>	<b>22</b>	<b>69</b>	<b>2</b>	<b>94</b>	<b>96</b>	<b>181</b>
Apprch %	93.8	6.2		68.1	31.9		2.1	97.9		
Total %	8.3	0.6	8.8	26	12.2	38.1	1.1	51.9	53	

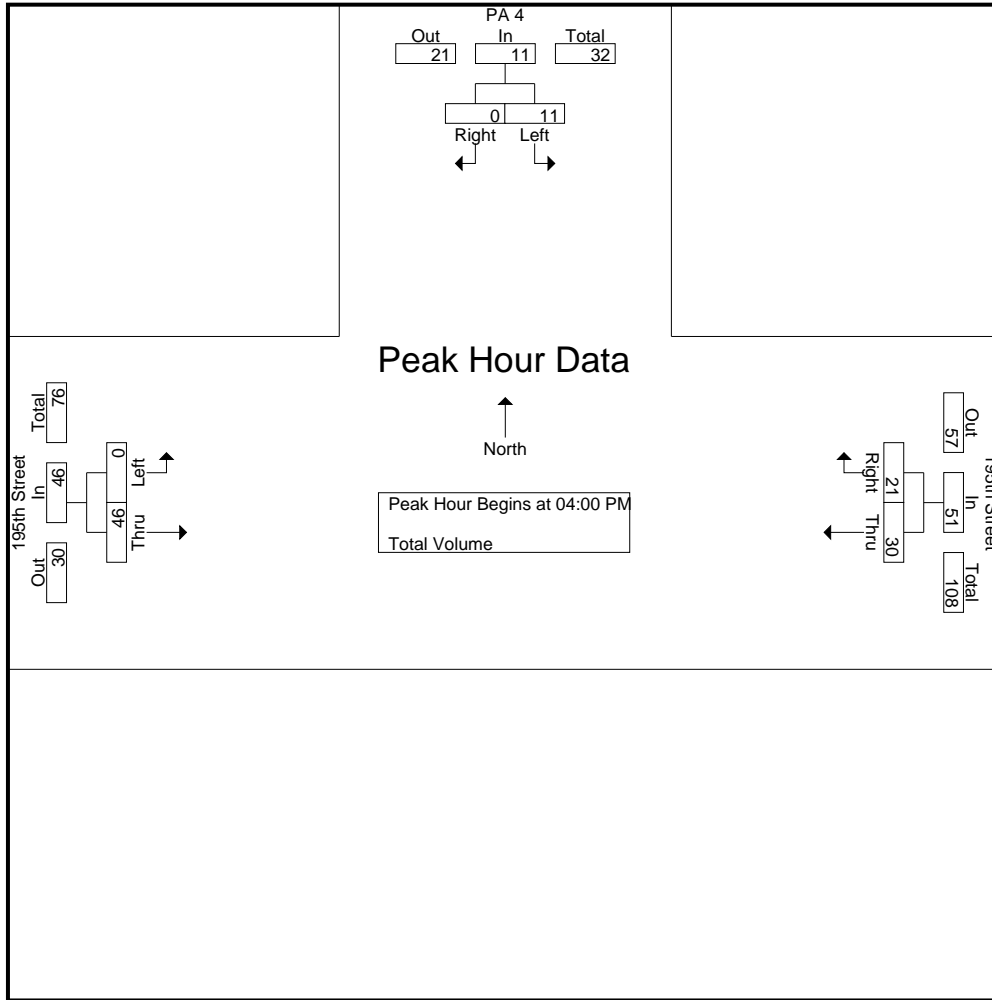
Start Time	PA 4 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	6	0	6	9	11	20	0	11	11	37
04:15 PM	3	0	3	9	7	16	0	10	10	29
04:30 PM	1	0	1	5	2	7	0	13	13	21
04:45 PM	1	0	1	7	1	8	0	12	12	21
<b>Total Volume</b>	<b>11</b>	<b>0</b>	<b>11</b>	<b>30</b>	<b>21</b>	<b>51</b>	<b>0</b>	<b>46</b>	<b>46</b>	<b>108</b>
<b>% App. Total</b>	<b>100</b>	<b>0</b>		<b>58.8</b>	<b>41.2</b>		<b>0</b>	<b>100</b>		
<b>PHF</b>	<b>.458</b>	<b>.000</b>	<b>.458</b>	<b>.833</b>	<b>.477</b>	<b>.638</b>	<b>.000</b>	<b>.885</b>	<b>.885</b>	<b>.730</b>

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

City of Torrance  
 N/S: PA 4  
 E/W: 195th Street  
 Weather: Clear

File Name : 14\_TOR\_PA 4\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:45 PM		
+0 mins.	<b>6</b>	0	<b>6</b>	<b>9</b>	<b>11</b>	<b>20</b>	0	12	12
+15 mins.	3	0	3	9	7	16	0	<b>18</b>	<b>18</b>
+30 mins.	1	0	1	5	2	7	0	10	10
+45 mins.	1	0	1	7	1	8	<b>2</b>	13	15
Total Volume	11	0	11	30	21	51	2	53	55
% App. Total	100	0		58.8	41.2		3.6	96.4	
PHF	.458	.000	.458	.833	.477	.638	.250	.736	.764

City of Torrance  
 N/S: PA 5  
 E/W: 195th Street  
 Weather: Clear

File Name : 15\_TOR\_PA 5\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

Start Time	PA 5 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	0	0	17	0	17	0	4	4	21
07:15 AM	0	0	0	22	0	22	2	3	5	27
07:30 AM	1	0	1	18	0	18	0	5	5	24
07:45 AM	0	0	0	37	0	37	0	4	4	41
Total	1	0	1	94	0	94	2	16	18	113
08:00 AM	1	0	1	27	0	27	0	3	3	31
08:15 AM	0	0	0	21	0	21	0	1	1	22
08:30 AM	0	0	0	20	0	20	0	5	5	25
08:45 AM	1	0	1	20	1	21	0	6	6	28
Total	2	0	2	88	1	89	0	15	15	106
Grand Total	3	0	3	182	1	183	2	31	33	219
Apprch %	100	0		99.5	0.5		6.1	93.9		
Total %	1.4	0	1.4	83.1	0.5	83.6	0.9	14.2	15.1	

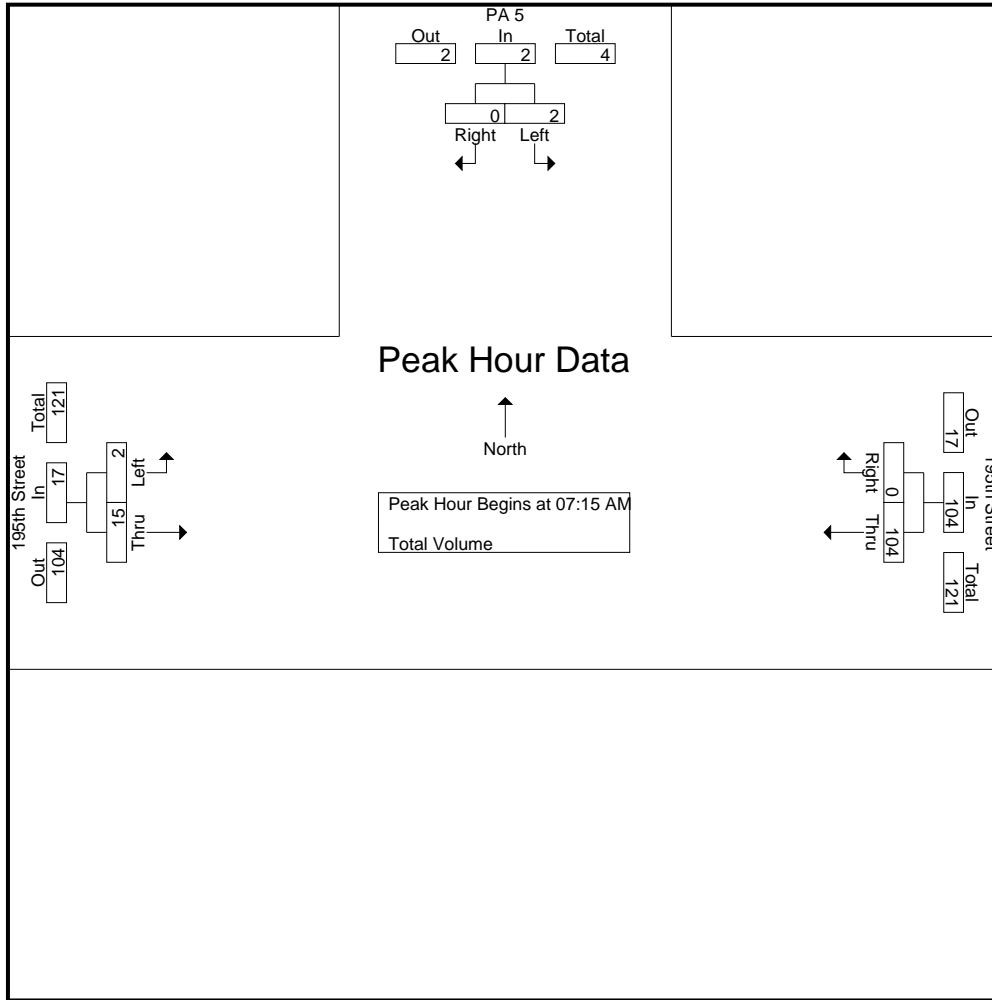
Start Time	PA 5 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:15 AM	0	0	0	22	0	22	2	3	5	27
07:30 AM	1	0	1	18	0	18	0	5	5	24
07:45 AM	0	0	0	37	0	37	0	4	4	41
08:00 AM	1	0	1	27	0	27	0	3	3	31
Total Volume	2	0	2	104	0	104	2	15	17	123
% App. Total	100	0		100	0		11.8	88.2		
PHF	.500	.000	.500	.703	.000	.703	.250	.750	.850	.750

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

City of Torrance  
 N/S: PA 5  
 E/W: 195th Street  
 Weather: Clear

File Name : 15\_TOR\_PA 5\_195th AM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:15 AM			07:45 AM			07:00 AM		
+0 mins.	0	0	0	<b>37</b>	0	<b>37</b>	0	4	4
+15 mins.	1	0	1	27	0	27	2	3	5
+30 mins.	0	0	0	21	0	21	0	5	5
+45 mins.	1	0	1	20	0	20	0	4	4
Total Volume	2	0	2	105	0	105	2	16	18
% App. Total	100	0	100	100	0	100	11.1	88.9	
PHF	.500	.000	.500	.709	.000	.709	.250	.800	.900

City of Torrance  
 N/S: PA 5  
 E/W: 195th Street  
 Weather: Clear

File Name : 15\_TOR\_PA 5\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 1

Groups Printed- Total Volume

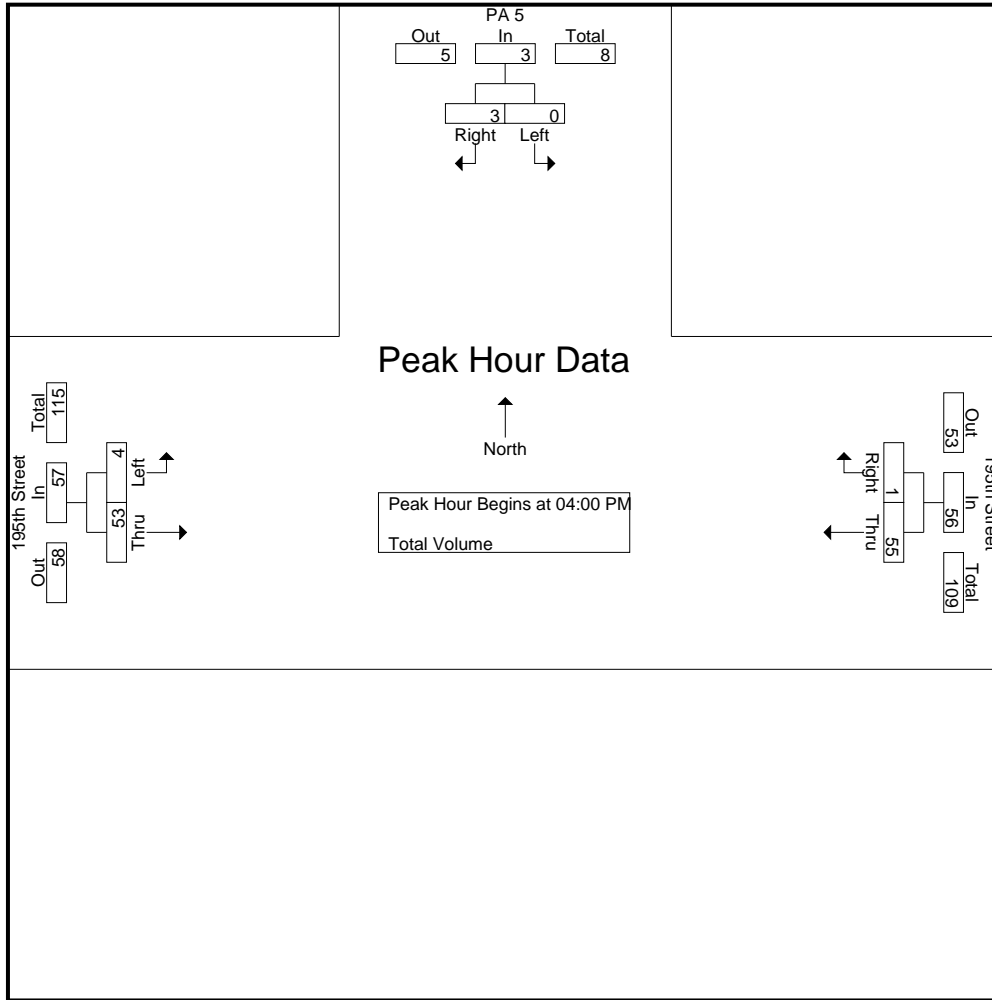
Start Time	PA 5 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	0	0	28	1	29	2	18	20	49
04:15 PM	0	1	1	16	0	16	1	8	9	26
04:30 PM	0	0	0	5	0	5	0	14	14	19
04:45 PM	0	2	2	6	0	6	1	13	14	22
Total	0	3	3	55	1	56	4	53	57	116
05:00 PM	0	0	0	4	0	4	0	20	20	24
05:15 PM	1	0	1	4	1	5	0	11	11	17
05:30 PM	0	2	2	6	0	6	0	14	14	22
05:45 PM	0	0	0	3	0	3	0	7	7	10
Total	1	2	3	17	1	18	0	52	52	73
Grand Total	1	5	6	72	2	74	4	105	109	189
Apprch %	16.7	83.3		97.3	2.7		3.7	96.3		
Total %	0.5	2.6	3.2	38.1	1.1	39.2	2.1	55.6	57.7	

Start Time	PA 5 Southbound			195th Street Westbound			195th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	0	0	28	1	29	2	18	20	49
04:15 PM	0	1	1	16	0	16	1	8	9	26
04:30 PM	0	0	0	5	0	5	0	14	14	19
04:45 PM	0	2	2	6	0	6	1	13	14	22
Total Volume	0	3	3	55	1	56	4	53	57	116
% App. Total	0	100		98.2	1.8		7	93		
PHF	.000	.375	.375	.491	.250	.483	.500	.736	.713	.592

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 04:00 PM

City of Torrance  
 N/S: PA 5  
 E/W: 195th Street  
 Weather: Clear

File Name : 15\_TOR\_PA 5\_195th PM  
 Site Code : 10521445  
 Start Date : 8/31/2021  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			04:30 PM		
+0 mins.	0	2	2	28	1	29	0	14	14
+15 mins.	0	0	0	16	0	16	1	13	14
+30 mins.	1	0	1	5	0	5	0	20	20
+45 mins.	0	2	2	6	0	6	0	11	11
Total Volume	1	4	5	55	1	56	1	58	59
% App. Total	20	80		98.2	1.8		1.7	98.3	
PHF	.250	.500	.625	.491	.250	.483	.250	.725	.738

## **Appendix C**

MUTCD Signal Warrant Analysis Worksheets

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - AM**

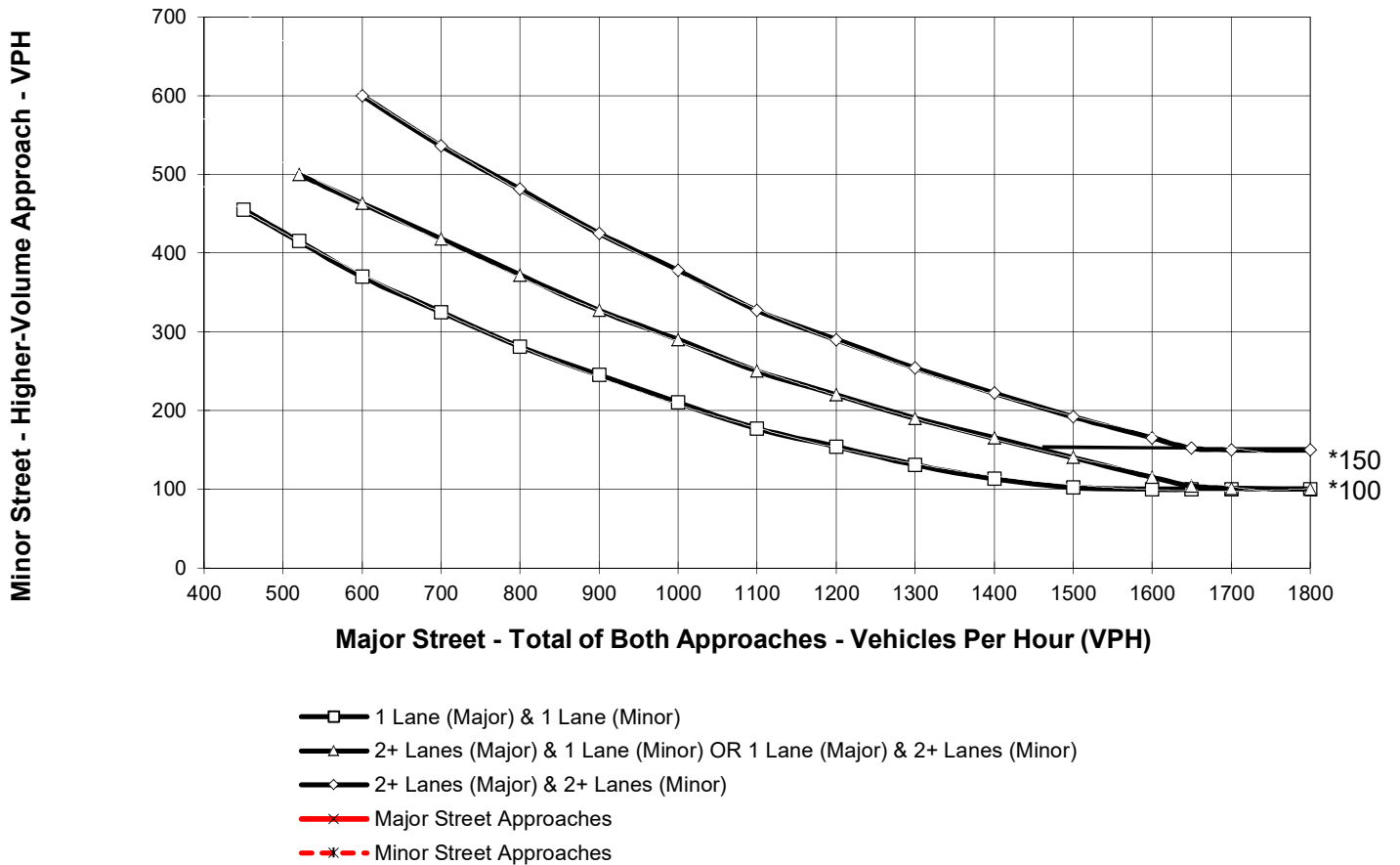
Major Street Name = **195th St**

Total of Both Approaches (VPH) = **105**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Gramercy PI**

High Volume Approach (VPH) = **21**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.



## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - PM**

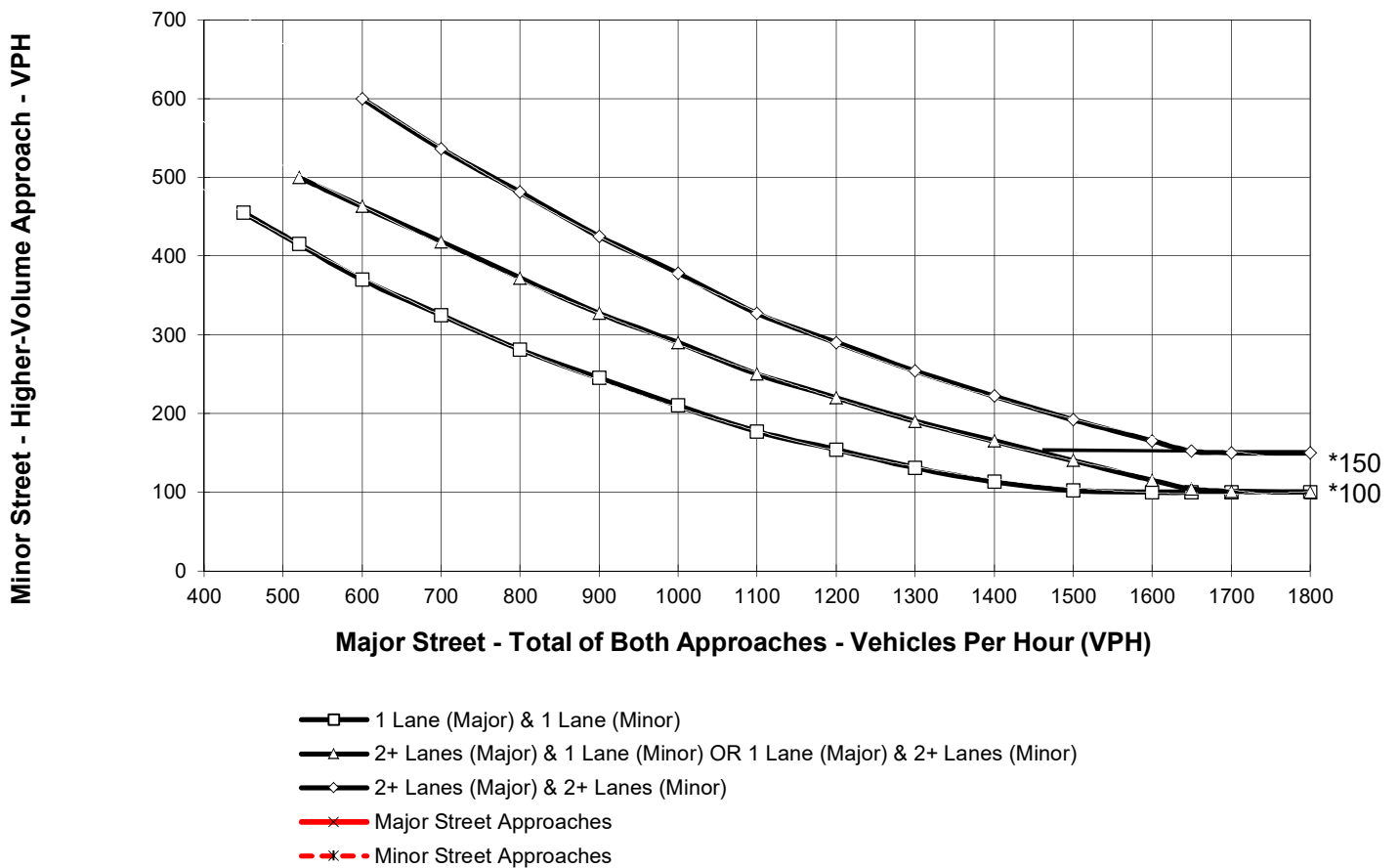
Major Street Name = **195th St**

Total of Both Approaches (VPH) = **58**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Gramercy Pl**

High Volume Approach (VPH) = **39**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing - AM**

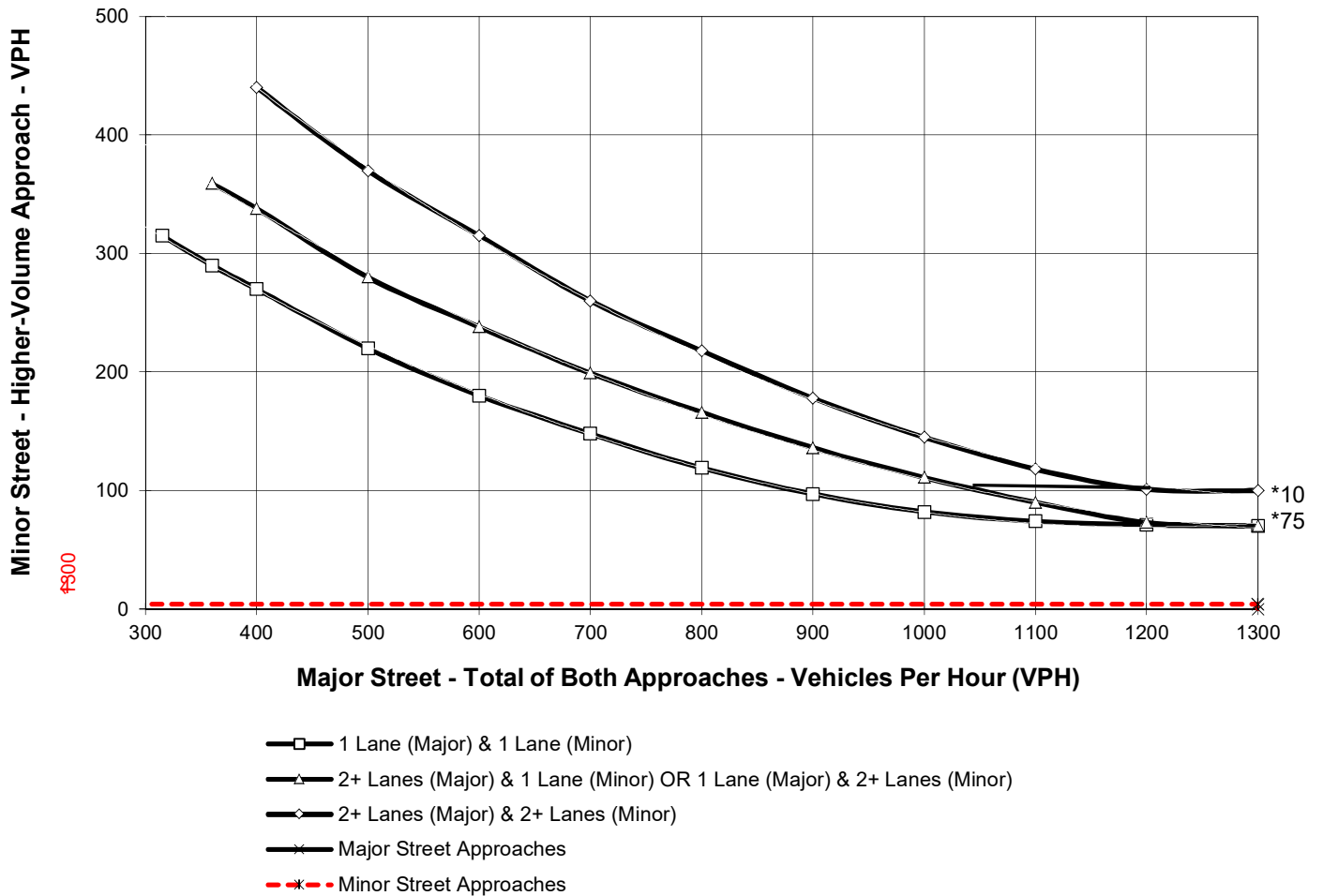
Major Street Name = **190th Street**

Total of Both Approaches (VPH) = **2394**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 1**

High Volume Approach (VPH) = **4**  
Number of Approach Lanes Minor Street = **2**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing - PM**

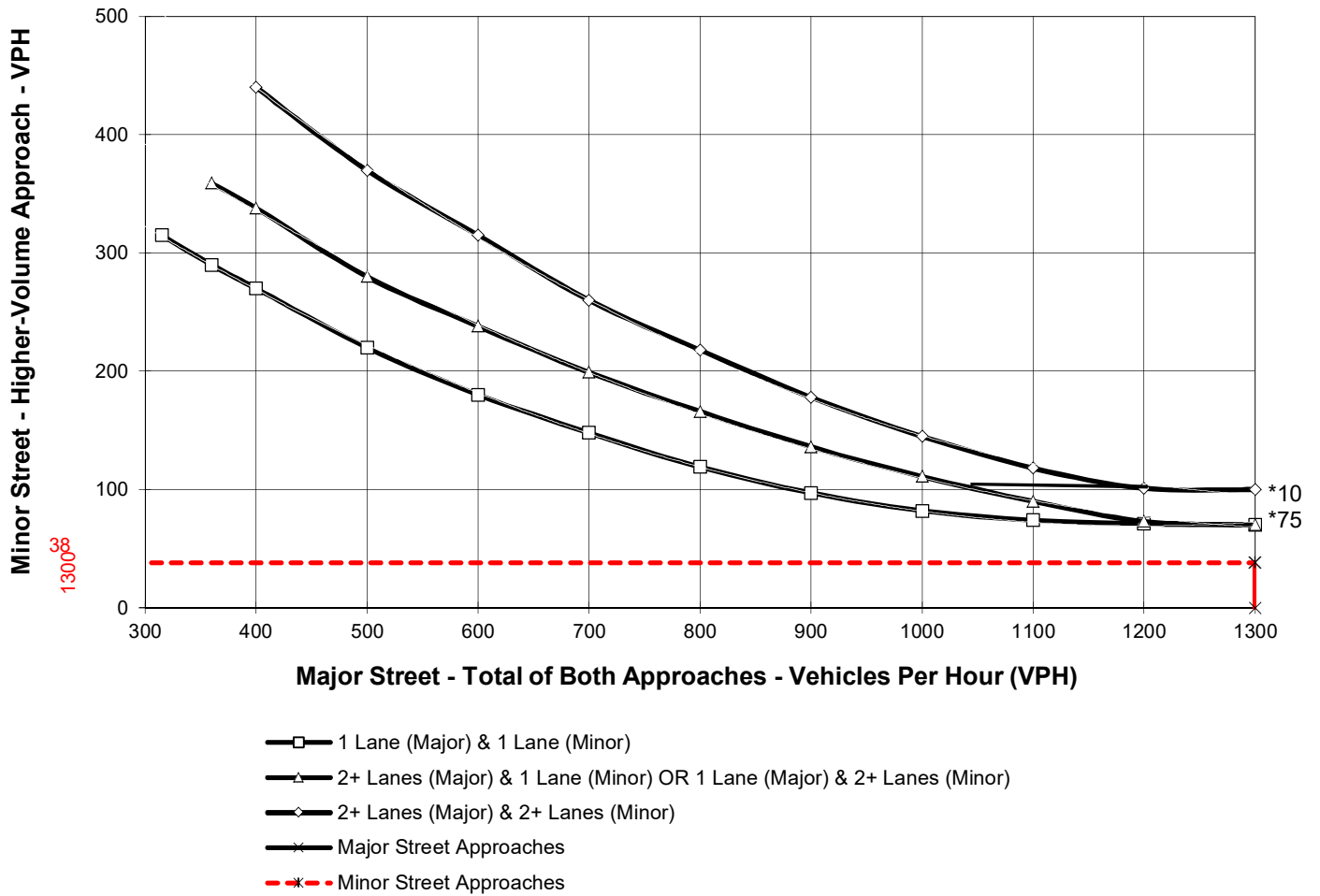
Major Street Name = **190th Street**

Total of Both Approaches (VPH) = **2533**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 1**

High Volume Approach (VPH) = **38**  
Number of Approach Lanes Minor Street = **2**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing - AM**

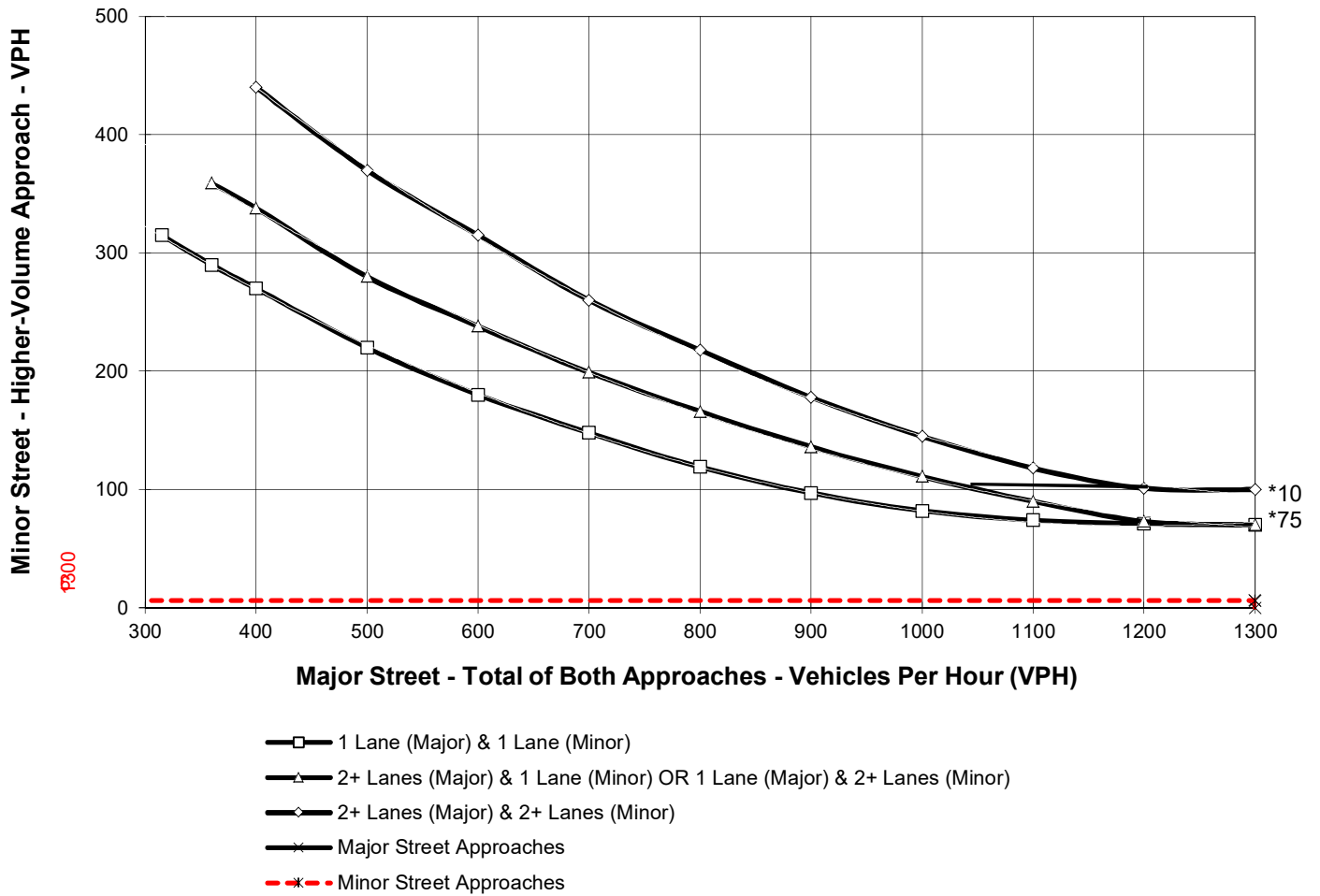
Major Street Name = **Western Avenue**

Total of Both Approaches (VPH) = **3038**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 2**

High Volume Approach (VPH) = **6**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing - PM**

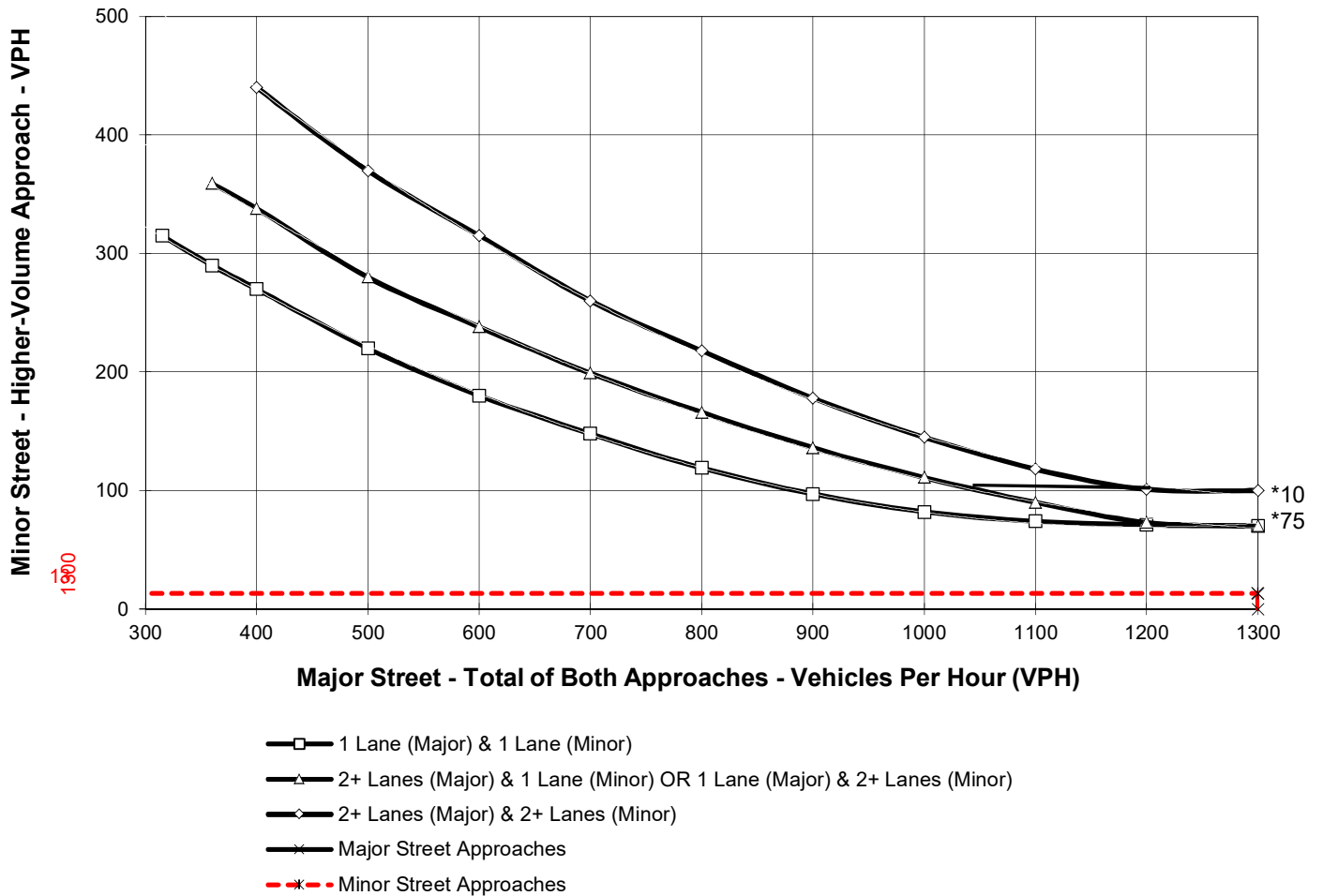
Major Street Name = **Western Avenue**

Total of Both Approaches (VPH) = **3031**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 2**

High Volume Approach (VPH) = **13**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - AM**

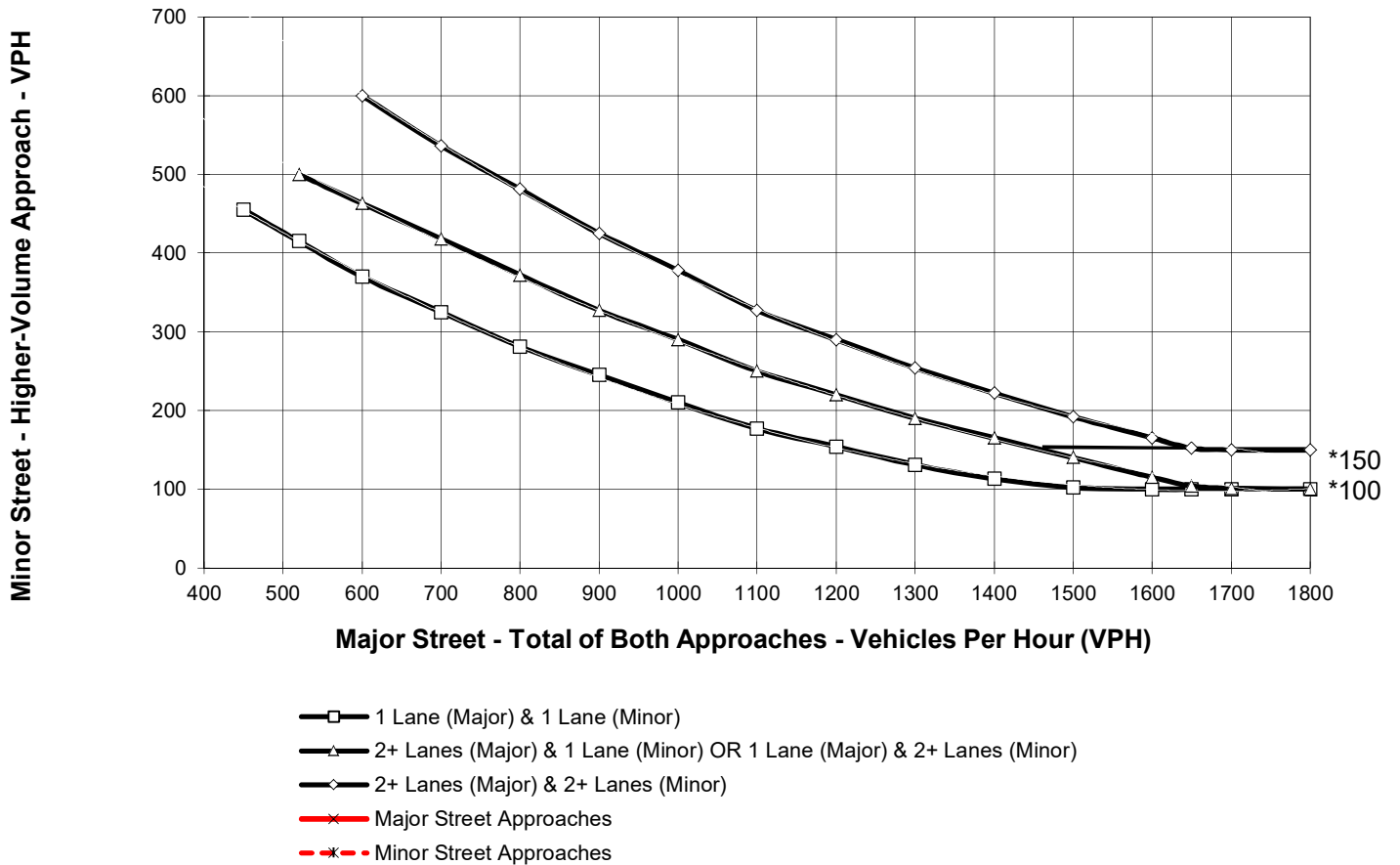
Major Street Name = **Gramercy Place**

Total of Both Approaches (VPH) = **44**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 3**

High Volume Approach (VPH) = **1**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - PM**

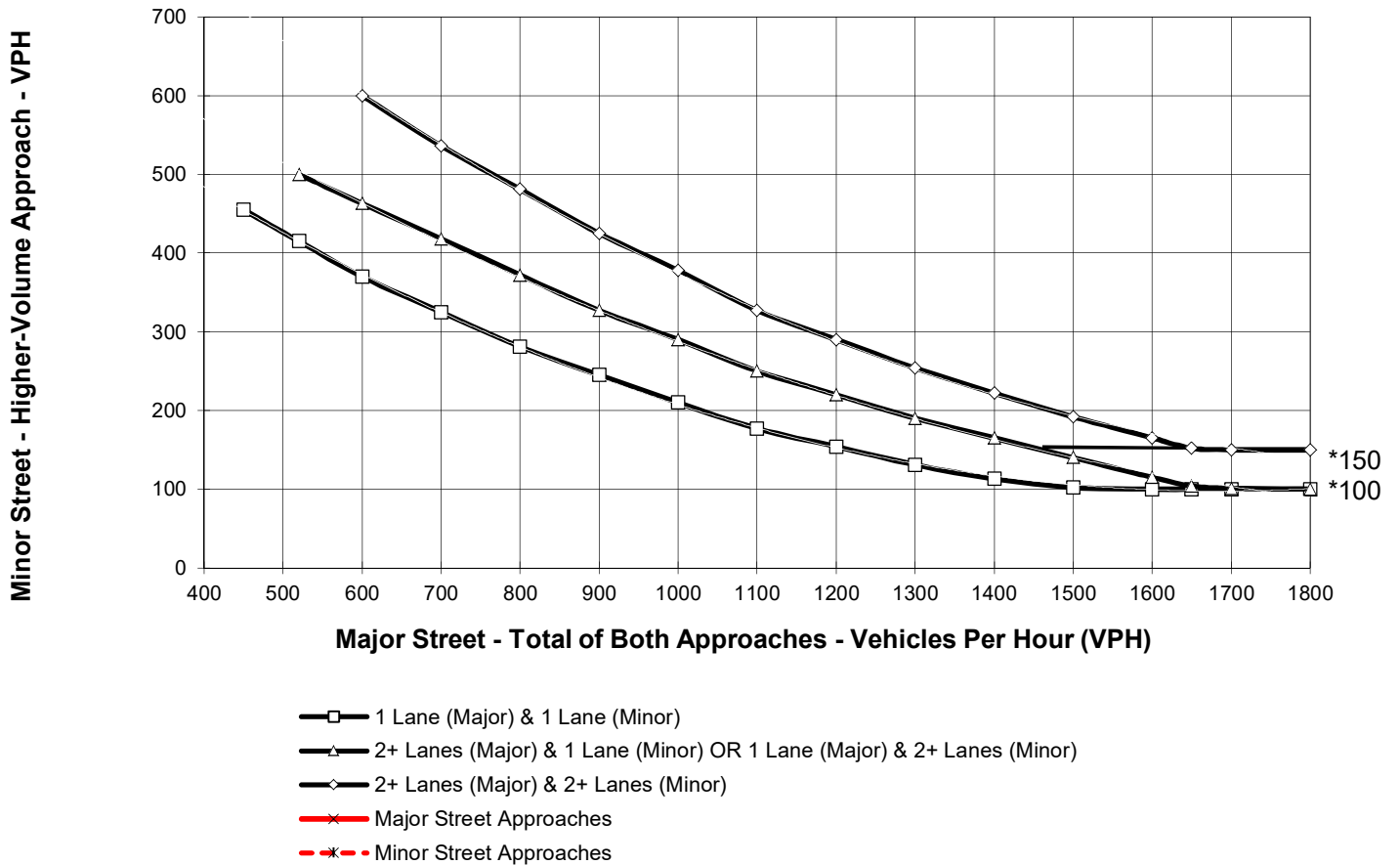
Major Street Name = **Gramercy Place**

Total of Both Approaches (VPH) = **56**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 3**

High Volume Approach (VPH) = **1**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - AM**

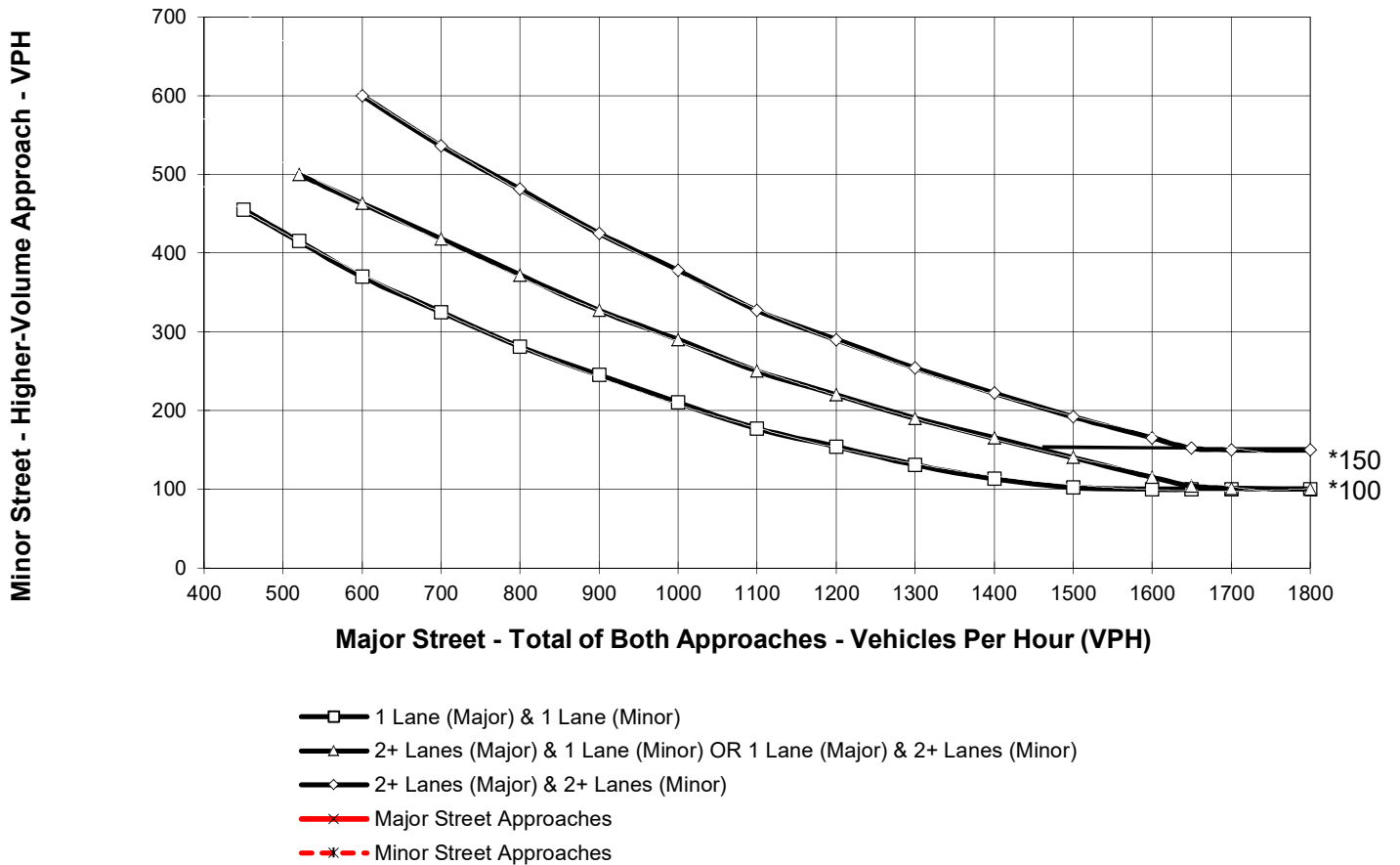
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **122**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 4**

High Volume Approach (VPH) = **6**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.



## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - PM**

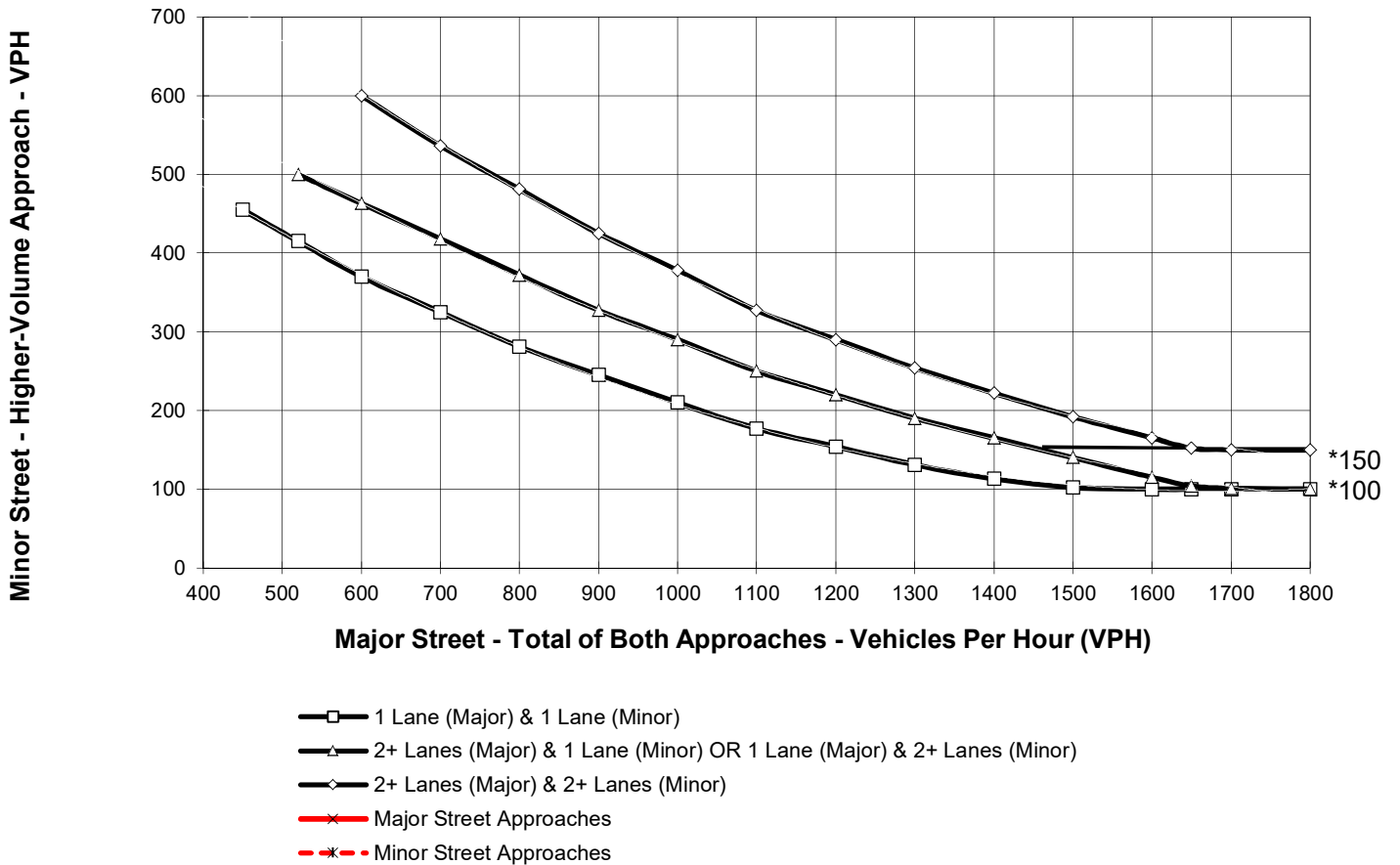
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **97**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 4**

High Volume Approach (VPH) = **11**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - AM**

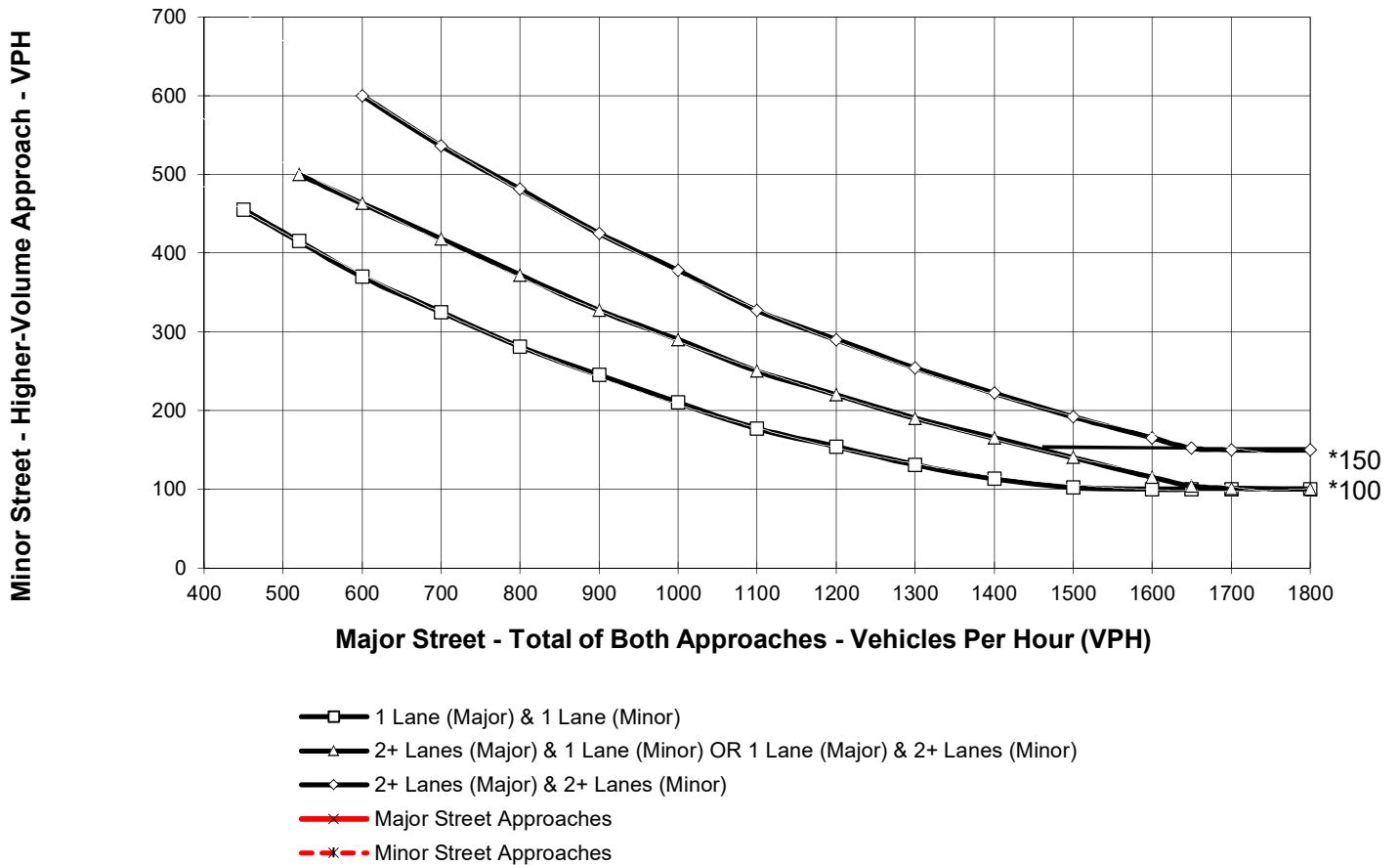
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **121**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 5**

High Volume Approach (VPH) = **2**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Existing - AM**

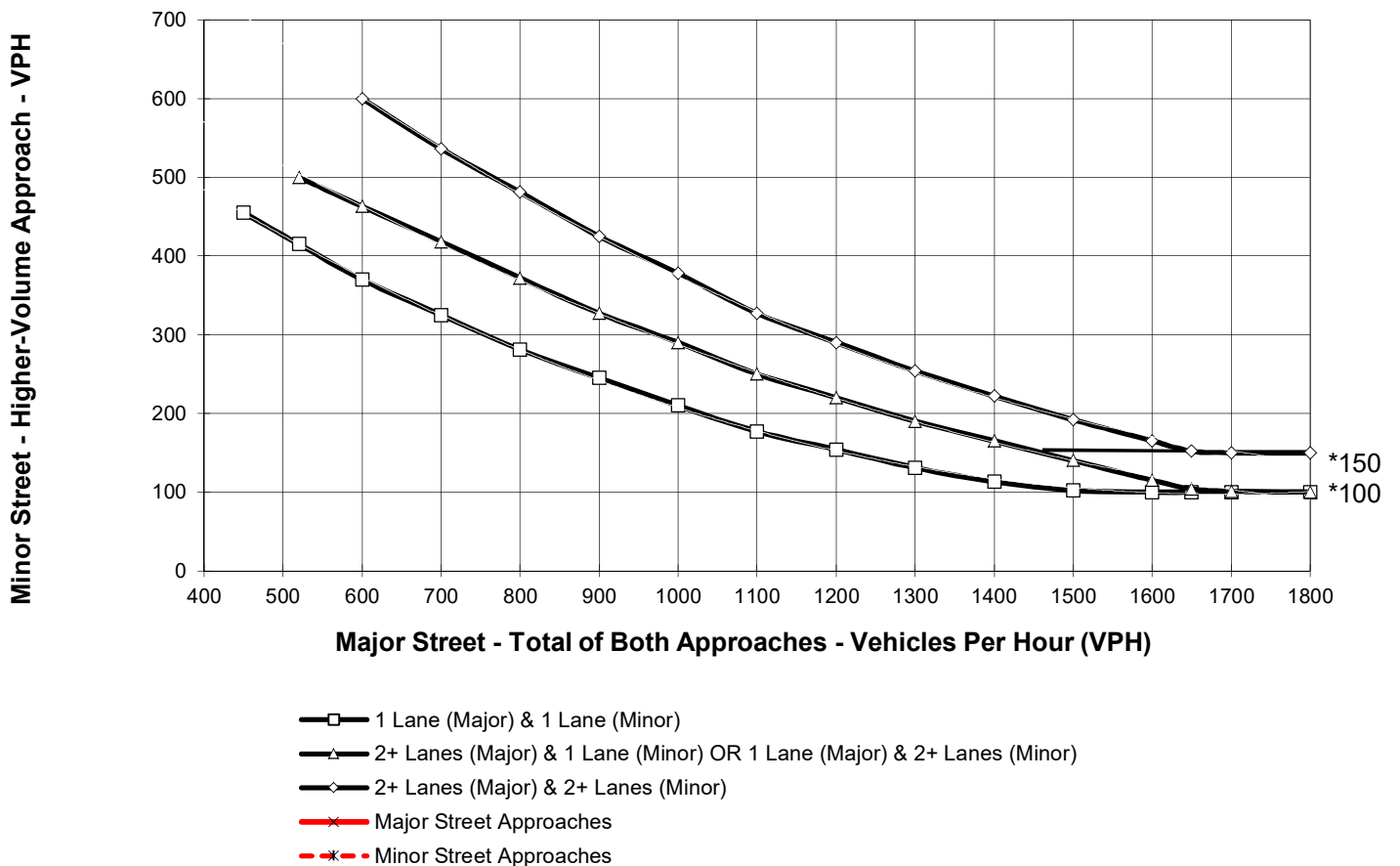
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **113**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 5**

High Volume Approach (VPH) = **3**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - AM**

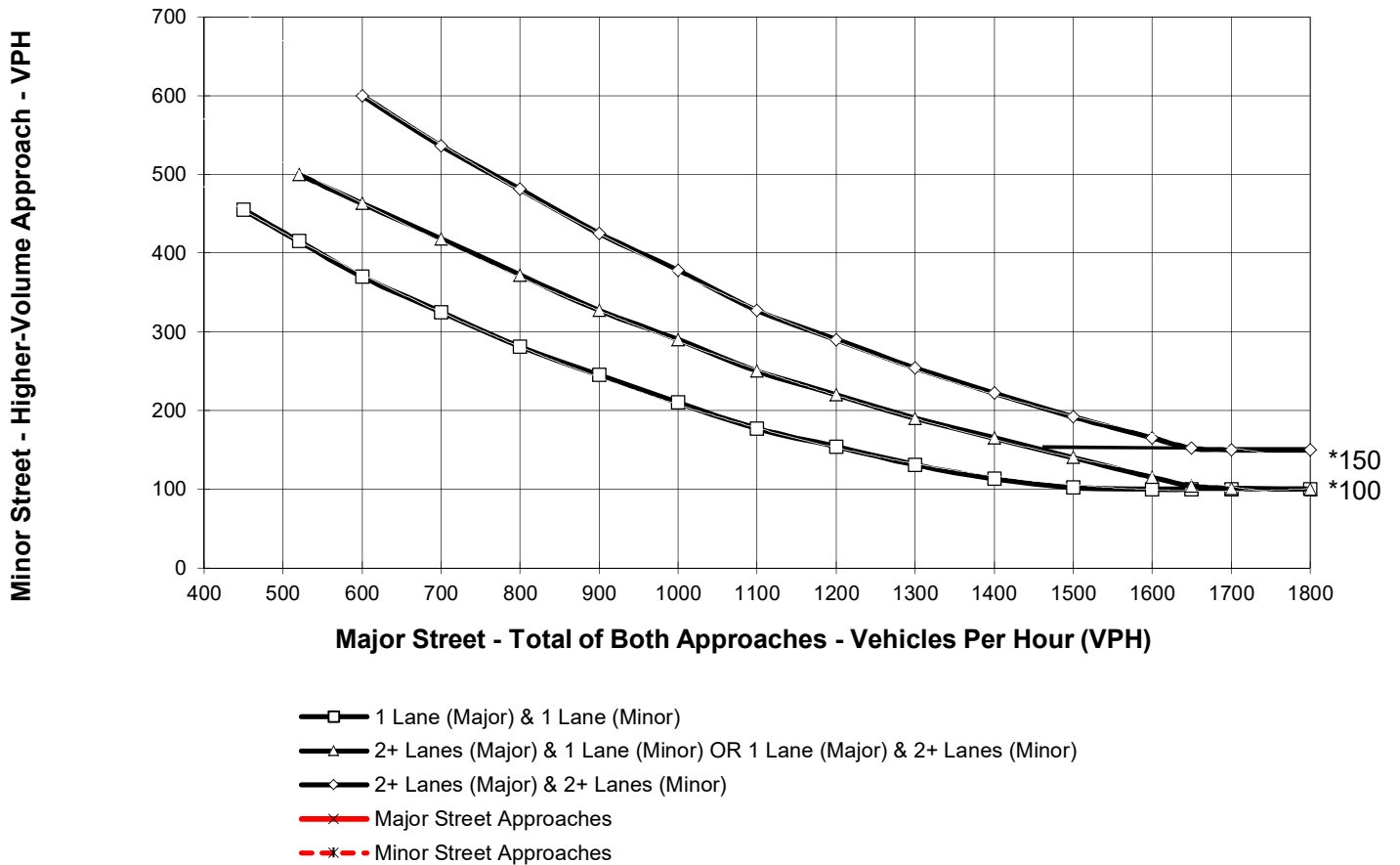
Major Street Name = **195th St**

Total of Both Approaches (VPH) = **105**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Gramercy PI**

High Volume Approach (VPH) = **21**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - PM**

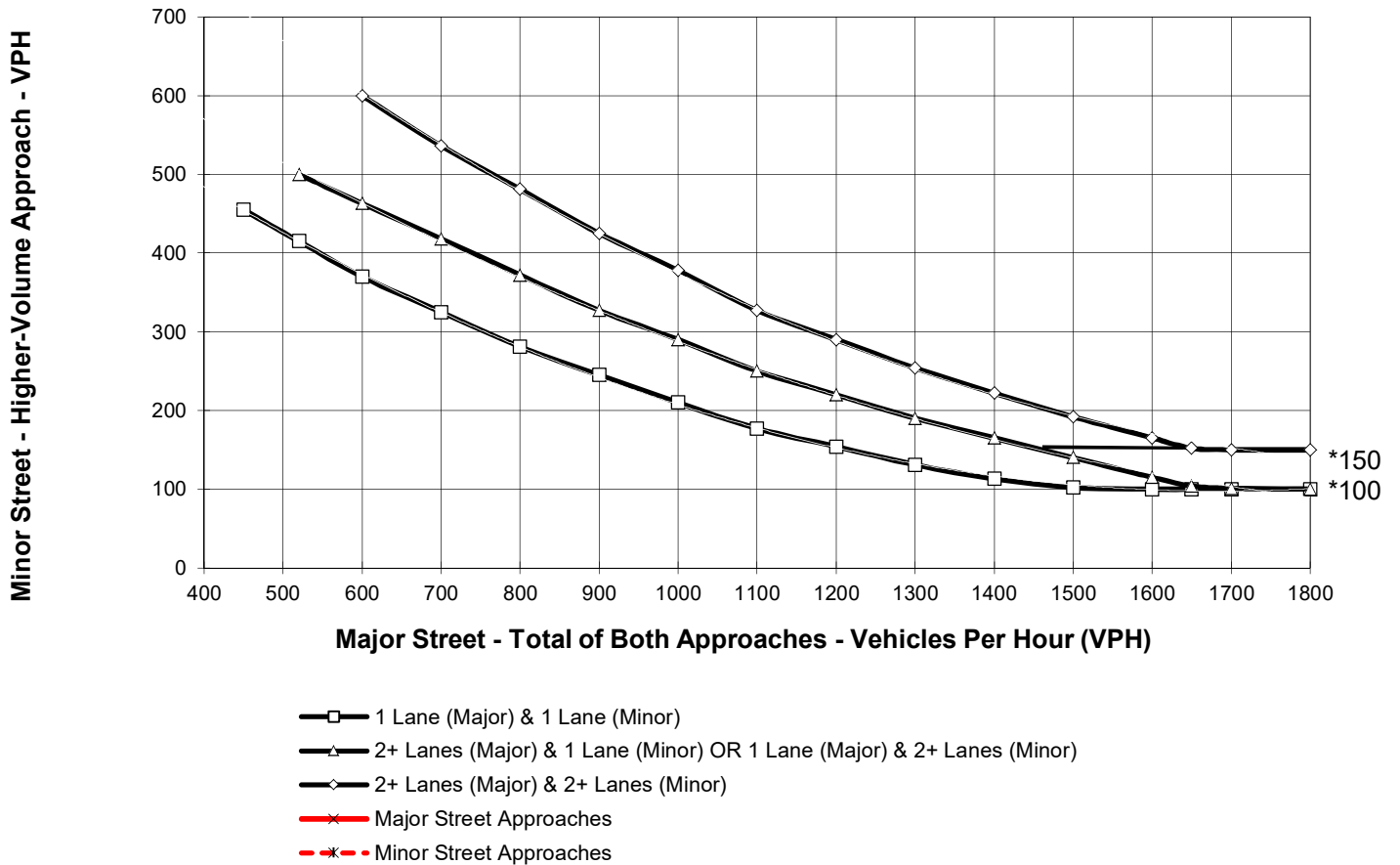
Major Street Name = **195th St**

Total of Both Approaches (VPH) = **58**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Gramercy PI**

High Volume Approach (VPH) = **39**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year Without Project - AM**

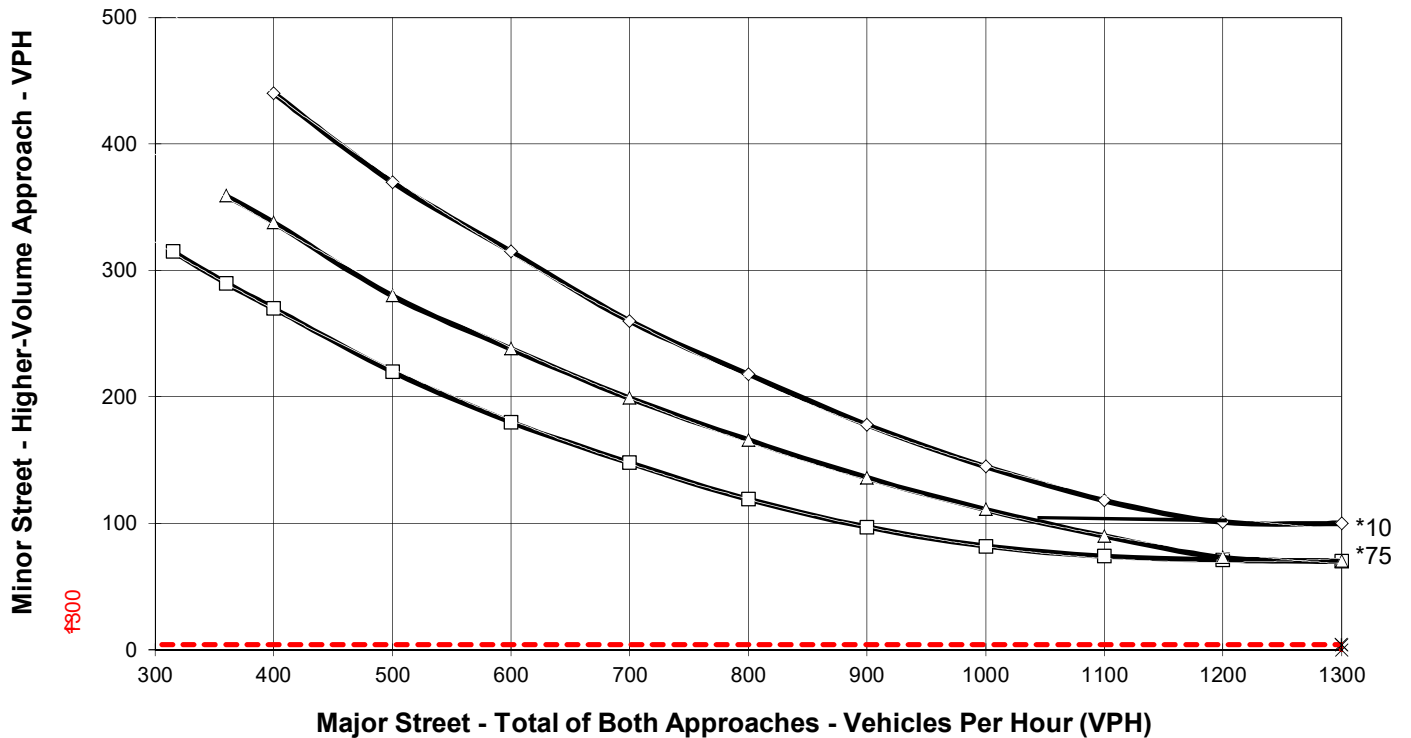
Major Street Name = **190th Street**

Total of Both Approaches (VPH) = **2418**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 1**

High Volume Approach (VPH) = **4**  
Number of Approach Lanes Minor Street = **2**

### SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- ×— Major Street Approaches
- - - \* Minor Street Approaches

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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year Without Project - PM**

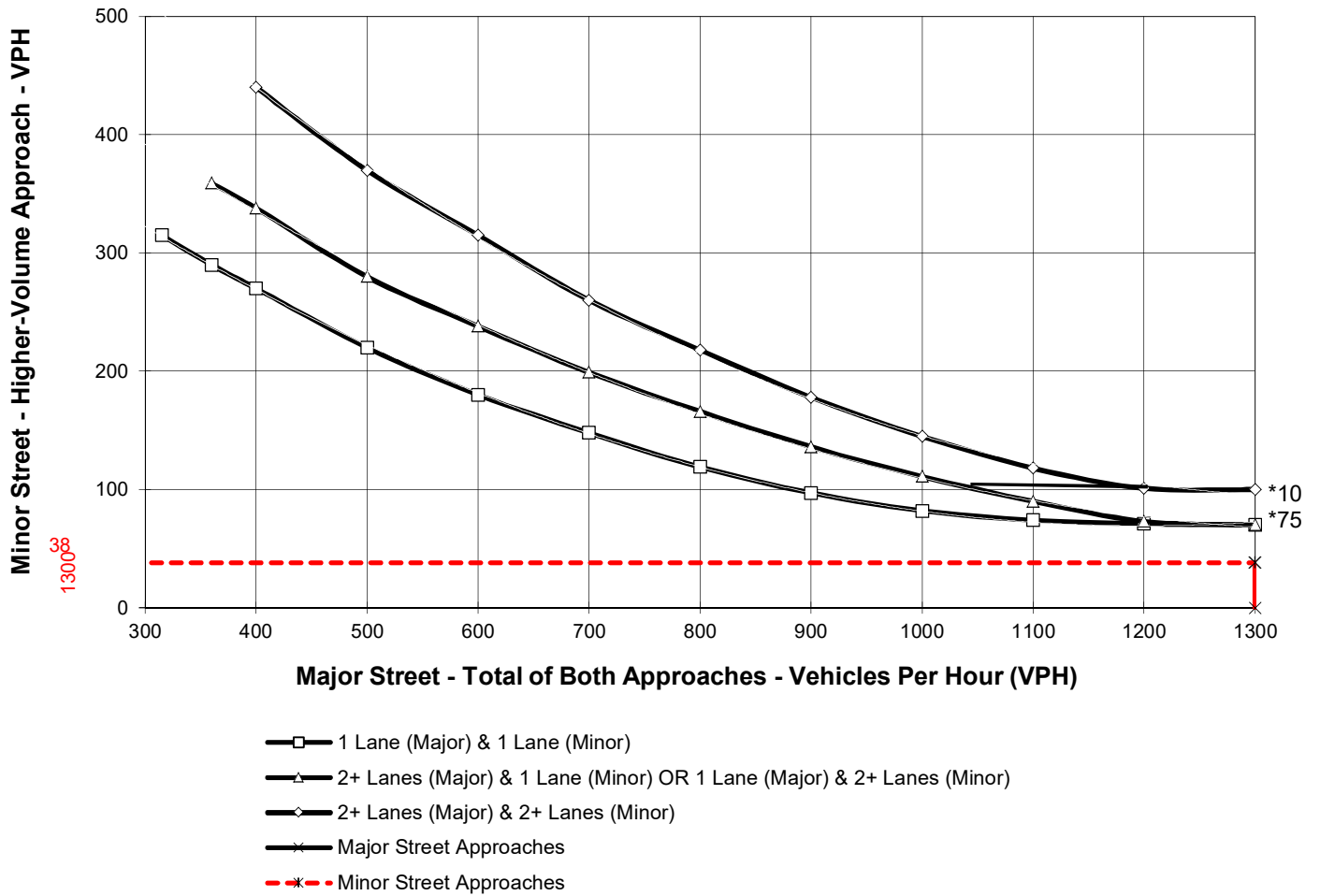
Major Street Name = **190th Street**

Total of Both Approaches (VPH) = **2558**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 1**

High Volume Approach (VPH) = **38**  
Number of Approach Lanes Minor Street = **2**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year Without Project - AM**

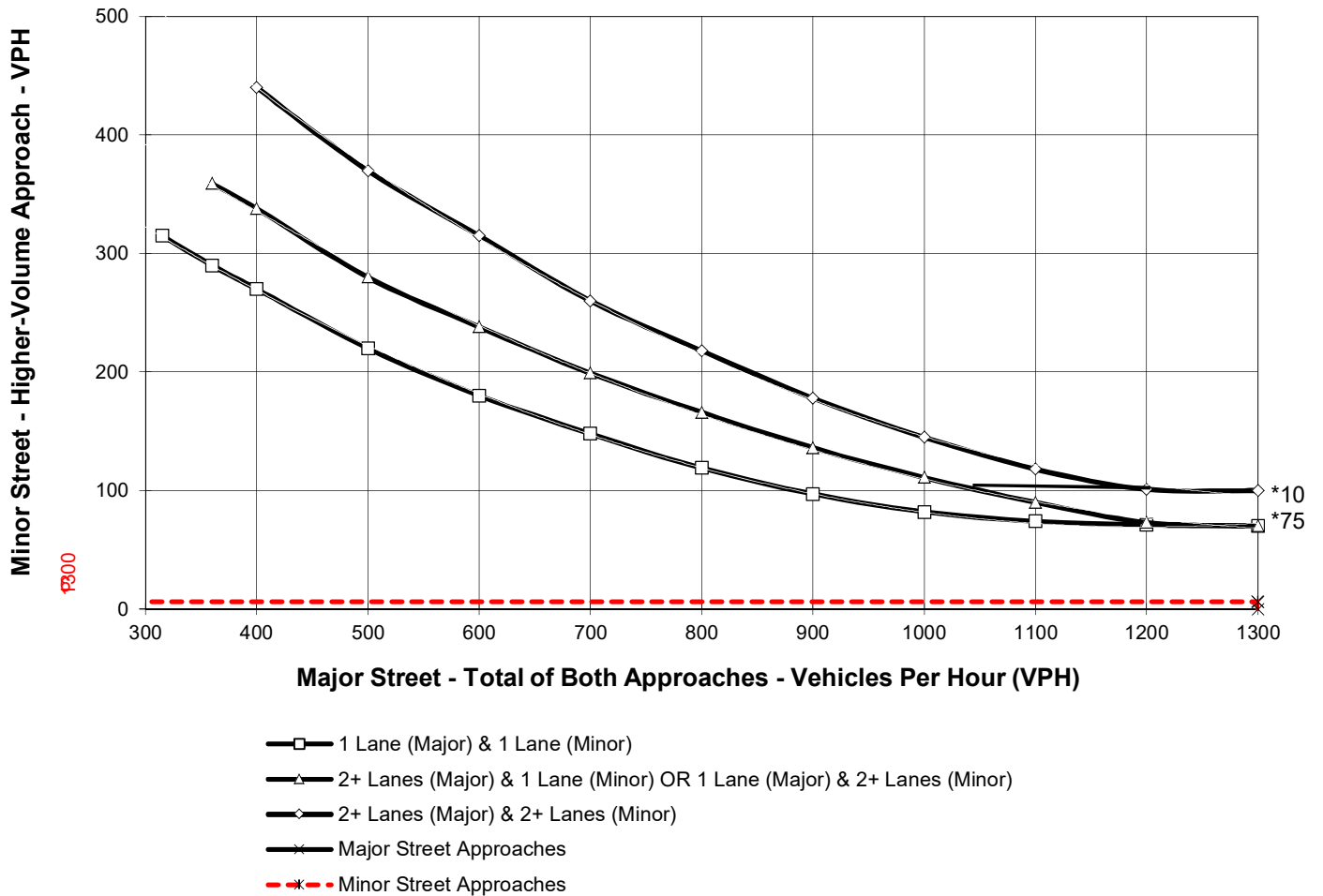
Major Street Name = **Western Avenue**

Total of Both Approaches (VPH) = **3068**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 2**

High Volume Approach (VPH) = **6**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



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



## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year Without Project - PM**

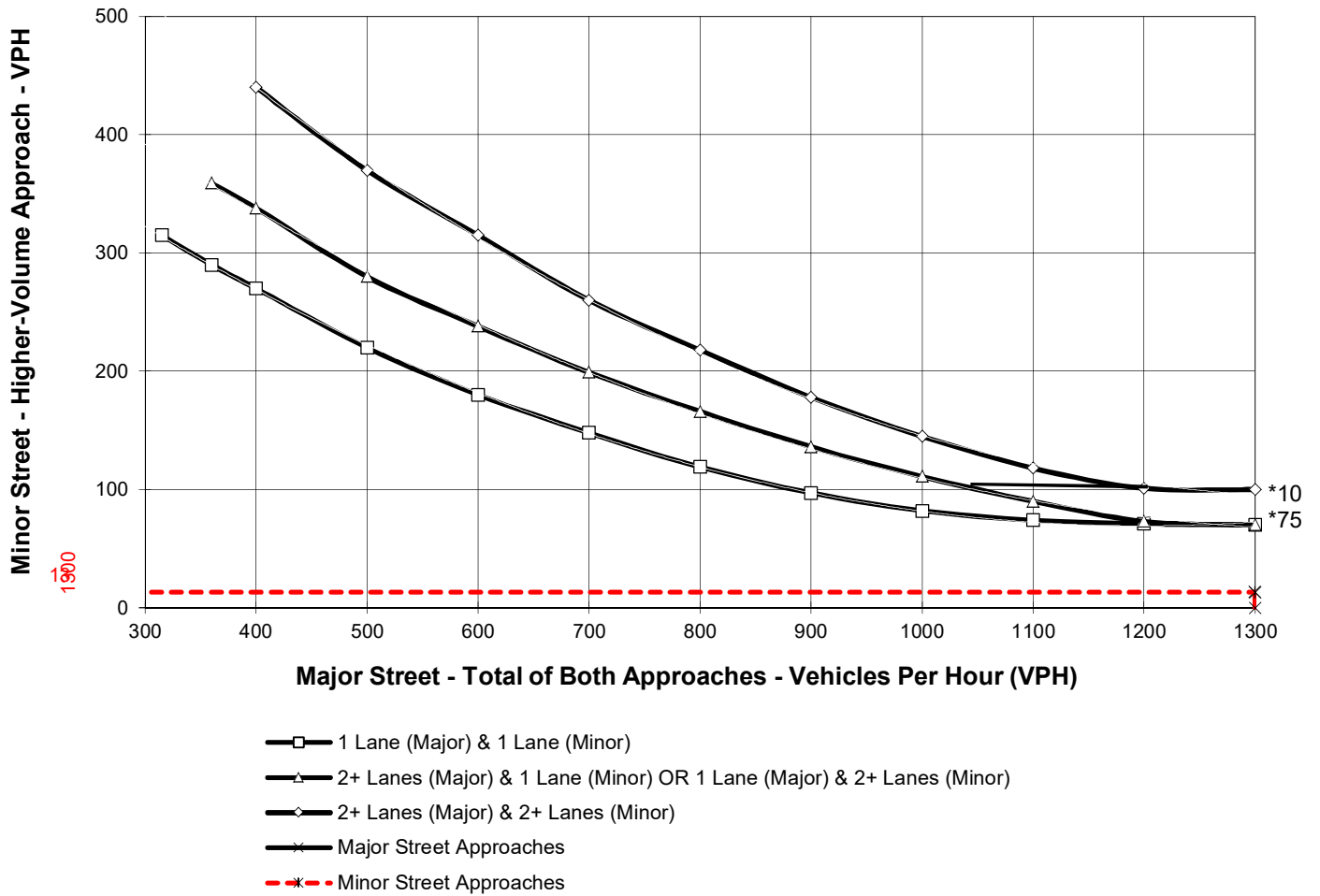
Major Street Name = **Western Avenue**

Total of Both Approaches (VPH) = **3061**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 2**

High Volume Approach (VPH) = **13**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - AM**

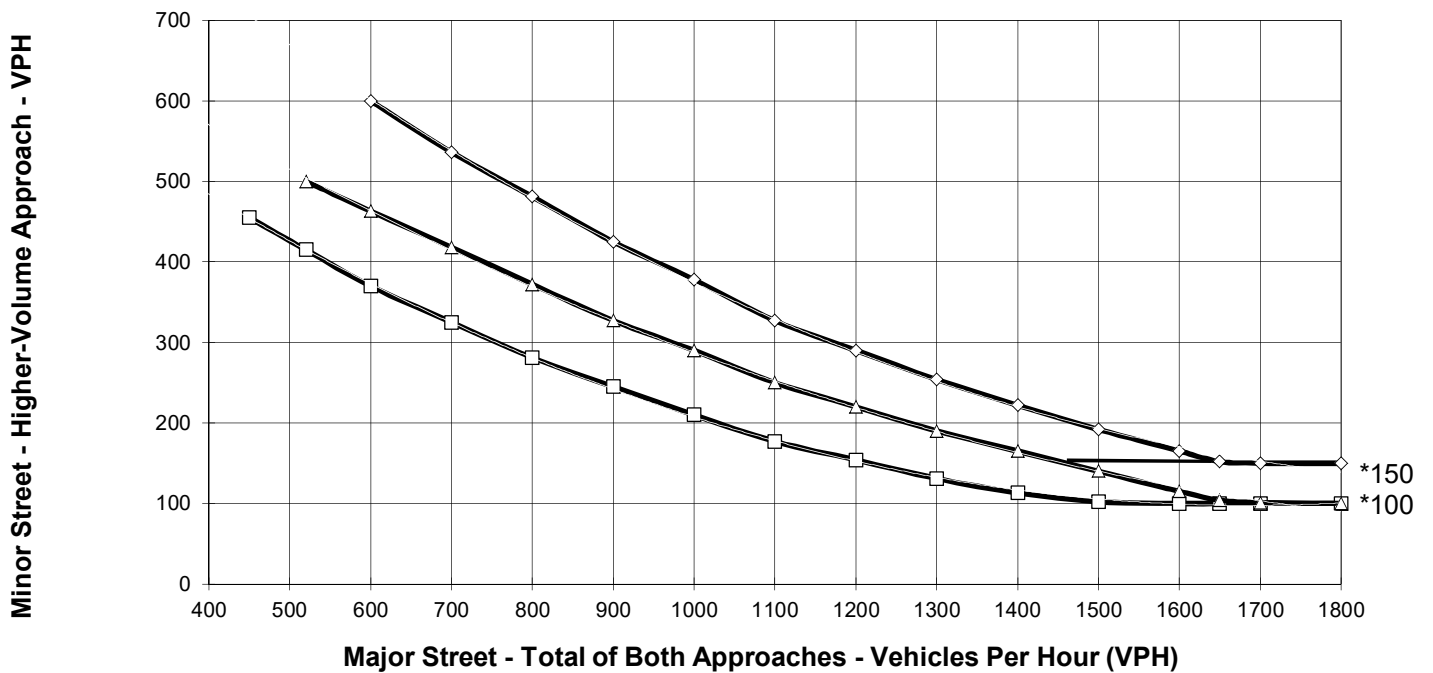
Major Street Name = **Gramercy Place**

Total of Both Approaches (VPH) = **44**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 3**

High Volume Approach (VPH) = **1**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - PM**

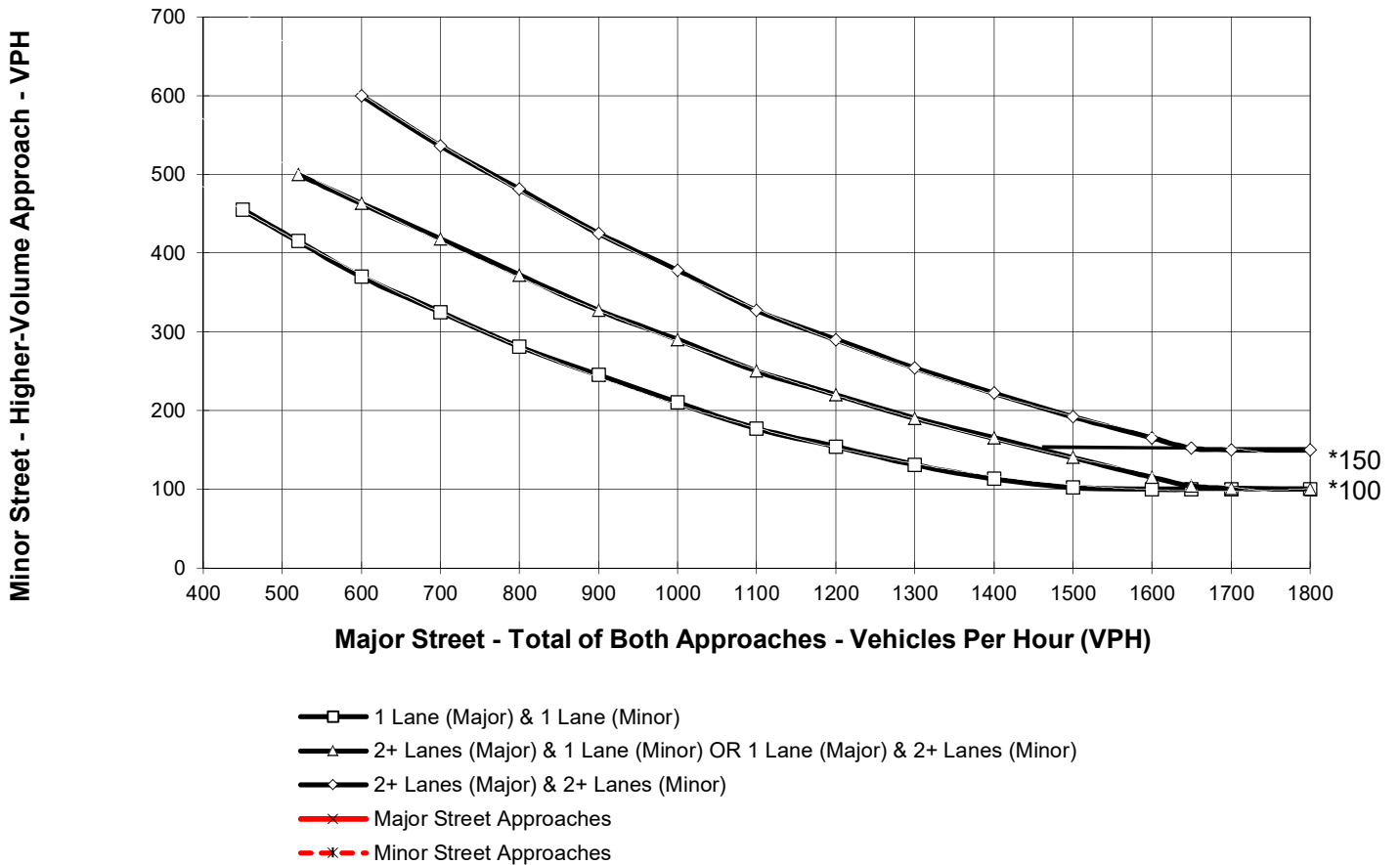
Major Street Name = **Gramercy Place**

Total of Both Approaches (VPH) = **56**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 3**

High Volume Approach (VPH) = **1**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - AM**

Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **123**

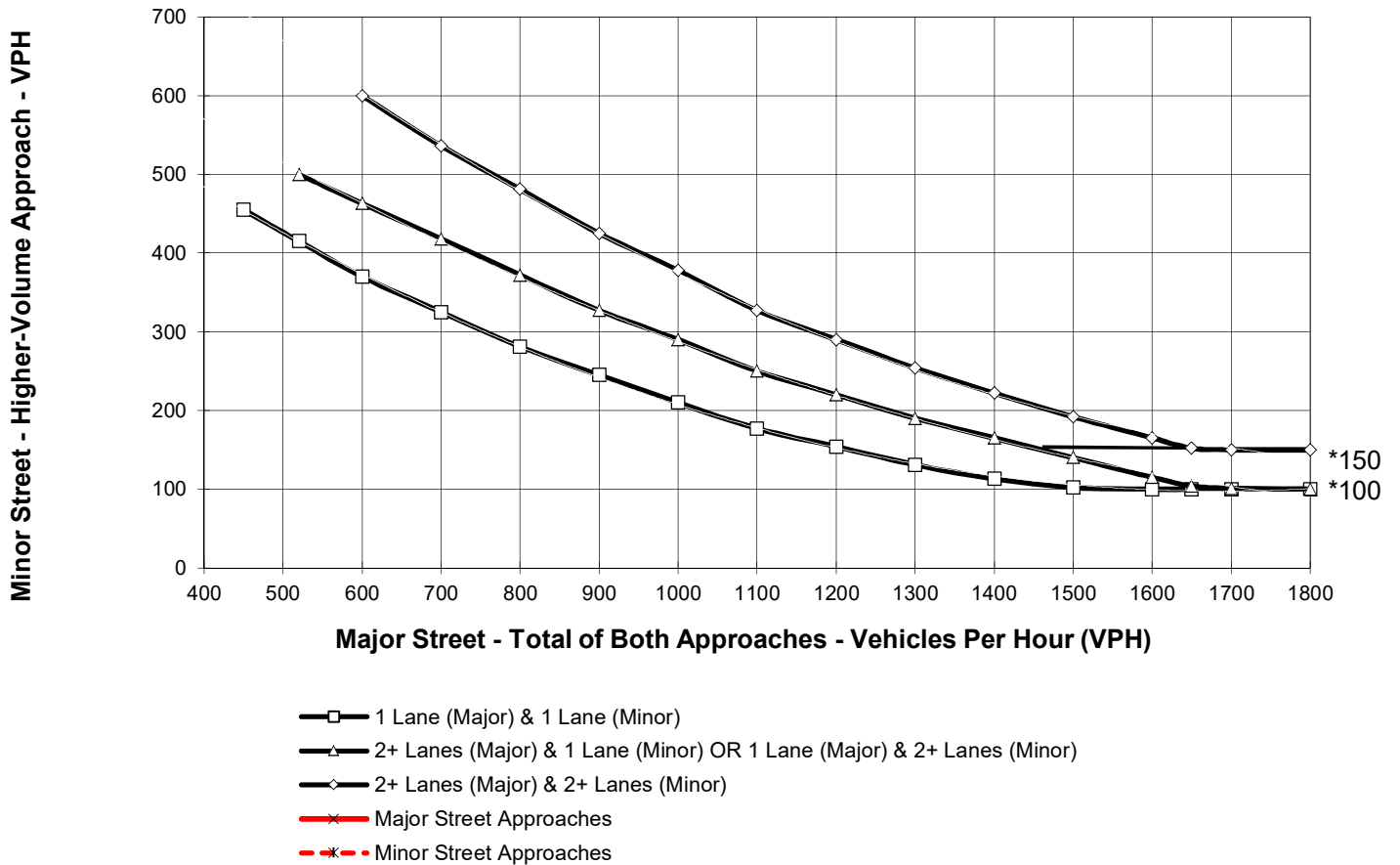
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 4**

High Volume Approach (VPH) = **6**

Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - PM**

Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **97**

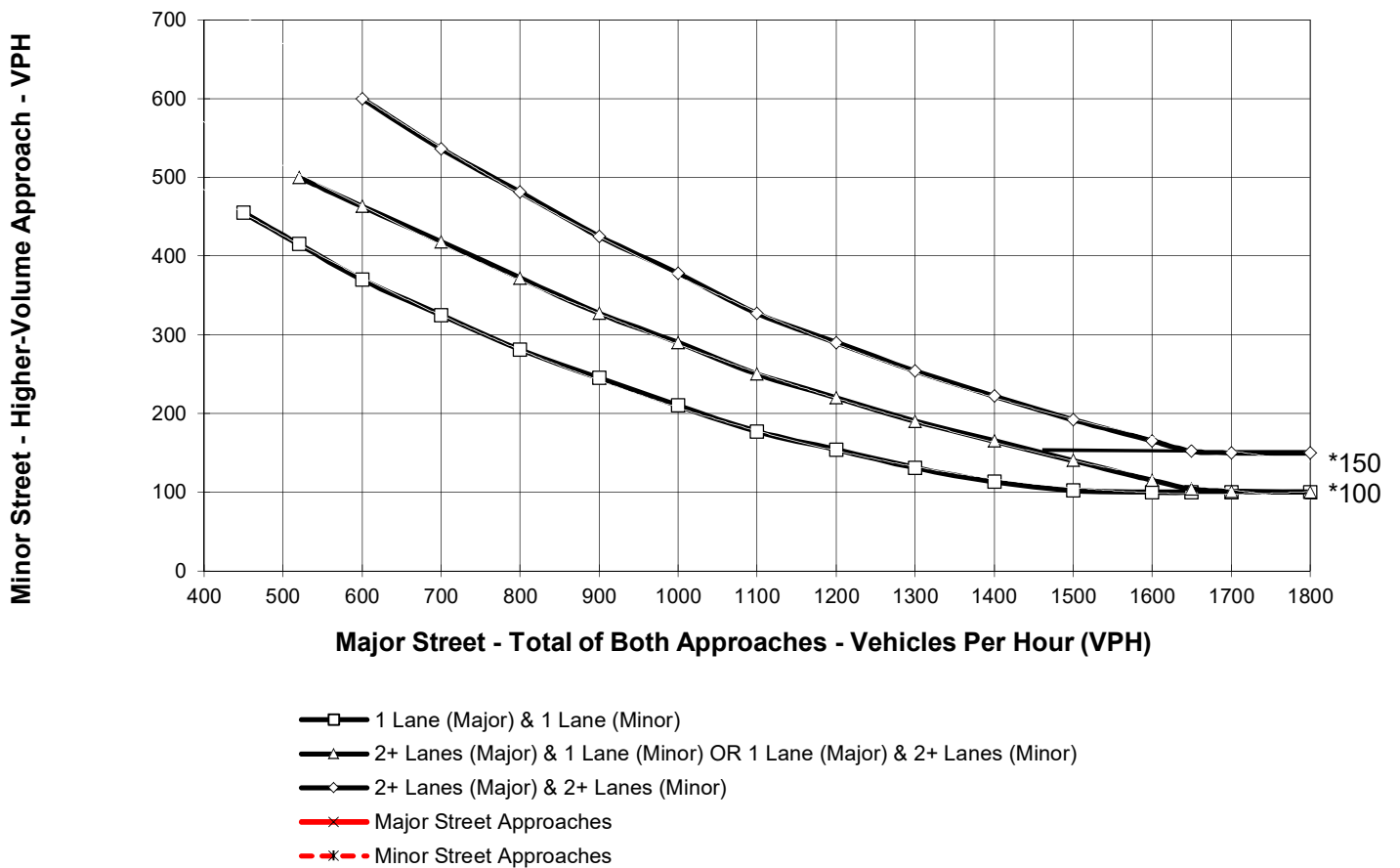
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 4**

High Volume Approach (VPH) = **11**

Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - AM**

Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **122**

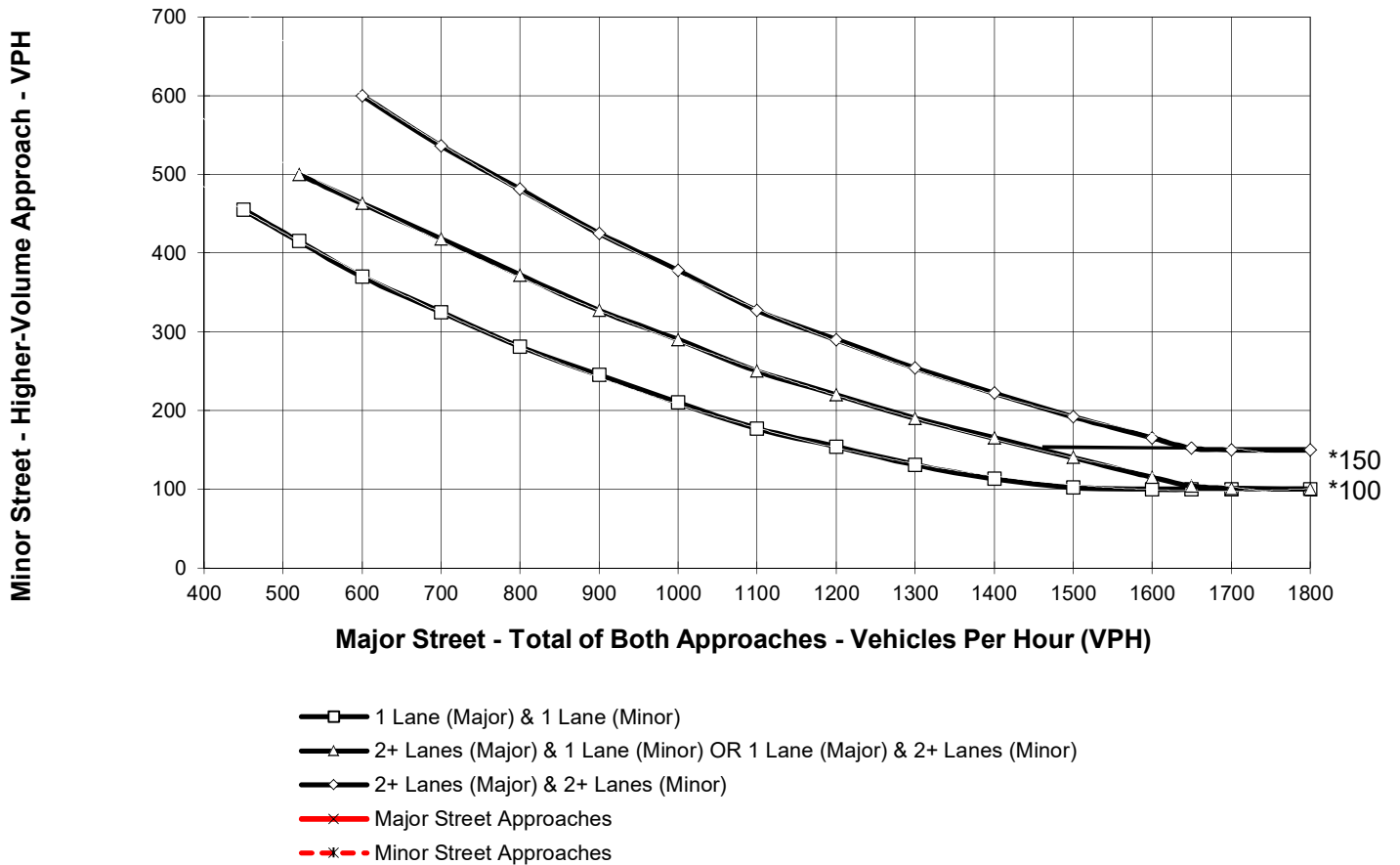
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 5**

High Volume Approach (VPH) = **2**

Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year Without Project - AM**

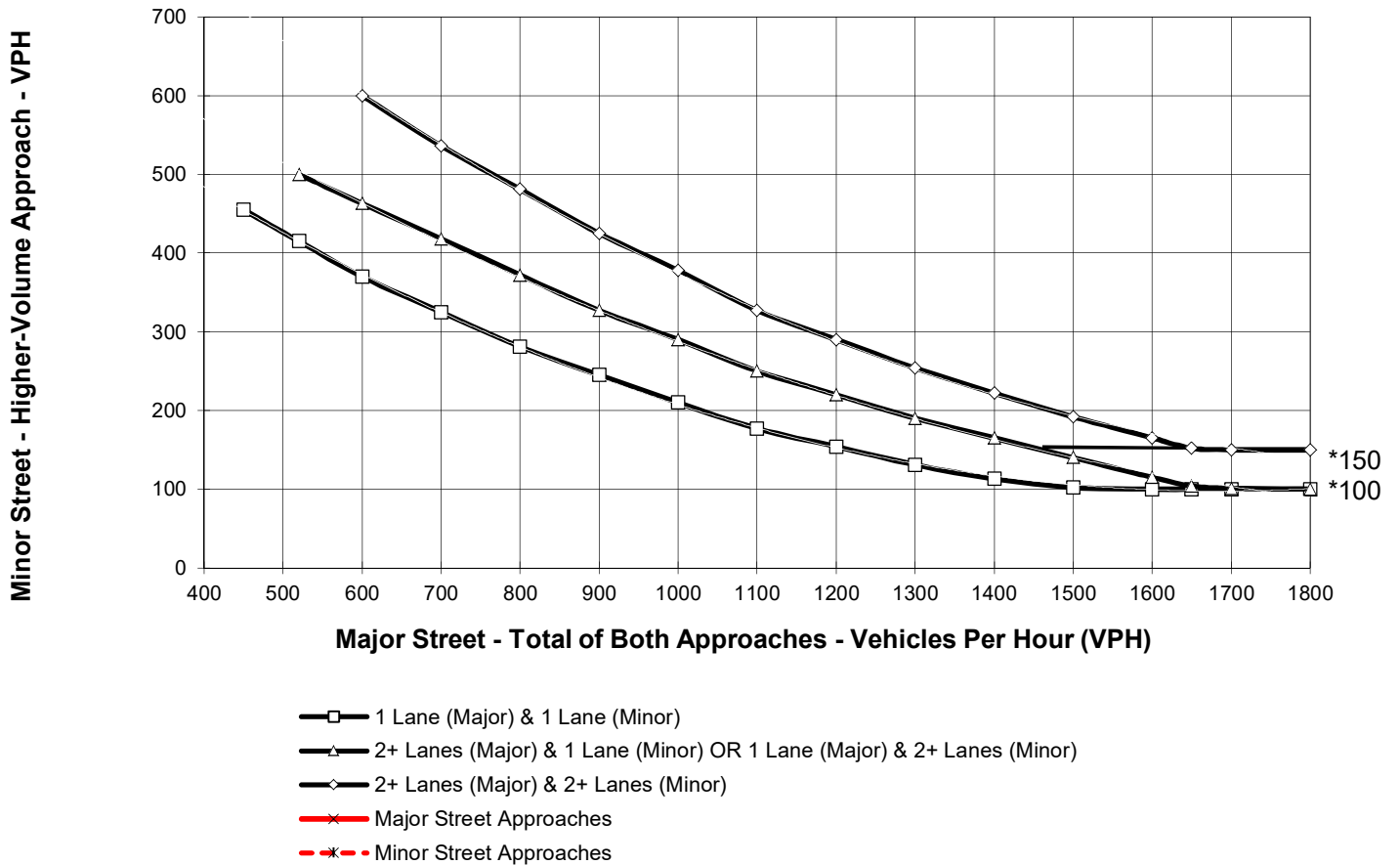
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **115**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 5**

High Volume Approach (VPH) = **3**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - AM**

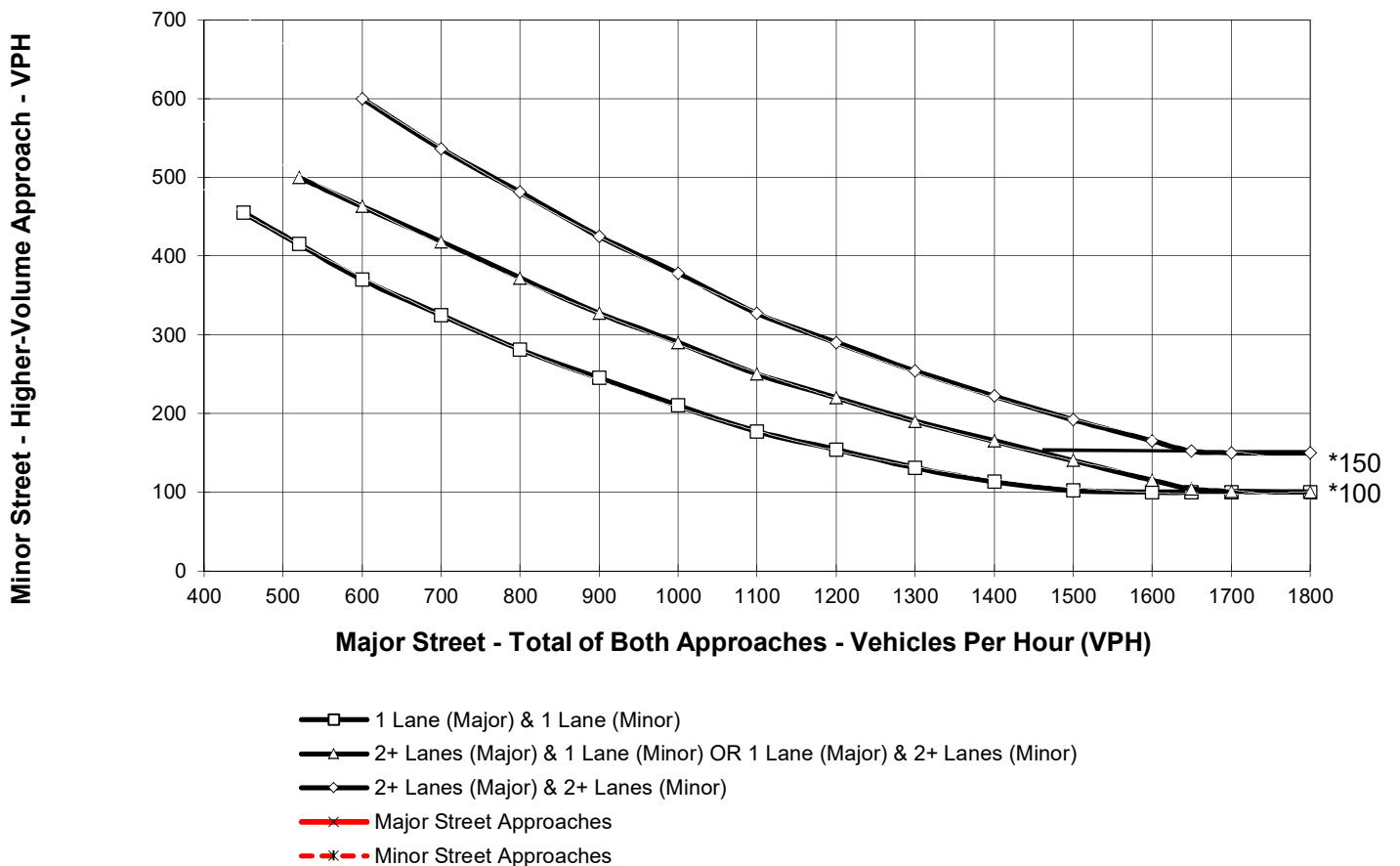
Major Street Name = **195th St**

Total of Both Approaches (VPH) = **174**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Gramercy PI**

High Volume Approach (VPH) = **21**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.



## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - PM**

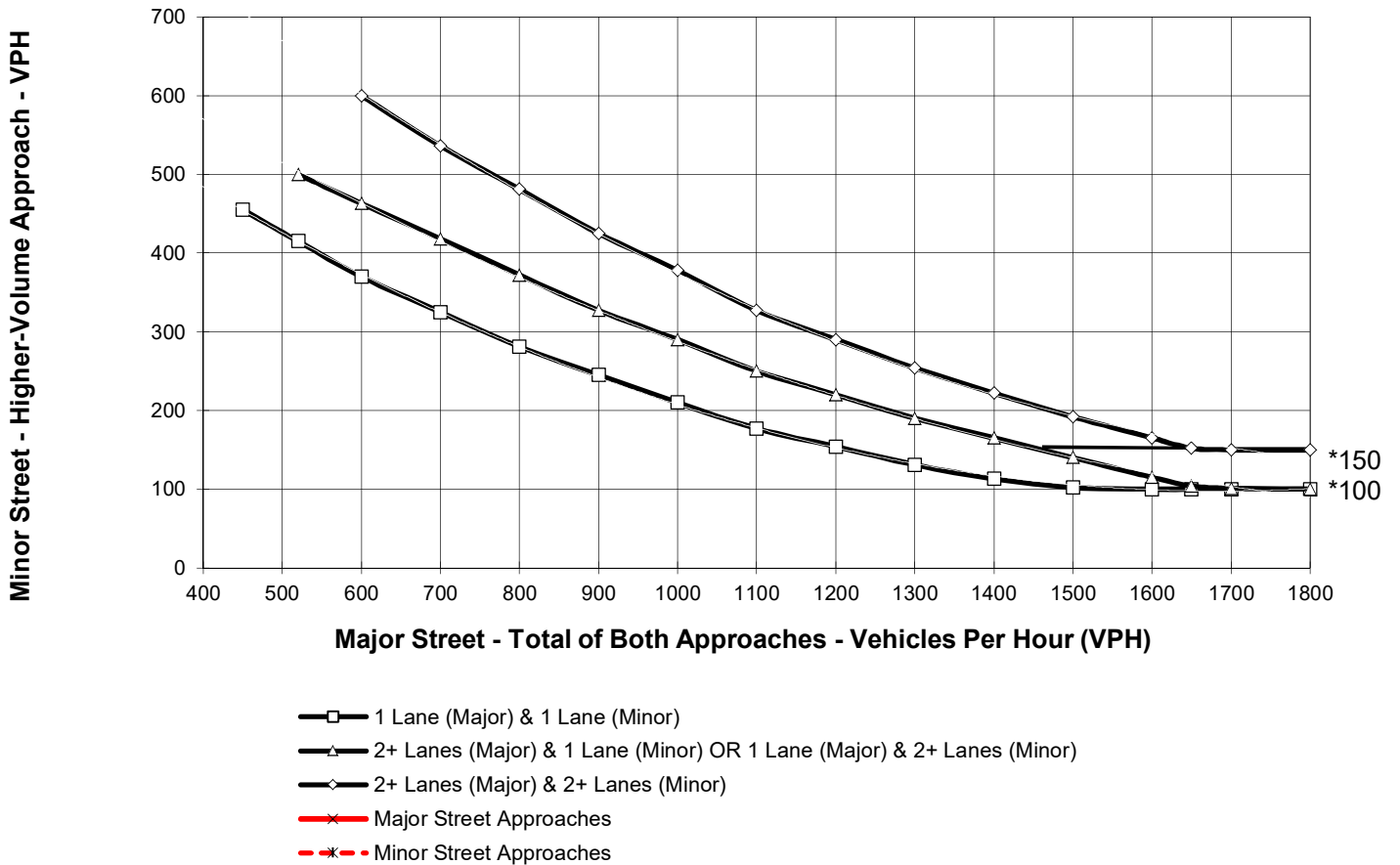
Major Street Name = **195th St**

Total of Both Approaches (VPH) = **116**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Gramercy PI**

High Volume Approach (VPH) = **39**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year With Project - AM**

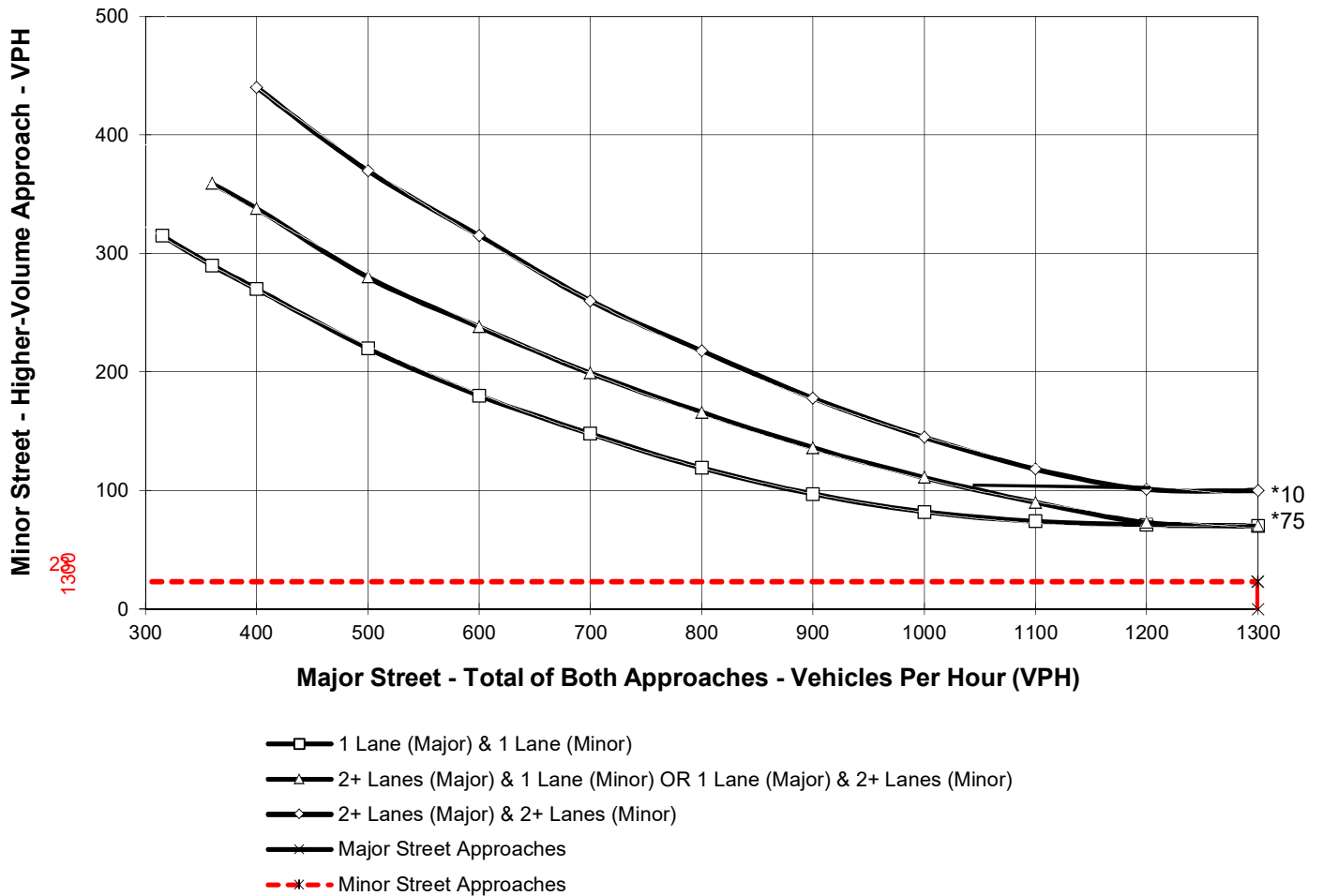
Major Street Name = **190th Street**

Total of Both Approaches (VPH) = **2528**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 1**

High Volume Approach (VPH) = **23**  
Number of Approach Lanes Minor Street = **2**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year With Project - PM**

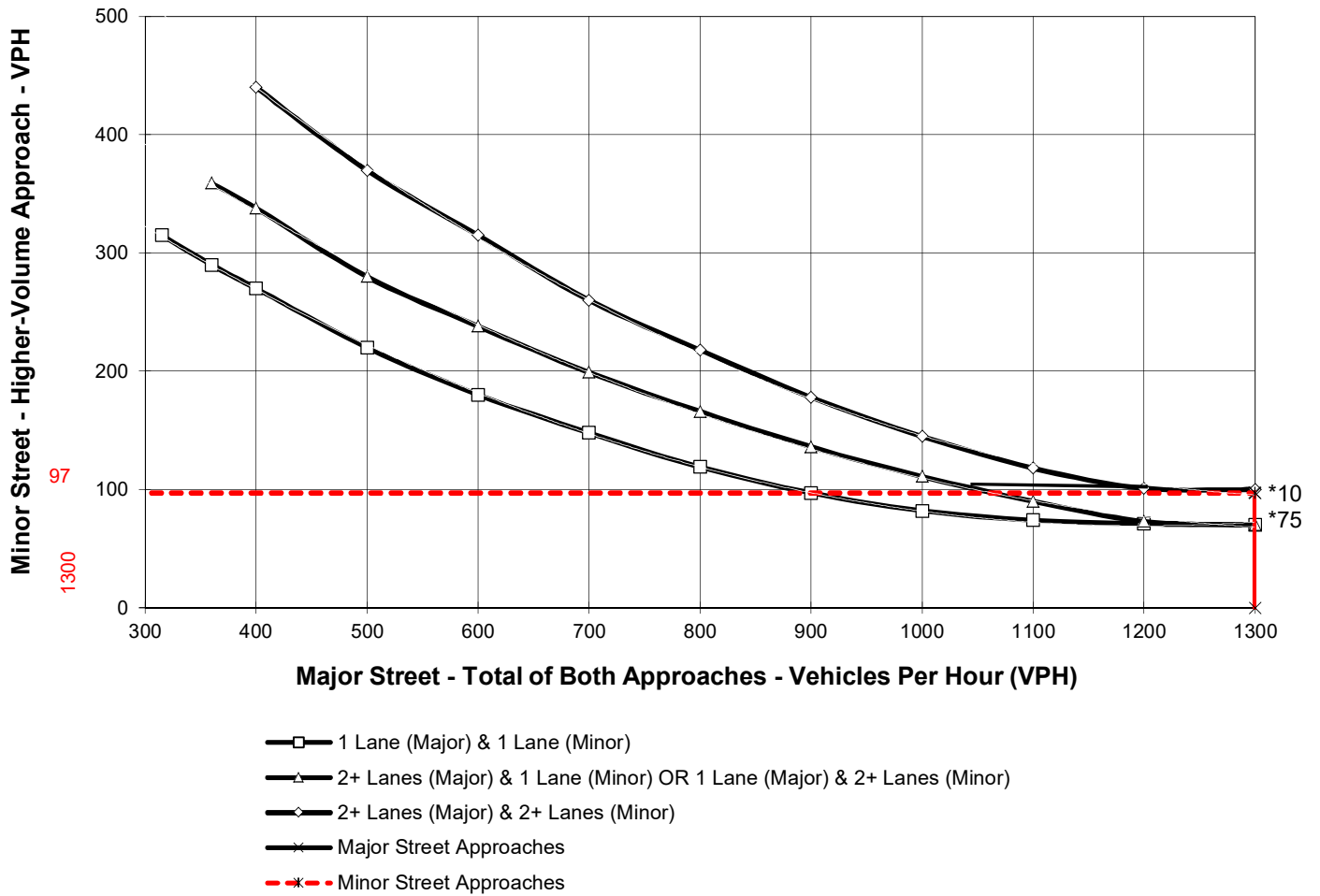
Major Street Name = **190th Street**

Total of Both Approaches (VPH) = **2587**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 1**

High Volume Approach (VPH) = **97**  
Number of Approach Lanes Minor Street = **2**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year With Project - AM**

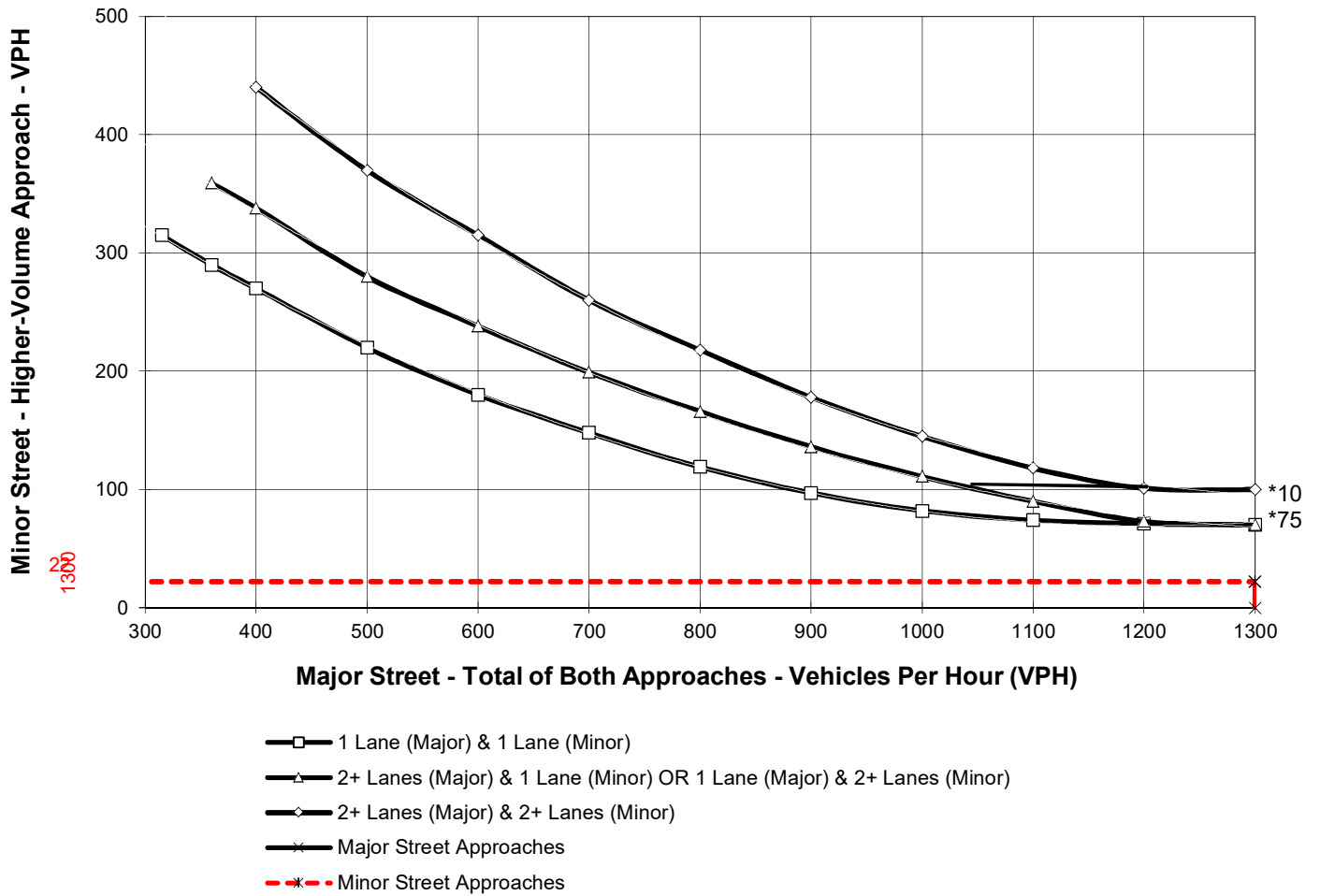
Major Street Name = **Western Avenue**

Total of Both Approaches (VPH) = **3156**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 2**

High Volume Approach (VPH) = **22**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



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

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year With Project - PM**

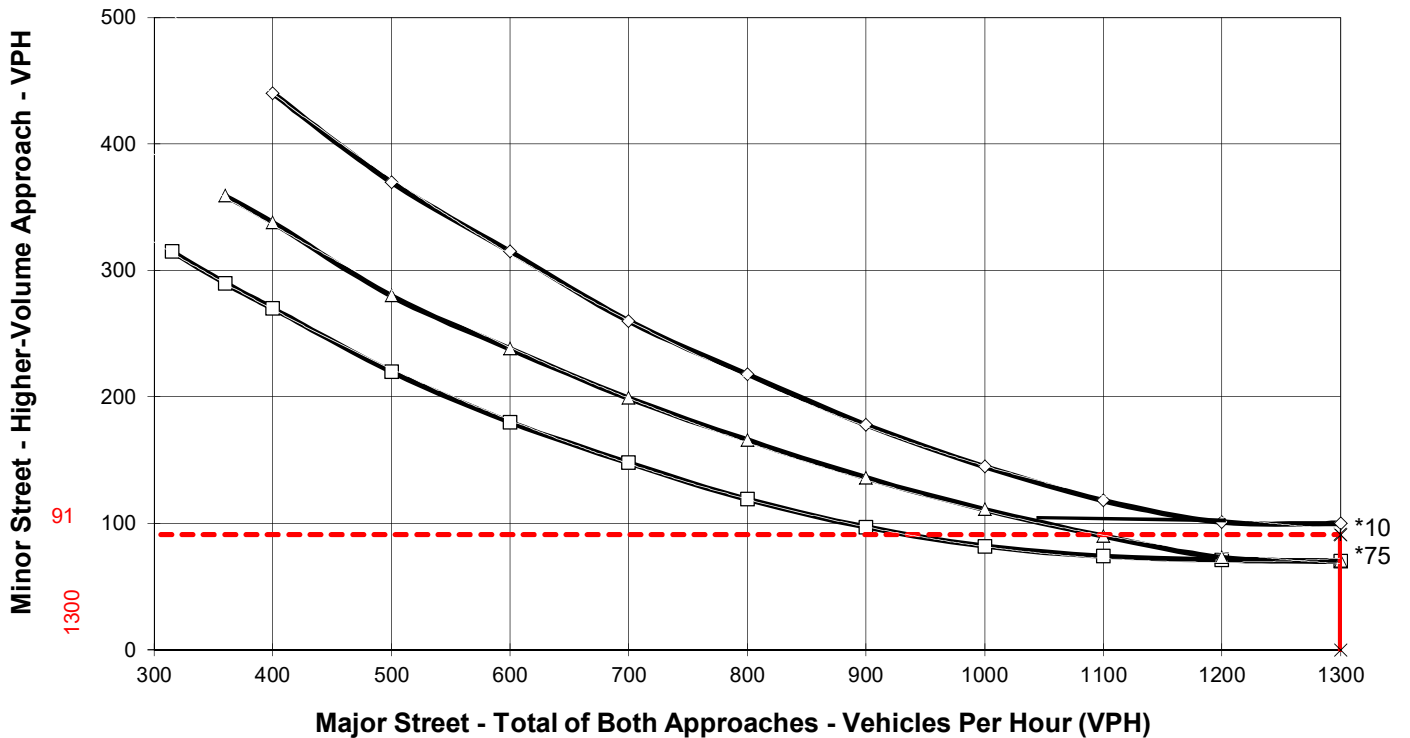
Major Street Name = **Western Avenue**

Total of Both Approaches (VPH) = **3084**  
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project Access 2**

High Volume Approach (VPH) = **91**  
Number of Approach Lanes Minor Street = **1**

### WARRANTED FOR A SIGNAL



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- ×— Major Street Approaches
- - - \* Minor Street Approaches

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

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - AM**

Major Street Name = **Gramercy Place**

Total of Both Approaches (VPH) = **107**

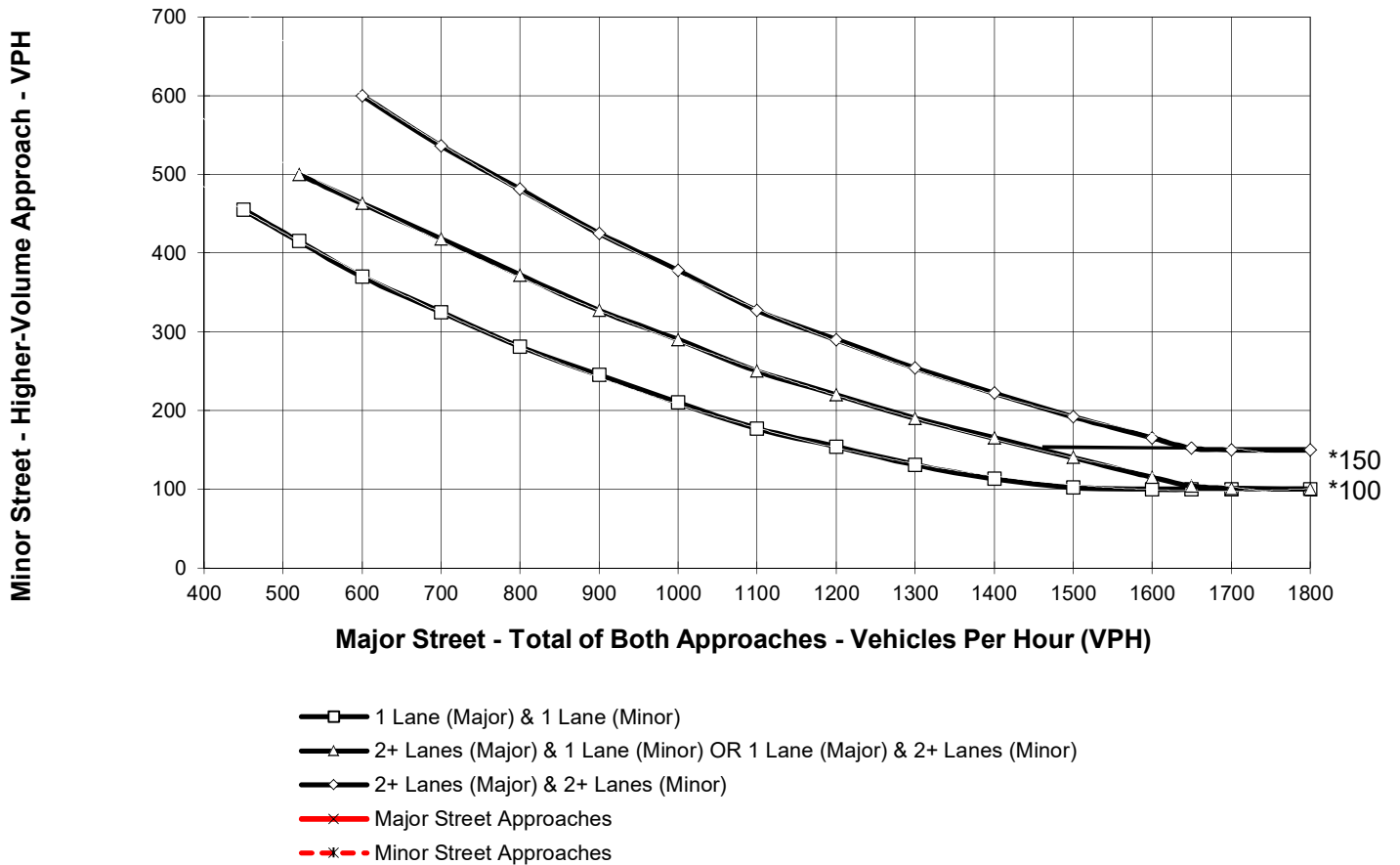
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 3**

High Volume Approach (VPH) = **10**

Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - PM**

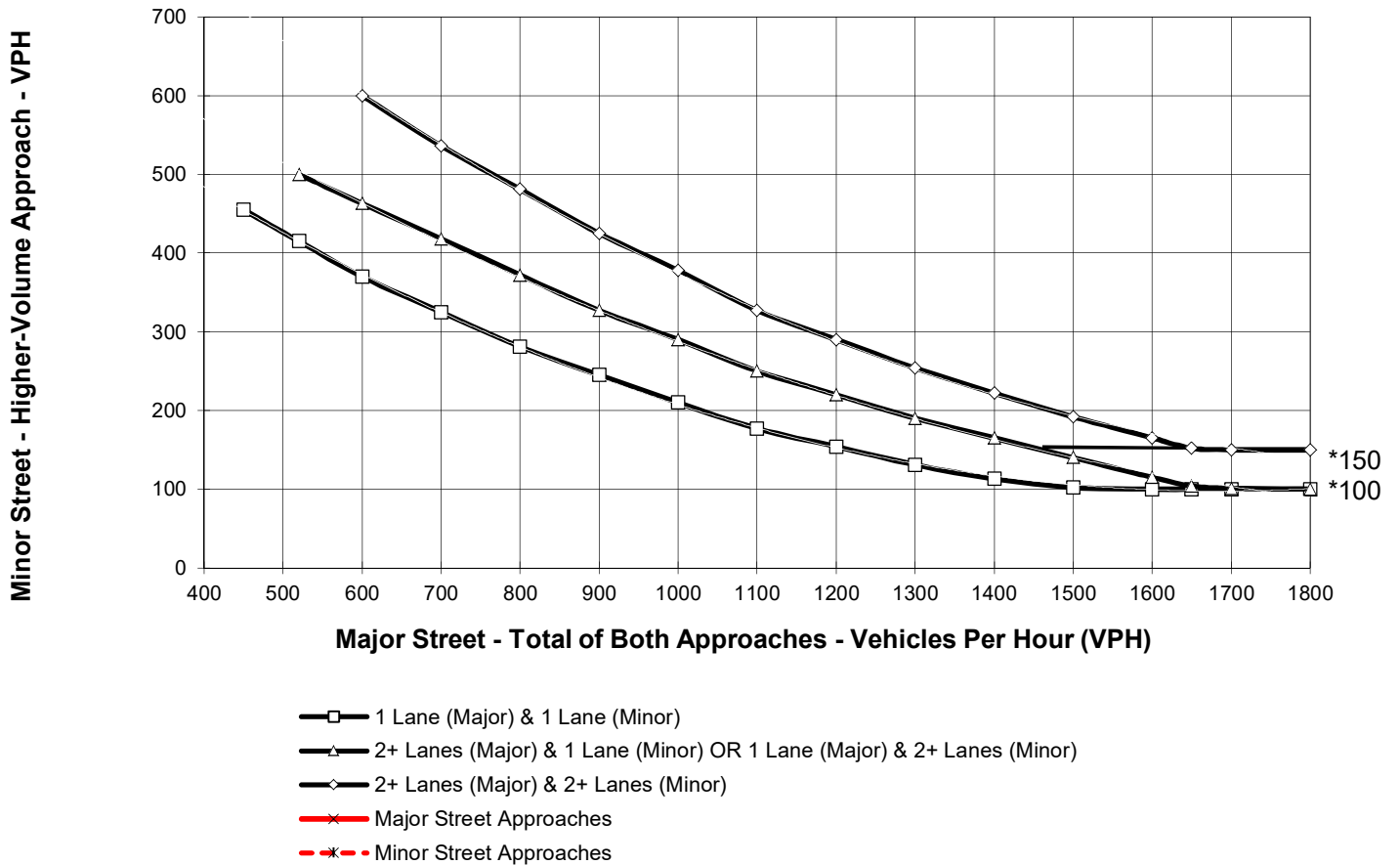
Major Street Name = **Gramercy Place**

Total of Both Approaches (VPH) = **72**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 3**

High Volume Approach (VPH) = **43**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - AM**

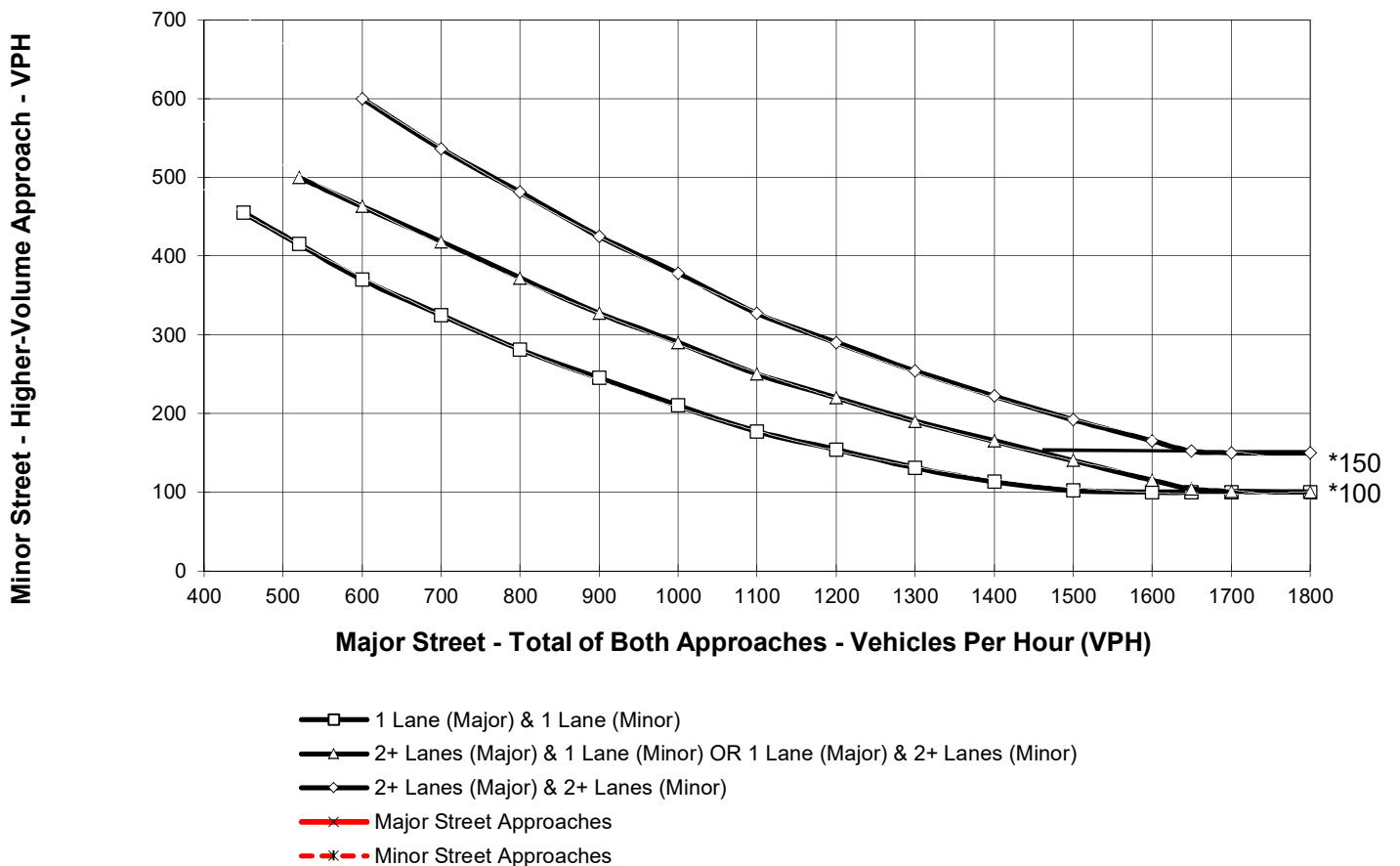
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **168**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 4**

High Volume Approach (VPH) = **8**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.



## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - PM**

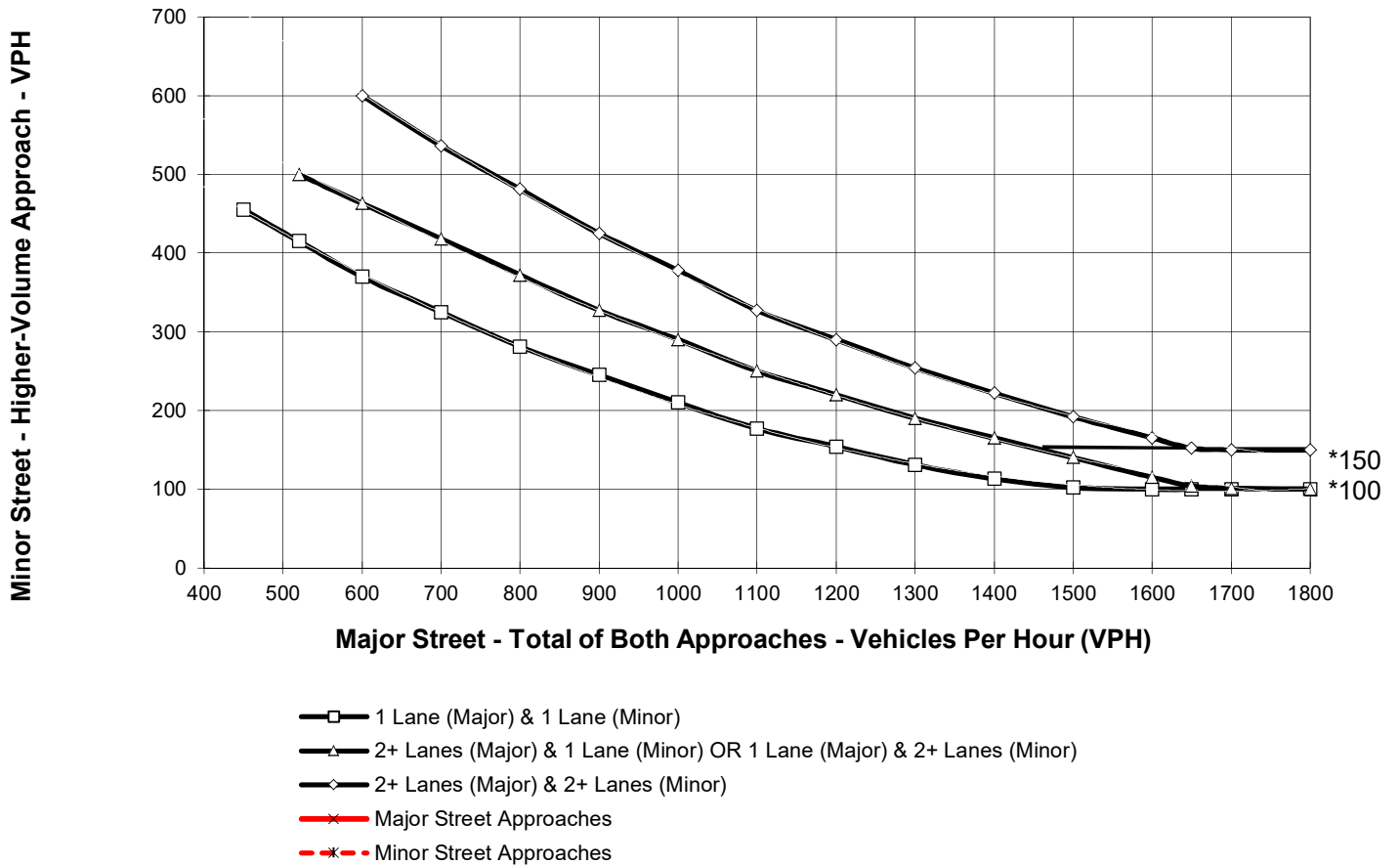
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **104**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 4**

High Volume Approach (VPH) = **35**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - AM**

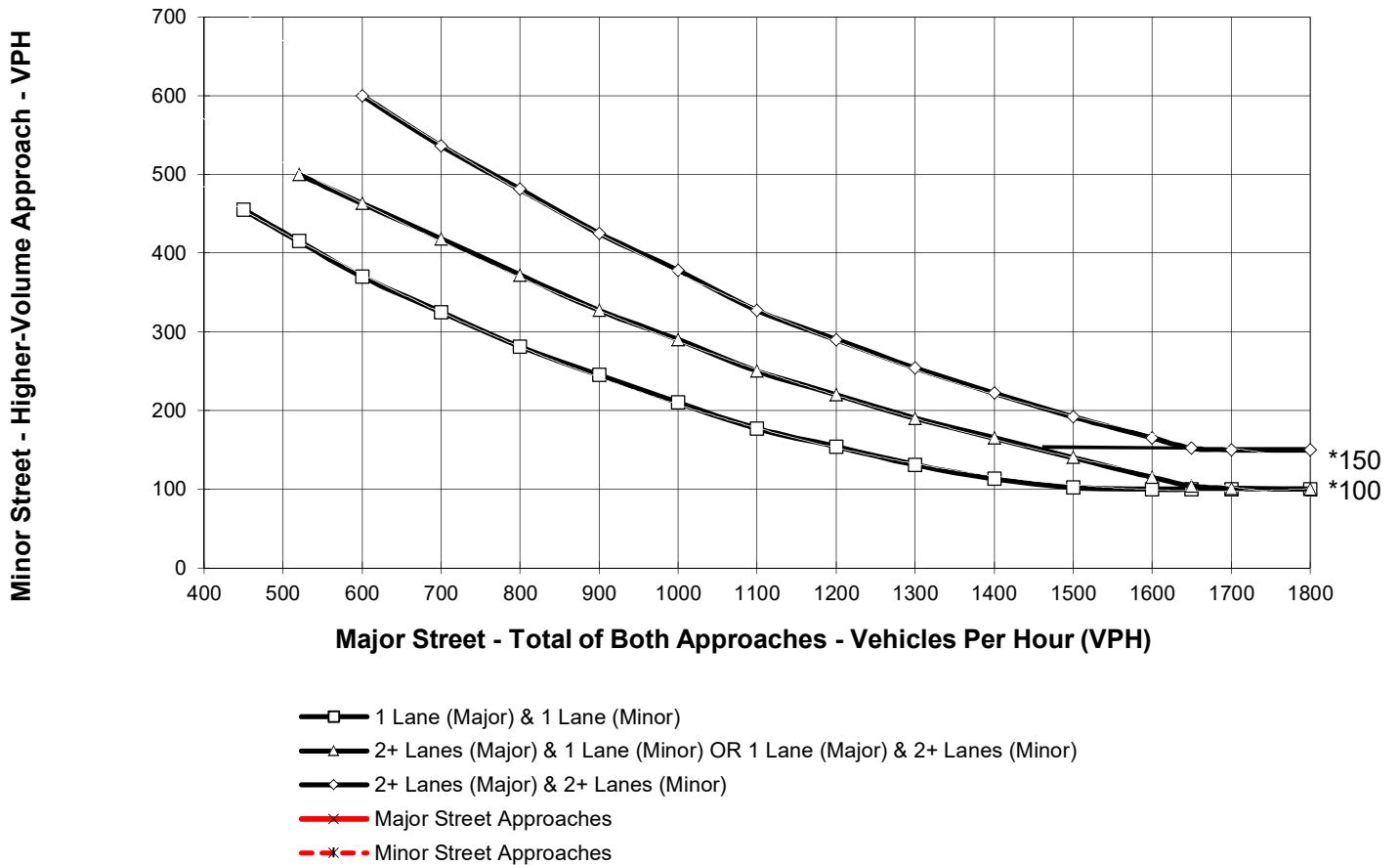
Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **148**  
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 5**

High Volume Approach (VPH) = **4**  
 Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (Urban Areas)

Traffic Conditions = **Opening Year With Project - AM**

Major Street Name = **195th Street**

Total of Both Approaches (VPH) = **124**

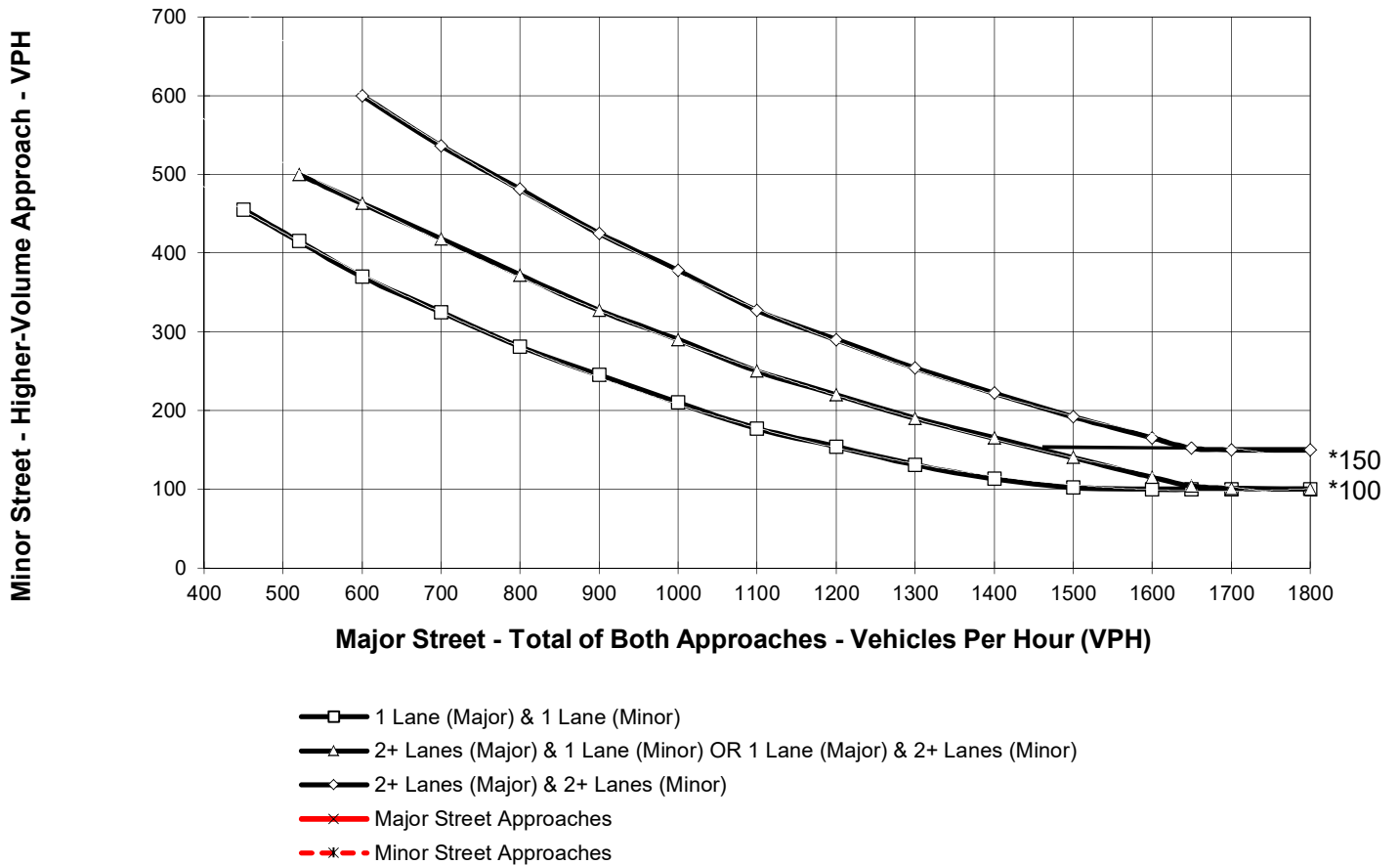
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Project Access 5**

High Volume Approach (VPH) = **20**

Number of Approach Lanes On Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## **Appendix D**

Existing Conditions Intersection Analysis Worksheets

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TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
EXISTING CONDITIONS  
AM PEAK HOUR

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## Scenario Report

Scenario: EX\_AM  
Command: EX\_AM  
Volume: EX AM  
Geometry: EXISTING  
Impact Fee: Default Impact Fee  
Trip Generation: NONE  
Trip Distribution: DEFAULT  
Paths: Default Path  
Routes: Default Route  
Configuration: EXISTING

-----  
 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Turning Movement Report  
 NONE

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#1 VAN NESS AVE / 190TH ST													
Base	56	267	120	70	543	280	89	1077	78	96	860	59	3595
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	56	267	120	70	543	280	89	1077	78	96	860	59	3595
#2 VAN NESS AVE / 195TH ST													
Base	0	453	19	15	679	0	0	0	0	12	0	11	1189
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	453	19	15	679	0	0	0	0	12	0	11	1189
#3 VAN NESS AVE / DEL AMO BLVD													
Base	46	303	45	33	452	206	132	272	50	86	533	25	2183
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	46	303	45	33	452	206	132	272	50	86	533	25	2183
#4 GRAMERCY PL / 190TH ST													
Base	1	2	15	2	2	0	0	1250	5	20	1068	1	2366
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	2	15	2	2	0	0	1250	5	20	1068	1	2366
#5 GRMAERCY PL / 195TH ST													
Base	4	2	2	2	12	7	10	7	18	32	27	11	134
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	2	2	2	12	7	10	7	18	32	27	11	134
#6 I-405 SOUTHBOUND RAMPS / 190TH ST													
Base	0	0	0	486	0	71	760	510	0	0	1040	145	3012
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	486	0	71	760	510	0	0	1040	145	3012
#7 WESTERN AVE / I-405 NORTHBOUND RAMPS													
Base	0	843	454	53	909	0	0	0	0	717	0	107	3083
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	843	454	53	909	0	0	0	0	717	0	107	3083
#8 WESTERN AVE / 190TH ST													
Base	118	1085	111	113	1133	353	131	425	365	215	662	89	4800
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	118	1085	111	113	1133	353	131	425	365	215	662	89	4800
#9 WESTERN AVE / 195TH ST													
Base	23	1308	12	35	1582	82	10	0	5	3	0	6	3066
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	23	1308	12	35	1582	82	10	0	5	3	0	6	3066

-----  
 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#10 WESTERN AVE / DEL AMO BLVD													
Base	144	927	11	17	1104	572	178	15	107	20	68	38	3201
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	144	927	11	17	1104	572	178	15	107	20	68	38	3201
#11 PROJECT ACCESS 1 / 190TH ST													
Base	0	0	1	3	0	1	8	1280	1	3	1095	7	2399
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	3	0	1	8	1280	1	3	1095	7	2399
#12 WESTERN AVE / PROJECT ACCESS 2													
Base	0	1316	8	11	1703	0	0	0	0	1	0	5	3044
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1316	8	11	1703	0	0	0	0	1	0	5	3044
#13 GRAMERCY PL / PROJECT ACCESS 3													
Base	0	20	0	2	22	0	0	0	0	0	0	1	45
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	20	0	2	22	0	0	0	0	0	0	1	45
#14 PROJECT ACCESS 4 / 195TH ST													
Base	0	0	0	4	0	2	1	12	0	0	102	7	128
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	2	1	12	0	0	102	7	128
#15 PROJECT ACCESS 5 / 195TH ST													
Base	0	0	0	2	0	0	2	15	0	0	104	0	123
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	2	15	0	0	104	0	123

-----  
 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report  
 ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)  
 \*\*\*\*\*  
 Intersection #1 VAN NESS AVE / 190TH ST  
 \*\*\*\*\*

Cycle (sec):	100	Critical Vol./Cap.(X):	0.612
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxxx
Optimal Cycle:	41	Level Of Service:	B

\*\*\*\*\*

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Protected	Protected	Protected	Protected
Rights:	Include	Ovl	Include	Include
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
Lanes:	2 0 2 0 1	1 0 2 0 1	1 0 3 0 1	1 0 2 0 1

-----

Volume Module:

Base Vol:	56 267 120	70 543 280	89 1077 78	96 860 59
Growth 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
Initial Bse:	56 267 120	70 543 280	89 1077 78	96 860 59
User 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
PHF 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
PHF Volume:	56 267 120	70 543 280	89 1077 78	96 860 59
Reduct Vol:	0 0 0	0 0 0	0 0 0	0 0 0
Reduced Vol:	56 267 120	70 543 280	89 1077 78	96 860 59
PCE 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
MLF 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
FinalVolume:	56 267 120	70 543 280	89 1077 78	96 860 59
OvlAdjVol:		191		

-----

Saturation Flow Module:

Sat/Lane:	1600 1600 1600	1600 1600 1600	1600 1600 1600	1600 1600 1600
Adjustment:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Lanes:	2.00 2.00 1.00	1.00 2.00 1.00	1.00 3.00 1.00	1.00 2.00 1.00
Final Sat.:	3200 3200 1600	1600 3200 1600	1600 4800 1600	1600 3200 1600

-----

Capacity Analysis Module:

Vol/Sat:	0.02 0.08 0.08	0.04 0.17 0.17	0.06 0.22 0.05	0.06 0.27 0.04
OvlAdjV/S:		0.12		
Crit Moves:	****	****	****	****

\*\*\*\*\*



-----  
 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report  
 ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)  
 \*\*\*\*\*  
 Intersection #2 VAN NESS AVE / 195TH ST  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.319  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 26 Level Of Service: A  
 \*\*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----  
 Control: Permitted Permitted Split Phase Split Phase  
 Rights: Ovl Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 0 0 2 0 1 1 0 2 0 0 0 0 0 0 2 0 0 0 1  
 -----  
 Volume Module:  
 Base Vol: 0 453 19 15 679 0 0 0 0 12 0 11  
 Growth 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  
 Initial Bse: 0 453 19 15 679 0 0 0 0 12 0 11  
 User 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  
 PHF 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  
 PHF Volume: 0 453 19 15 679 0 0 0 0 12 0 11  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 0 453 19 15 679 0 0 0 0 12 0 11  
 PCE 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  
 MLF 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  
 FinalVolume: 0 453 19 15 679 0 0 0 0 12 0 11  
 OvlAdjVol: 8  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 0.00 2.00 1.00 1.00 2.00 0.00 0.00 0.00 0.00 2.00 0.00 1.00  
 Final Sat.: 0 3200 1600 1600 3200 0 0 0 0 3200 0 1600  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.00 0.14 0.01 0.01 0.21 0.00 0.00 0.00 0.00 0.00 0.00 0.01  
 OvlAdjV/S: 0.01  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\*  
 \*\*\*\*\*

-----  
 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report  
 ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)  
 \*\*\*\*\*  
 Intersection #3 VAN NESS AVE / DEL AMO BLVD  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.558  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 37 Level Of Service: A  
 \*\*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----  
 Control: Permitted Permitted Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 1 0 1 1 0 1 0 1 1 0 2 0 1 0 1 1 0 2 0 1  
 -----  
 Volume Module:  
 Base Vol: 46 303 45 33 452 206 132 272 50 86 533 25  
 Growth 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  
 Initial Bse: 46 303 45 33 452 206 132 272 50 86 533 25  
 User 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  
 PHF 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  
 PHF Volume: 46 303 45 33 452 206 132 272 50 86 533 25  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 46 303 45 33 452 206 132 272 50 86 533 25  
 PCE 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  
 MLF 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  
 FinalVolume: 46 303 45 33 452 206 132 272 50 86 533 25  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 1.74 0.26 1.00 1.37 0.63 2.00 1.00 1.00 1.00 2.00 1.00  
 Final Sat.: 1600 2786 414 1600 2198 1002 3200 1600 1600 1600 3200 1600  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.03 0.11 0.11 0.02 0.21 0.21 0.04 0.17 0.03 0.05 0.17 0.02  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\*  
 \*\*\*\*\*

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #4 GRAMERCY PL / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.446  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	0	1	0	2	1	0	1

Volume Module:

Base Vol:	1	2	15	2	2	0	0	1250	5	20	1068	1
Growth 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
Initial Bse:	1	2	15	2	2	0	0	1250	5	20	1068	1
User 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
PHF 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
PHF Volume:	1	2	15	2	2	0	0	1250	5	20	1068	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	2	15	2	2	0	0	1250	5	20	1068	1
PCE 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
MLF 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
FinalVolume:	1	2	15	2	2	0	0	1250	5	20	1068	1

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.12	0.88	1.00	1.00	0.00	1.00	2.99	0.01	1.00	1.99	0.01
Final Sat.:	1600	188	1412	1600	1600	0	1600	4781	19	1600	3197	3

Capacity Analysis Module:

Vol/Sat:	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.26	0.26	0.01	0.33	0.33
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #6 I-405 SOUTHBOUND RAMPS / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.728  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 54 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	1	0	0	0	2	0	3

Volume Module:

Base Vol:	0	0	0	486	0	71	760	510	0	0	1040	145
Growth 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
Initial Bse:	0	0	0	486	0	71	760	510	0	0	1040	145
User 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
PHF 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
PHF Volume:	0	0	0	486	0	71	760	510	0	0	1040	145
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	486	0	71	760	510	0	0	1040	145
PCE 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
MLF 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
FinalVolume:	0	0	0	486	0	71	760	510	0	0	1040	145

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.75	0.00	0.25	2.00	3.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	2792	0	408	3200	4800	0	0	4800	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.17	0.00	0.17	0.24	0.11	0.00	0.00	0.22	0.09
Crit Moves:				****		****	****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report  
 ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)  
 \*\*\*\*\*  
 Intersection #7 WESTERN AVE / I-405 NORTHBOUND RAMPS  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.654  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 45 Level Of Service: B  
 \*\*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----  
 Control: Protected Protected Split Phase Split Phase  
 Rights: Ovl Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 0 0 2 0 1 1 0 3 0 0 0 0 0 0 1 0 1! 0 0  
 -----  
 Volume Module:  
 Base Vol: 0 843 454 53 909 0 0 0 0 717 0 107  
 Growth 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  
 Initial Bse: 0 843 454 53 909 0 0 0 0 717 0 107  
 User 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  
 PHF 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  
 PHF Volume: 0 843 454 53 909 0 0 0 0 717 0 107  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 0 843 454 53 909 0 0 0 0 717 0 107  
 PCE 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  
 MLF 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  
 FinalVolume: 0 843 454 53 909 0 0 0 0 717 0 107  
 OvlAdjVol: 42  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 0.00 2.00 1.00 1.00 3.00 0.00 0.00 0.00 0.00 1.74 0.00 0.26  
 Final Sat.: 0 3200 1600 1600 4800 0 0 0 0 2784 0 416  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.00 0.26 0.28 0.03 0.19 0.00 0.00 0.00 0.00 0.26 0.00 0.26  
 OvlAdjV/S: 0.03  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\*  
 \*\*\*\*\*

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report  
 ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)  
 \*\*\*\*\*  
 Intersection #8 WESTERN AVE / 190TH ST  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.631  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 43 Level Of Service: B  
 \*\*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----  
 Control: Protected Protected Protected Protected  
 Rights: Ovl Ovl Ovl Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 2 0 3 0 1 2 0 3 0 1 2 0 3 0 1 2 0 2 1 0  
 -----  
 Volume Module:  
 Base Vol: 118 1085 111 113 1133 353 131 425 365 215 662 89  
 Growth 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  
 Initial Bse: 118 1085 111 113 1133 353 131 425 365 215 662 89  
 User 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  
 PHF 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  
 PHF Volume: 118 1085 111 113 1133 353 131 425 365 215 662 89  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 118 1085 111 113 1133 353 131 425 365 215 662 89  
 PCE 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  
 MLF 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  
 FinalVolume: 118 1085 111 113 1133 353 131 425 365 215 662 89  
 OvlAdjVol: 4 288 306  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 2.00 3.00 1.00 2.00 3.00 1.00 2.00 3.00 1.00 2.00 2.64 0.36  
 Final Sat.: 3200 4800 1600 3200 4800 1600 3200 4800 1600 3200 4231 569  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.04 0.23 0.07 0.04 0.24 0.22 0.04 0.09 0.23 0.07 0.16 0.16  
 OvlAdjV/S: 0.00 0.18 0.19  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\*  
 \*\*\*\*\*

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #9 WESTERN AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.456  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	0	0	1	0	0	1	0

Volume Module:

Base Vol:	23	1308	12	35	1582	82	10	0	5	3	0	6
Growth 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
Initial Bse:	23	1308	12	35	1582	82	10	0	5	3	0	6
User 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
PHF 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
PHF Volume:	23	1308	12	35	1582	82	10	0	5	3	0	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	1308	12	35	1582	82	10	0	5	3	0	6
PCE 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
MLF 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
FinalVolume:	23	1308	12	35	1582	82	10	0	5	3	0	6

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.00	1.00	0.33	0.00	0.67
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	0	1600	533	0	1067

Capacity Analysis Module:

Vol/Sat:	0.01	0.27	0.01	0.02	0.33	0.05	0.01	0.00	0.00	0.00	0.00	0.01
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 AM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #10 WESTERN AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.693  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 49 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	0	1	1	0	0	1	0

Volume Module:

Base Vol:	144	927	11	17	1104	572	178	15	107	20	68	38
Growth 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
Initial Bse:	144	927	11	17	1104	572	178	15	107	20	68	38
User 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
PHF 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
PHF Volume:	144	927	11	17	1104	572	178	15	107	20	68	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	144	927	11	17	1104	572	178	15	107	20	68	38
PCE 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
MLF 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
FinalVolume:	144	927	11	17	1104	572	178	15	107	20	68	38

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.84	0.16	1.00	0.16	0.54	0.30
Final Sat.:	1600	3200	1600	1600	3200	1600	2951	249	1600	254	863	483

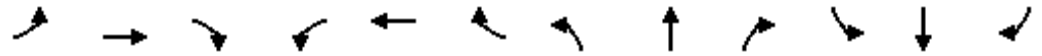
Capacity Analysis Module:

Vol/Sat:	0.09	0.29	0.01	0.01	0.34	0.36	0.06	0.06	0.07	0.08	0.08	0.08
Crit Moves:	****					****			****	****		

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Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 5: Gramercy Place & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt		0.931			0.979			0.963			0.955	
Flt Protected		0.986			0.978			0.978			0.994	
Satd. Flow (prot)	0	1710	0	0	1784	0	0	1754	0	0	1768	0
Flt Permitted		0.986			0.978			0.978			0.994	
Satd. Flow (perm)	0	1710	0	0	1784	0	0	1754	0	0	1768	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1405			500			880			967	
Travel Time (s)		31.9			11.4			20.0			22.0	

Intersection Summary

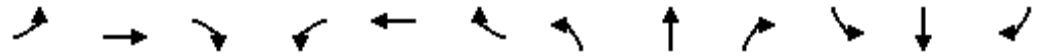
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

5: Gramercy Place & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	10	7	18	32	27	11	4	2	2	2	12	7
Future Volume (vph)	10	7	18	32	27	11	4	2	2	2	12	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	13	9	23	41	35	14	5	3	3	3	15	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	0	90	0	0	11	0	0	27	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	7	18	32	27	11	4	2	2	2	12	7
Future Vol, veh/h	10	7	18	32	27	11	4	2	2	2	12	7
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	9	23	41	35	14	5	3	3	3	15	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	7.5	7.2	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	29%	46%	10%
Vol Thru, %	25%	20%	39%	57%
Vol Right, %	25%	51%	16%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	35	70	21
LT Vol	4	10	32	2
Through Vol	2	7	27	12
RT Vol	2	18	11	7
Lane Flow Rate	10	45	90	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.048	0.1	0.03
Departure Headway (Hd)	4.138	3.815	4.03	3.994
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	858	936	889	889
Service Time	2.198	1.849	2.054	2.05
HCM Lane V/C Ratio	0.012	0.048	0.101	0.03
HCM Control Delay	7.2	7	7.5	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.3	0.1

Lanes and Geometrics  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	258			166	0	0
Storage Lanes	2			1	2	0
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850	0.981	
Flt Protected	0.950				0.958	
Satd. Flow (prot)	3433	5085	5085	1583	3396	0
Flt Permitted	0.950				0.958	
Satd. Flow (perm)	3433	5085	5085	1583	3396	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				151	23	
Link Speed (mph)		30	30		30	
Link Distance (ft)		645	638		544	
Travel Time (s)		14.7	14.5		12.4	

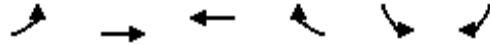
Intersection Summary

Area Type: Other

Volume  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



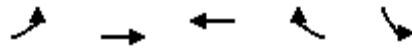
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	760	510	1040	145	486	71
Future Volume (vph)	760	510	1040	145	486	71
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	792	531	1083	151	506	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	792	531	1083	151	580	0
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

6: 190th Street & I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations	↗↗	↑↑↑	↑↑↑	↖	↘↘
Traffic Volume (vph)	760	510	1040	145	486
Future Volume (vph)	760	510	1040	145	486
Turn Type	Prot	NA	NA	Perm	Prot
Protected Phases	7	4	8		6
Permitted Phases				8	
Detector Phase	7	4	8	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	24.0	47.0	23.0	23.0	23.0
Total Split (%)	34.3%	67.1%	32.9%	32.9%	32.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	None	None	None	Max
Act Effct Green (s)	18.7	41.5	18.3	18.3	18.5
Actuated g/C Ratio	0.27	0.60	0.27	0.27	0.27
v/c Ratio	0.85	0.17	0.80	0.28	0.63
Control Delay	34.6	6.3	29.4	5.6	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	6.3	29.4	5.6	25.1
LOS	C	A	C	A	C
Approach Delay		23.2	26.5		25.1
Approach LOS		C	C		C

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 69	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 69.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: 190th Street & I-405 Ramp

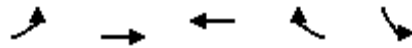


## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 6: 190th Street &amp; I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	792	531	1083	151	580
v/c Ratio	0.85	0.17	0.80	0.28	0.63
Control Delay	34.6	6.3	29.4	5.6	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	6.3	29.4	5.6	25.1
Queue Length 50th (ft)	163	32	159	0	108
Queue Length 95th (ft)	#252	46	207	39	158
Internal Link Dist (ft)		565	558		464
Turn Bay Length (ft)	258			166	
Base Capacity (vph)	970	3132	1363	535	927
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.17	0.79	0.28	0.63

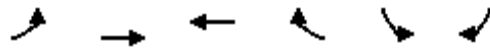
## Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 6: 190th Street & I-405 Ramp

10/06/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↶↶	↶↶↶	↶↶↶	↶	↶↶			
Traffic Volume (veh/h)	760	510	1040	145	486	71		
Future Volume (veh/h)	760	510	1040	145	486	71		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	792	531	1083	151	575	0		
Adj No. of Lanes	2	3	3	1	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	0		
Cap, veh/h	908	3007	1325	413	975	444		
Arrive On Green	0.26	0.59	0.26	0.26	0.27	0.00		
Sat Flow, veh/h	3442	5253	5253	1583	3548	1615		
Grp Volume(v), veh/h	792	531	1083	151	575	0		
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1774	1615		
Q Serve(g_s), s	14.8	3.2	13.5	5.2	9.4	0.0		
Cycle Q Clear(g_c), s	14.8	3.2	13.5	5.2	9.4	0.0		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	908	3007	1325	413	975	444		
V/C Ratio(X)	0.87	0.18	0.82	0.37	0.59	0.00		
Avail Cap(c_a), veh/h	997	3212	1398	435	975	444		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	23.7	6.3	23.4	20.3	21.1	0.0		
Incr Delay (d2), s/veh	8.0	0.0	3.8	0.5	2.6	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.1	1.5	6.8	2.3	5.0	0.0		
LnGrp Delay(d),s/veh	31.7	6.3	27.1	20.9	23.7	0.0		
LnGrp LOS	C	A	C	C	C			
Approach Vol, veh/h		1323	1234		575			
Approach Delay, s/veh		21.5	26.4		23.7			
Approach LOS		C	C		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				44.3		23.0	22.3	22.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				42.5		18.5	19.5	18.5
Max Q Clear Time (g_c+I1), s				5.2		11.4	16.8	15.5
Green Ext Time (p_c), s				4.1		1.3	1.0	2.1
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			23.8					
HCM 2010 LOS			C					
<b>Notes</b>								



Lanes and Geometrics      TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street      10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	170	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.91
Ped Bike Factor						
Frt	0.981			0.850		
Flt Protected	0.958				0.950	
Satd. Flow (prot)	3396	0	3539	1583	1770	5085
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	3396	0	3539	1583	1770	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	31			452		
Link Speed (mph)	30		30			30
Link Distance (ft)	1298		979			805
Travel Time (s)	29.5		22.3			18.3

**Intersection Summary**

Area Type:      Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	717	107	843	454	53	909
Future Volume (vph)	717	107	843	454	53	909
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	779	116	916	493	58	988
Shared Lane Traffic (%)						
Lane Group Flow (vph)	895	0	916	493	58	988
<b>Intersection Summary</b>						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

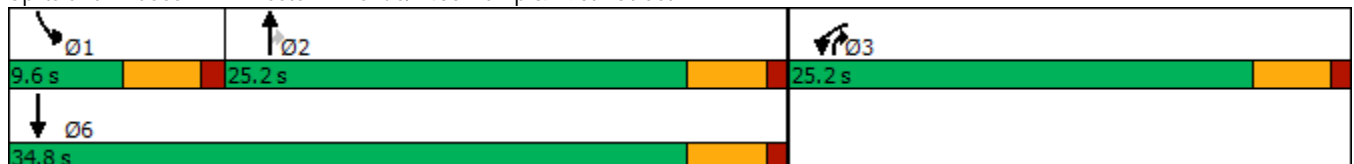
10/06/2021

	↙	↑	↘	↙	↓
Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↑↑	↘	↙	↑↑↑
Traffic Volume (vph)	717	843	454	53	909
Future Volume (vph)	717	843	454	53	909
Turn Type	Prot	NA	pm+ov	Prot	NA
Protected Phases	3	2	3	1	6
Permitted Phases			2		
Detector Phase	3	2	3	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5
Total Split (s)	25.2	25.2	25.2	9.6	34.8
Total Split (%)	42.0%	42.0%	42.0%	16.0%	58.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag		Lag		Lead	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	Max	None	None	Max
Act Effct Green (s)	19.2	24.7	50.3	5.1	30.4
Actuated g/C Ratio	0.33	0.42	0.86	0.09	0.52
v/c Ratio	0.79	0.61	0.35	0.38	0.38
Control Delay	23.0	17.1	1.0	33.4	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	17.1	1.0	33.4	9.2
LOS	C	B	A	C	A
Approach Delay	23.0	11.5			10.6
Approach LOS	C	B			B

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 58.6	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 14.3	Intersection LOS: B
Intersection Capacity Utilization 62.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 7: Western Avenue/I-405 Ramp & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 7: Western Avenue/I-405 Ramp &amp; 190th Street

10/06/2021


















Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	895	916	493	58	988
v/c Ratio	0.79	0.61	0.35	0.38	0.38
Control Delay	23.0	17.1	1.0	33.4	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	17.1	1.0	33.4	9.2
Queue Length 50th (ft)	139	150	2	20	73
Queue Length 95th (ft)	200	213	17	52	100
Internal Link Dist (ft)	1218	899			725
Turn Bay Length (ft)			150	170	
Base Capacity (vph)	1222	1493	1411	154	2634
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.61	0.35	0.38	0.38

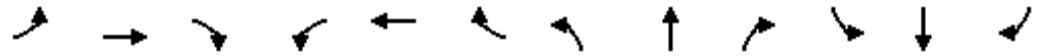
## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 		 			  		
Traffic Volume (veh/h)	717	107	843	454	53	909		
Future Volume (veh/h)	717	107	843	454	53	909		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863		
Adj Flow Rate, veh/h	887	0	916	493	58	988		
Adj No. of Lanes	2	1	2	1	1	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	1071	488	1434	1120	94	2737		
Arrive On Green	0.30	0.00	0.41	0.41	0.05	0.54		
Sat Flow, veh/h	3548	1615	3632	1583	1774	5253		
Grp Volume(v), veh/h	887	0	916	493	58	988		
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1583	1774	1695		
Q Serve(g_s), s	13.1	0.0	11.7	7.5	1.8	6.3		
Cycle Q Clear(g_c), s	13.1	0.0	11.7	7.5	1.8	6.3		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	1071	488	1434	1120	94	2737		
V/C Ratio(X)	0.83	0.00	0.64	0.44	0.62	0.36		
Avail Cap(c_a), veh/h	1305	594	1434	1120	161	2737		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	18.3	0.0	13.4	3.5	26.1	7.5		
Incr Delay (d2), s/veh	3.8	0.0	2.2	1.3	6.4	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.0	0.0	6.0	3.6	1.1	3.0		
LnGrp Delay(d),s/veh	22.1	0.0	15.6	4.8	32.5	7.8		
LnGrp LOS	C		B	A	C	A		
Approach Vol, veh/h	887		1409			1046		
Approach Delay, s/veh	22.1		11.8			9.2		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.5	27.3				34.8		21.5
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.1	20.7				30.3		20.7
Max Q Clear Time (g_c+I1), s	3.8	13.7				8.3		15.1
Green Ext Time (p_c), s	0.0	4.4				7.4		1.9
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			13.7					
HCM 2010 LOS			B					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↑	↖	↖↗	↑↑↑		↖↗	↑↑↑	↖	↖↗	↑↑↑	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	148		190	232		0	150		316	280		250
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.982				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	4994	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	4994	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101		37				114			101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		638			1305			584			979	
Travel Time (s)		14.5			29.7			13.3			22.3	

**Intersection Summary**

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	131	425	365	215	662	89	118	1085	111	113	1133	353
Future Volume (vph)	131	425	365	215	662	89	118	1085	111	113	1133	353
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	135	438	376	222	682	92	122	1119	114	116	1168	364
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	438	376	222	774	0	122	1119	114	116	1168	364
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021

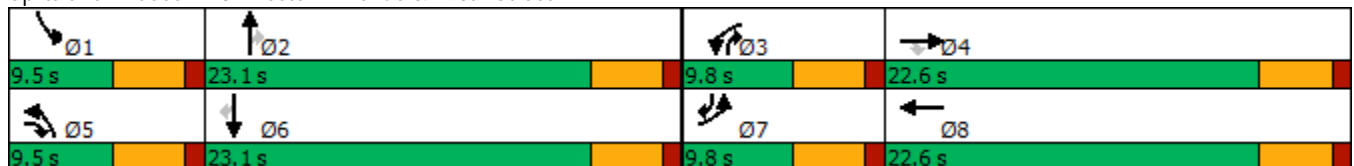


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↑	↗	↖↗	↑↑↑	↖↗	↑↑↑	↗	↖↗	↑↑↑	↗
Traffic Volume (vph)	131	425	365	215	662	118	1085	111	113	1133	353
Future Volume (vph)	131	425	365	215	662	118	1085	111	113	1133	353
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	3	1	6	7
Permitted Phases			4					2			6
Detector Phase	7	4	5	3	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	9.8	22.6	9.5	9.8	22.6	9.5	23.1	9.8	9.5	23.1	9.8
Total Split (%)	15.1%	34.8%	14.6%	15.1%	34.8%	14.6%	35.5%	15.1%	14.6%	35.5%	15.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	None
Act Effect Green (s)	5.3	15.8	25.3	5.3	15.8	5.0	20.7	30.5	5.0	18.6	28.4
Actuated g/C Ratio	0.08	0.25	0.40	0.08	0.25	0.08	0.33	0.49	0.08	0.30	0.45
v/c Ratio	0.47	0.34	0.54	0.77	0.60	0.45	0.67	0.14	0.42	0.77	0.47
Control Delay	33.8	19.9	13.4	48.7	21.7	33.9	21.7	3.1	33.4	24.9	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	19.9	13.4	48.7	21.7	33.9	21.7	3.1	33.4	24.9	11.3
LOS	C	B	B	D	C	C	C	A	C	C	B
Approach Delay		19.3			27.7		21.3			22.5	
Approach LOS		B			C		C			C	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 62.8	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 22.6	Intersection LOS: C
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: Western Avenue & 190th Street





## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 8: Western Avenue &amp; 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	135	438	376	222	774	122	1119	114	116	1168	364
v/c Ratio	0.47	0.34	0.54	0.77	0.60	0.45	0.67	0.14	0.42	0.77	0.47
Control Delay	33.8	19.9	13.4	48.7	21.7	33.9	21.7	3.1	33.4	24.9	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	19.9	13.4	48.7	21.7	33.9	21.7	3.1	33.4	24.9	11.3
Queue Length 50th (ft)	26	49	73	44	90	24	143	0	22	152	65
Queue Length 95th (ft)	51	74	145	#97	125	47	194	24	45	204	134
Internal Link Dist (ft)		558			1225		504			899	
Turn Bay Length (ft)	148		190	232		150		316	280		250
Base Capacity (vph)	290	1467	698	290	1467	274	1673	826	274	1508	772
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.30	0.54	0.77	0.53	0.45	0.67	0.14	0.42	0.77	0.47
























## Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	425	365	215	662	89	118	1085	111	113	1133	353
Future Volume (veh/h)	131	425	365	215	662	89	118	1085	111	113	1133	353
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	135	438	376	222	682	92	122	1119	114	116	1168	364
Adj No. of Lanes	2	3	1	2	3	0	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	1328	525	291	1242	166	242	1514	605	238	1509	584
Arrive On Green	0.07	0.26	0.26	0.08	0.27	0.27	0.07	0.30	0.30	0.07	0.30	0.30
Sat Flow, veh/h	3442	5085	1583	3442	4539	607	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	135	438	376	222	508	266	122	1119	114	116	1168	364
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1756	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	2.4	4.4	13.0	4.0	8.0	8.1	2.1	12.4	3.0	2.0	13.1	11.8
Cycle Q Clear(g_c), s	2.4	4.4	13.0	4.0	8.0	8.1	2.1	12.4	3.0	2.0	13.1	11.8
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	1328	525	291	928	480	242	1514	605	238	1509	584
V/C Ratio(X)	0.54	0.33	0.72	0.76	0.55	0.55	0.50	0.74	0.19	0.49	0.77	0.62
Avail Cap(c_a), veh/h	291	1469	568	291	979	507	275	1514	605	275	1509	584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	18.7	18.4	28.1	19.4	19.5	28.1	19.8	12.9	28.1	20.1	16.2
Incr Delay (d2), s/veh	1.8	0.1	3.9	11.3	0.6	1.2	1.6	3.3	0.7	1.5	3.9	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.0	6.2	2.3	3.8	4.1	1.1	6.3	1.4	1.0	6.6	5.9
LnGrp Delay(d),s/veh	29.9	18.9	22.3	39.4	20.0	20.7	29.7	23.1	13.6	29.6	24.0	21.2
LnGrp LOS	C	B	C	D	C	C	C	C	B	C	C	C
Approach Vol, veh/h		949			996			1355			1648	
Approach Delay, s/veh		21.8			24.5			22.9			23.8	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	23.2	9.8	20.9	8.9	23.1	9.0	21.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.6	5.3	18.1	5.0	18.6	5.3	18.1				
Max Q Clear Time (g_c+I1), s	4.0	14.4	6.0	15.0	4.1	15.1	4.4	10.1				
Green Ext Time (p_c), s	0.0	2.8	0.0	1.3	0.0	2.6	0.0	3.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.3									
HCM 2010 LOS			C									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↑↑↑	↗	↖	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		50	0		0	114		306	200		190
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.905				0.850			0.850
Flt Protected		0.950			0.985		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1660	0	1770	5085	1583	1770	5085	1583
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1863	1583	0	1686	0	1770	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109				109			109
Link Speed (mph)		30			30			30				30
Link Distance (ft)		502			1333			1078				969
Travel Time (s)		11.4			30.3			24.5				22.0

Intersection Summary

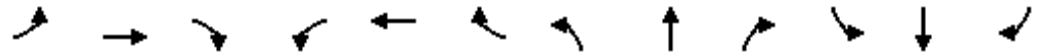
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	10	0	5	3	0	6	23	1308	12	35	1582	82
Future Volume (vph)	10	0	5	3	0	6	23	1308	12	35	1582	82
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	11	0	5	3	0	7	25	1437	13	38	1738	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	5	0	10	0	25	1437	13	38	1738	90
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021

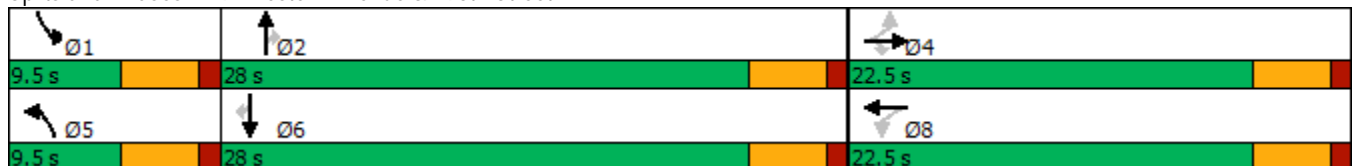


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↖	↑↑↑	↗	↖	↑↑↑	↗
Traffic Volume (vph)	10	0	5	3	0	23	1308	12	35	1582	82
Future Volume (vph)	10	0	5	3	0	23	1308	12	35	1582	82
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8				2			6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	28.0	28.0	9.5	28.0	28.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	15.8%	46.7%	46.7%	15.8%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		6.0	6.0		5.8	5.1	38.1	38.1	5.1	38.1	38.1
Actuated g/C Ratio		0.14	0.14		0.14	0.12	0.90	0.90	0.12	0.90	0.90
v/c Ratio		0.04	0.02		0.03	0.12	0.32	0.01	0.18	0.38	0.06
Control Delay		16.4	0.0		0.2	18.7	2.9	0.0	19.6	3.2	1.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.4	0.0		0.2	18.7	2.9	0.0	19.6	3.2	1.4
LOS		B	A		A	B	A	A	B	A	A
Approach Delay		11.3			0.2		3.1			3.4	
Approach LOS		B			A		A			A	

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 42.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 3.3	Intersection LOS: A
Intersection Capacity Utilization 50.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: Western Avenue & 195th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 9: Western Avenue &amp; 195th Street

10/06/2021
























Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	11	5	10	25	1437	13	38	1738	90
v/c Ratio	0.04	0.02	0.03	0.12	0.32	0.01	0.18	0.38	0.06
Control Delay	16.4	0.0	0.2	18.7	2.9	0.0	19.6	3.2	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	0.0	0.2	18.7	2.9	0.0	19.6	3.2	1.4
Queue Length 50th (ft)	2	0	0	6	0	0	9	0	0
Queue Length 95th (ft)	13	0	0	24	134	0	32	175	13
Internal Link Dist (ft)	422		1253		998			889	
Turn Bay Length (ft)		50		114		306	200		190
Base Capacity (vph)	798	741	785	210	4557	1430	210	4557	1430
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.01	0.12	0.32	0.01	0.18	0.38	0.06

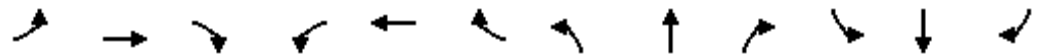
## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	5	3	0	6	23	1308	12	35	1582	82
Future Volume (veh/h)	10	0	5	3	0	6	23	1308	12	35	1582	82
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	11	0	5	3	0	7	25	1437	13	38	1738	90
Adj No. of Lanes	0	1	1	0	1	0	1	3	1	1	3	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	0	50	129	0	27	54	2989	931	76	3054	951
Arrive On Green	0.03	0.00	0.03	0.03	0.00	0.03	0.03	0.59	0.59	0.04	0.60	0.60
Sat Flow, veh/h	1550	0	1583	369	0	862	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	11	0	5	10	0	0	25	1437	13	38	1738	90
Grp Sat Flow(s),veh/h/ln	1551	0	1583	1231	0	0	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	0.1	0.3	0.0	0.0	0.6	6.5	0.1	0.8	8.3	1.0
Cycle Q Clear(g_c), s	0.2	0.0	0.1	0.5	0.0	0.0	0.6	6.5	0.1	0.8	8.3	1.0
Prop In Lane	1.00		1.00	0.30		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	0	50	156	0	0	54	2989	931	76	3054	951
V/C Ratio(X)	0.05	0.00	0.10	0.06	0.00	0.00	0.46	0.48	0.01	0.50	0.57	0.09
Avail Cap(c_a), veh/h	816	0	713	795	0	0	222	2989	931	222	3054	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	0.0	18.8	19.1	0.0	0.0	19.1	4.7	3.4	18.7	4.8	3.4
Incr Delay (d2), s/veh	0.1	0.0	0.9	0.2	0.0	0.0	6.1	0.6	0.0	4.9	0.8	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.1	0.0	0.0	0.4	3.1	0.1	0.5	3.9	0.5
LnGrp Delay(d),s/veh	19.0	0.0	19.7	19.3	0.0	0.0	25.2	5.3	3.5	23.6	5.6	3.6
LnGrp LOS	B		B	B			C	A	A	C	A	A
Approach Vol, veh/h		16			10			1475			1866	
Approach Delay, s/veh		19.2			19.3			5.6			5.9	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	28.0		5.8	5.7	28.5		5.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	23.5		18.0	5.0	23.5		18.0				
Max Q Clear Time (g_c+I1), s	2.8	8.5		2.2	2.6	10.3		2.5				
Green Ext Time (p_c), s	0.0	8.9		0.0	0.0	9.7		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			5.9									
HCM 2010 LOS			A									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	62		64	0		0	200		50	92		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.959				0.850		0.949	
Flt Protected	0.950	0.960			0.992		0.950			0.950		
Satd. Flow (prot)	1681	1699	1583	0	1772	0	1770	3539	1583	1770	4826	0
Flt Permitted	0.950	0.960			0.992		0.096			0.253		
Satd. Flow (perm)	1681	1699	1583	0	1772	0	179	3539	1583	471	4826	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111		15				55		188	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1176			1320			1187			1078	
Travel Time (s)		26.7			30.0			27.0			24.5	

Intersection Summary

Area Type: Other

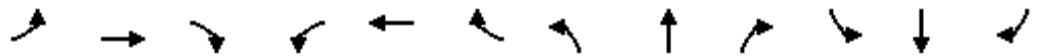


Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	178	15	107	20	68	38	144	927	11	17	1104	572
Future Volume (vph)	178	15	107	20	68	38	144	927	11	17	1104	572
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	185	16	111	21	71	40	150	966	11	18	1150	596
Shared Lane Traffic (%)	46%											
Lane Group Flow (vph)	100	101	111	0	132	0	150	966	11	18	1746	0
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	178	15	107	68	144	927	11	17	1104
Future Volume (vph)	178	15	107	68	144	927	11	17	1104
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4	4		8		2			6
Permitted Phases			4		2		2	6	
Detector Phase	4	4	4	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	75.0	75.0	75.0	75.0	75.0
Total Split (%)	18.8%	18.8%	18.8%	18.8%	62.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effect Green (s)	11.9	11.9	11.9	12.4	70.8	70.8	70.8	70.8	70.8
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.65	0.65	0.65	0.65	0.65
v/c Ratio	0.54	0.54	0.41	0.61	1.29	0.42	0.01	0.06	0.54
Control Delay	57.6	57.5	13.2	53.7	206.1	10.7	0.0	9.8	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	57.5	13.2	53.7	206.1	10.7	0.0	9.8	10.5
LOS	E	E	B	D	F	B	A	A	B
Approach Delay		41.8		53.7		36.6			10.5
Approach LOS		D		D		D			B

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 108.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.29	
Intersection Signal Delay: 24.0	Intersection LOS: C
Intersection Capacity Utilization 67.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 10: Western Avenue & Del Amo Boulevard



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 10: Western Avenue &amp; Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	100	101	111	132	150	966	11	18	1746
v/c Ratio	0.54	0.54	0.41	0.61	1.29	0.42	0.01	0.06	0.54
Control Delay	57.6	57.5	13.2	53.7	206.1	10.7	0.0	9.8	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	57.5	13.2	53.7	206.1	10.7	0.0	9.8	10.5
Queue Length 50th (ft)	70	70	0	78	-133	154	0	4	192
Queue Length 95th (ft)	133	134	52	148	#213	261	0	17	310
Internal Link Dist (ft)		1096		1240		1107			998
Turn Bay Length (ft)	62		64		200		50	92	
Base Capacity (vph)	279	282	355	307	116	2305	1050	306	3209
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.36	0.31	0.43	1.29	0.42	0.01	0.06	0.54

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.























Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	15	107	20	68	38	144	927	11	17	1104	572
Future Volume (veh/h)	178	15	107	20	68	38	144	927	11	17	1104	572
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	196	0	111	21	71	40	150	966	11	18	1150	596
Adj No. of Lanes	2	0	1	0	1	0	1	2	1	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	335	0	149	26	89	50	204	2410	1078	391	2308	1078
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	3548	0	1583	279	944	532	275	3539	1583	573	3390	1583
Grp Volume(v), veh/h	196	0	111	132	0	0	150	966	11	18	1150	596
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1755	0	0	275	1770	1583	573	1695	1583
Q Serve(g_s), s	5.5	0.0	7.1	7.6	0.0	0.0	50.6	12.4	0.2	1.5	17.0	19.9
Cycle Q Clear(g_c), s	5.5	0.0	7.1	7.6	0.0	0.0	70.5	12.4	0.2	13.9	17.0	19.9
Prop In Lane	1.00		1.00	0.16		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	335	0	149	166	0	0	204	2410	1078	391	2308	1078
V/C Ratio(X)	0.59	0.00	0.74	0.80	0.00	0.00	0.74	0.40	0.01	0.05	0.50	0.55
Avail Cap(c_a), veh/h	617	0	275	305	0	0	204	2410	1078	391	2308	1078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	45.7	45.9	0.0	0.0	29.2	7.2	5.3	10.3	8.0	8.5
Incr Delay (d2), s/veh	1.6	0.0	7.1	8.4	0.0	0.0	21.0	0.5	0.0	0.2	0.8	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	3.4	4.1	0.0	0.0	5.4	6.2	0.1	0.3	8.1	9.2
LnGrp Delay(d),s/veh	46.6	0.0	52.8	54.4	0.0	0.0	50.1	7.7	5.3	10.5	8.7	10.5
LnGrp LOS	D		D	D			D	A	A	B	A	B
Approach Vol, veh/h		307			132			1127			1764	
Approach Delay, s/veh		48.8			54.4			13.4			9.4	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.0		14.3		75.0		14.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		70.5		18.0		70.5		18.0				
Max Q Clear Time (g_c+I1), s		72.5		9.1		21.9		9.6				
Green Ext Time (p_c), s		0.0		0.7		21.4		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.1									
HCM 2010 LOS			B									
<b>Notes</b>												

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 11: Project Access 1 & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.999			0.850				0.966
Flt Protected	0.950			0.950								0.964
Satd. Flow (prot)	1770	5085	0	1770	3536	0	1863	1583	0	0	1735	0
Flt Permitted	0.950			0.950								0.964
Satd. Flow (perm)	1770	5085	0	1770	3536	0	1863	1583	0	0	1735	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1861			645			451				561
Travel Time (s)		42.3			14.7			10.3				12.8

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

11: Project Access 1 & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	8	1280	1	3	1095	7	0	0	1	3	0	1
Future Volume (vph)	8	1280	1	3	1095	7	0	0	1	3	0	1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	1320	1	3	1129	7	0	0	1	3	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1321	0	3	1136	0	0	1	0	0	4	0
Intersection Summary												

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↑↑↑			↔ ↑↑			↔ ↑			↔		
Traffic Vol, veh/h	8	1280	1	3	1095	7	0	0	1	3	0	1
Future Vol, veh/h	8	1280	1	3	1095	7	0	0	1	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1320	1	3	1129	7	0	0	1	3	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1136	0	0	1321	0	0	1908	2479	661	1683	2476	568
Stage 1	-	-	-	-	-	-	1337	1337	-	1139	1139	-
Stage 2	-	-	-	-	-	-	571	1142	-	544	1337	-
Critical Hdwy	4.14	-	-	5.34	-	-	6.99	6.54	7.14	6.99	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.74	5.54	-
Follow-up Hdwy	2.22	-	-	3.12	-	-	3.67	4.02	3.92	3.67	4.02	3.32
Pot Cap-1 Maneuver	611	-	-	273	-	-	55	29	347	78	29	466
Stage 1	-	-	-	-	-	-	118	220	-	209	274	-
Stage 2	-	-	-	-	-	-	459	273	-	462	220	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	611	-	-	273	-	-	54	28	347	76	28	466
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	28	-	76	28	-
Stage 1	-	-	-	-	-	-	116	217	-	206	271	-
Stage 2	-	-	-	-	-	-	453	270	-	455	217	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0			15.4			44.2		
HCM LOS							C			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	347	611	-	-	273	-	-	96
HCM Lane V/C Ratio	-	0.003	0.013	-	-	0.011	-	-	0.043
HCM Control Delay (s)	0	15.4	11	-	-	18.3	-	-	44.2
HCM Lane LOS	A	C	B	-	-	C	-	-	E
HCM 95th %tile Q(veh)	-	0	0	-	-	0	-	-	0.1

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 12: Western Avenue & Project Access 2 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↑↑↑		↙	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt					0.887			0.999				
Flt Protected					0.992					0.950		
Satd. Flow (prot)	0	1863	0	0	1639	0	1863	5080	0	1770	5085	0
Flt Permitted					0.992					0.950		
Satd. Flow (perm)	0	1863	0	0	1639	0	1863	5080	0	1770	5085	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		781			1291			969			584	
Travel Time (s)		17.8			29.3			22.0			13.3	

Intersection Summary

Area Type: Other

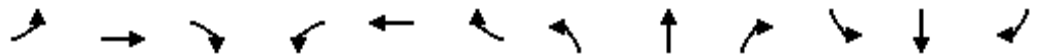


Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

12: Western Avenue & Project Access 2

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	1	0	5	0	1316	8	11	1703	0
Future Volume (vph)	0	0	0	1	0	5	0	1316	8	11	1703	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	1	0	5	0	1400	9	12	1812	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	6	0	0	1409	0	12	1812	0
Intersection Summary												

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	0	0	0	1	0	5	0	1316	8	11	1703	0
Future Vol, veh/h	0	0	0	1	0	5	0	1316	8	11	1703	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	1	0	5	0	1400	9	12	1812	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2396	3245	906	2154	3241	705	1812	0	0	1409	0	0
Stage 1	1836	1836	-	1405	1405	-	-	-	-	-	-	-
Stage 2	560	1409	-	749	1836	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	36	9	240	51	9	325	156	-	-	247	-	-
Stage 1	51	125	-	103	204	-	-	-	-	-	-	-
Stage 2	438	203	-	336	125	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	34	9	240	49	9	325	156	-	-	247	-	-
Mov Cap-2 Maneuver	34	9	-	49	9	-	-	-	-	-	-	-
Stage 1	51	119	-	103	204	-	-	-	-	-	-	-
Stage 2	431	203	-	320	119	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB		
HCM Control Delay, s	0		27.3		0		0.1		
HCM LOS	A		D						

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	156	-	-	-	168	247	-
HCM Lane V/C Ratio	-	-	-	-	0.038	0.047	-
HCM Control Delay (s)	0	-	-	0	27.3	20.3	-
HCM Lane LOS	A	-	-	A	D	C	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	72		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.995
Satd. Flow (prot)	1611	0	1863	0	0	1853
Flt Permitted						0.995
Satd. Flow (perm)	1611	0	1863	0	0	1853
Link Speed (mph)	30		30		30	
Link Distance (ft)	795		967		440	
Travel Time (s)	18.1		22.0		10.0	

**Intersection Summary**

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

13: Gramercy Place/Van Ness Avenue & Project Access 3

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	1	20	0	2	22
Future Volume (vph)	0	1	20	0	2	22
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	1	25	0	3	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	25	0	0	31
<b>Intersection Summary</b>						

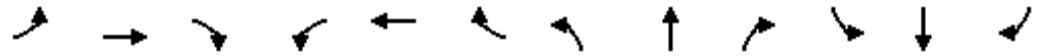
Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	20	0	2	22
Future Vol, veh/h	0	1	20	0	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	25	0	3	28

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	59	25	0	0	25	0
Stage 1	25	-	-	-	-	-
Stage 2	34	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	948	1051	-	-	1589	-
Stage 1	998	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	946	1051	-	-	1589	-
Mov Cap-2 Maneuver	946	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1051	1589
HCM Lane V/C Ratio	-	-	0.001	0.002
HCM Control Delay (s)	-	-	8.4	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 14: 195th Street & Project Access 4 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	98		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt					0.990							0.955
Flt Protected	0.950											0.968
Satd. Flow (prot)	1770	1863	0	1863	1844	0	0	1863	0	0	1722	0
Flt Permitted	0.950											0.968
Satd. Flow (perm)	1770	1863	0	1863	1844	0	0	1863	0	0	1722	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		500			713			827				834
Travel Time (s)		11.4			16.2			18.8				19.0

Intersection Summary

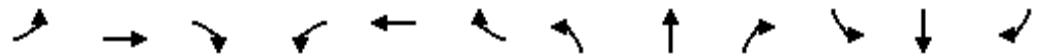
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

14: 195th Street & Project Access 4

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	12	0	0	102	7	0	0	0	4	0	2
Future Volume (vph)	1	12	0	0	102	7	0	0	0	4	0	2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	17	0	0	146	10	0	0	0	6	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	17	0	0	156	0	0	0	0	0	9	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

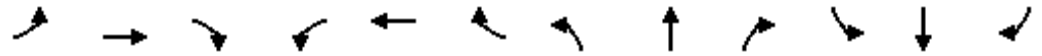
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	1	12	0	0	102	7	0	0	0	4	0	2
Future Vol, veh/h	1	12	0	0	102	7	0	0	0	4	0	2
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	17	0	0	146	10	0	0	0	6	0	3
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.5	8.3	0	7.3
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	67%
Vol Thru, %	100%	0%	100%	100%	94%	0%
Vol Right, %	0%	0%	0%	0%	6%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	1	12	0	109	6
LT Vol	0	1	0	0	0	4
Through Vol	0	0	12	0	102	0
RT Vol	0	0	0	0	7	2
Lane Flow Rate	0	1	17	0	156	9
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.002	0.022	0	0.195	0.01
Departure Headway (Hd)	4.364	5.126	4.625	4.558	4.513	4.287
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	698	773	0	799	840
Service Time	2.364	2.861	2.36	2.267	2.222	2.287
HCM Lane V/C Ratio	0	0.001	0.022	0	0.195	0.011
HCM Control Delay	7.4	7.9	7.5	7.3	8.3	7.3
HCM Lane LOS	N	A	A	N	A	A
HCM 95th-tile Q	0	0	0.1	0	0.7	0



Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 15: 195th Street & Project Access 5 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	102		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Fr <sub>t</sub>												
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	1863	0	0	3539	0	0	1863	0	0	1770	0
Flt Permitted	0.950										0.950	
Satd. Flow (perm)	1770	1863	0	0	3539	0	0	1863	0	0	1770	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		713			502			847			825	
Travel Time (s)		16.2			11.4			19.3			18.8	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

15: 195th Street & Project Access 5

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	2	15	0	0	104	0	0	0	0	2	0	0
Future Volume (vph)	2	15	0	0	104	0	0	0	0	2	0	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	20	0	0	139	0	0	0	0	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	20	0	0	139	0	0	0	0	0	3	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	6.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	15	0	0	104	0	0	0	0	2	0	0
Future Vol, veh/h	2	15	0	0	104	0	0	0	0	2	0	0
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	20	0	0	139	0	0	0	0	3	0	0
Number of Lanes	1	1	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.4	6.7	0	7.5
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	100%
Vol Thru, %	100%	0%	100%	100%	100%	0%
Vol Right, %	0%	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	2	15	52	52	2
LT Vol	0	2	0	0	0	2
Through Vol	0	0	15	52	52	0
RT Vol	0	0	0	0	0	0
Lane Flow Rate	0	3	20	69	69	3
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.004	0.026	0.088	0.054	0.003
Departure Headway (Hd)	4.202	5.106	4.606	4.548	2.814	4.4
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	703	780	791	1277	809
Service Time	2.254	2.818	2.318	2.256	0.521	2.45
HCM Lane V/C Ratio	0	0.004	0.026	0.087	0.054	0.004
HCM Control Delay	7.3	7.8	7.4	7.7	5.7	7.5
HCM Lane LOS	N	A	A	A	A	A
HCM 95th-tile Q	0	0	0.1	0.3	0.2	0

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TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
EXISTING CONDITIONS  
PM PEAK HOUR

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## Scenario Report

Scenario: EX\_PM  
Command: EX\_PM  
Volume: EX PM  
Geometry: EXISTING  
Impact Fee: Default Impact Fee  
Trip Generation: NONE  
Trip Distribution: DEFAULT  
Paths: Default Path  
Routes: Default Route  
Configuration: EXISTING

-----  
 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Turning Movement Report  
 NONE

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#1 VAN NESS AVE / 190TH ST													
Base	70	513	183	61	353	159	178	1489	91	58	677	61	3893
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	70	513	183	61	353	159	178	1489	91	58	677	61	3893
#2 VAN NESS AVE / 195TH ST													
Base	0	712	4	6	531	0	0	0	0	11	0	25	1289
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	712	4	6	531	0	0	0	0	11	0	25	1289
#3 VAN NESS AVE / DEL AMO BLVD													
Base	58	463	64	59	355	106	241	557	92	52	379	38	2464
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	58	463	64	59	355	106	241	557	92	52	379	38	2464
#4 GRAMERCY PL / 190TH ST													
Base	9	1	36	1	0	0	0	1709	1	4	757	27	2545
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	1	36	1	0	0	0	1709	1	4	757	27	2545
#5 GRMAERCY PL / 195TH ST													
Base	15	12	12	10	0	5	13	16	1	4	20	4	112
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	12	12	10	0	5	13	16	1	4	20	4	112
#6 I-405 SOUTHBOUND RAMPS / 190TH ST													
Base	0	0	0	418	0	14	600	1161	0	0	775	130	3098
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	418	0	14	600	1161	0	0	775	130	3098
#7 WESTERN AVE / I-405 NORTHBOUND RAMPS													
Base	0	1147	488	43	822	0	0	0	0	586	0	244	3330
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1147	488	43	822	0	0	0	0	586	0	244	3330
#8 WESTERN AVE / 190TH ST													
Base	126	1145	233	111	992	302	250	1010	332	133	486	218	5338
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	126	1145	233	111	992	302	250	1010	332	133	486	218	5338
#9 WESTERN AVE / 195TH ST													
Base	6	1417	3	12	1529	17	48	0	13	12	0	26	3083
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	1417	3	12	1529	17	48	0	13	12	0	26	3083

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
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Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#10 WESTERN AVE / DEL AMO BLVD													
Base	92	967	15	36	1253	349	489	79	229	21	22	35	3587
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	92	967	15	36	1253	349	489	79	229	21	22	35	3587
#11 PROJECT ACCESS 1 / 190TH ST													
Base	0	0	0	23	0	15	6	1749	0	1	777	0	2571
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	23	0	15	6	1749	0	1	777	0	2571
#12 WESTERN AVE / PROJECT ACCESS 2													
Base	0	1484	0	8	1539	0	0	0	0	3	0	10	3044
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1484	0	8	1539	0	0	0	0	3	0	10	3044
#13 GRAMERCY PL / PROJECT ACCESS 3													
Base	0	39	0	1	16	0	0	0	0	0	0	1	57
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	39	0	1	16	0	0	0	0	0	0	1	57
#14 PROJECT ACCESS 4 / 195TH ST													
Base	0	0	0	11	0	0	0	46	0	0	30	21	108
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	11	0	0	0	46	0	0	30	21	108
#15 PROJECT ACCESS 5 / 195TH ST													
Base	0	0	0	0	0	3	4	53	0	0	55	1	116
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	4	53	0	0	55	1	116

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Level Of Service Computation Report  
 ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)  
 \*\*\*\*\*  
 Intersection #1 VAN NESS AVE / 190TH ST  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.645  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 44 Level Of Service: B  
 \*\*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----  
 Control: Protected Protected Protected Protected  
 Rights: Include Ovl Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 2 0 2 0 1 1 0 2 0 1 1 0 3 0 1 1 0 2 0 1  
 -----  
 Volume Module:  
 Base Vol: 70 513 183 61 353 159 178 1489 91 58 677 61  
 Growth 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  
 Initial Bse: 70 513 183 61 353 159 178 1489 91 58 677 61  
 User 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  
 PHF 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  
 PHF Volume: 70 513 183 61 353 159 178 1489 91 58 677 61  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 70 513 183 61 353 159 178 1489 91 58 677 61  
 PCE 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  
 MLF 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  
 FinalVolume: 70 513 183 61 353 159 178 1489 91 58 677 61  
 OvlAdjVol: 0  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 2.00 2.00 1.00 1.00 2.00 1.00 1.00 3.00 1.00 1.00 2.00 1.00  
 Final Sat.: 3200 3200 1600 1600 3200 1600 1600 4800 1600 1600 3200 1600  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.02 0.16 0.11 0.04 0.11 0.10 0.11 0.31 0.06 0.04 0.21 0.04  
 OvlAdjV/S: 0.00  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\*  
 \*\*\*\*\*

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #2 VAN NESS AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.342  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 26 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	0	0	0	0	1

Volume Module:

Base Vol:	0	712	4	6	531	0	0	0	0	11	0	25
Growth 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
Initial Bse:	0	712	4	6	531	0	0	0	0	11	0	25
User 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
PHF 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
PHF Volume:	0	712	4	6	531	0	0	0	0	11	0	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	712	4	6	531	0	0	0	0	11	0	25
PCE 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
MLF 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
FinalVolume:	0	712	4	6	531	0	0	0	0	11	0	25
OvlAdjVol:	0											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	0	3200	1600	1600	3200	0	0	0	0	3200	0	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.22	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.02
OvlAdjV/S:	0.00											
Crit Moves:	****			****						****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #3 VAN NESS AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.682  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 48 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	2	0	1	1	0	2

Volume Module:

Base Vol:	58	463	64	59	355	106	241	557	92	52	379	38
Growth 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
Initial Bse:	58	463	64	59	355	106	241	557	92	52	379	38
User 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
PHF 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
PHF Volume:	58	463	64	59	355	106	241	557	92	52	379	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	58	463	64	59	355	106	241	557	92	52	379	38
PCE 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
MLF 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
FinalVolume:	58	463	64	59	355	106	241	557	92	52	379	38

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.76	0.24	1.00	1.54	0.46	2.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	2811	389	1600	2464	736	3200	1600	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.04	0.16	0.16	0.04	0.14	0.14	0.08	0.35	0.06	0.03	0.12	0.02
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Level Of Service Computation Report  
 ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)  
 \*\*\*\*\*  
 Intersection #4 GRAMERCY PL / 190TH ST  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.483  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 32 Level Of Service: A  
 \*\*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----  
 Control: Permitted Permitted Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 1 1 0  
 -----  
 Volume Module:  
 Base Vol: 9 1 36 1 0 0 0 1709 1 4 757 27  
 Growth 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  
 Initial Bse: 9 1 36 1 0 0 0 1709 1 4 757 27  
 User 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  
 PHF 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  
 PHF Volume: 9 1 36 1 0 0 0 1709 1 4 757 27  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 9 1 36 1 0 0 0 1709 1 4 757 27  
 PCE 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  
 MLF 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  
 FinalVolume: 9 1 36 1 0 0 0 1709 1 4 757 27  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 0.03 0.97 1.00 1.00 0.00 1.00 2.99 0.01 1.00 1.93 0.07  
 Final Sat.: 1600 43 1557 1600 1600 0 1600 4797 3 1600 3090 110  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.01 0.02 0.02 0.00 0.00 0.00 0.00 0.36 0.36 0.00 0.24 0.25  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\*  
 \*\*\*\*\*

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #6 I-405 SOUTHBOUND RAMPS / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.584  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 39 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	1	2	0	3	0	0	3

Volume Module:

Base Vol:	0	0	0	418	0	14	600	1161	0	0	775	130
Growth 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
Initial Bse:	0	0	0	418	0	14	600	1161	0	0	775	130
User 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
PHF 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
PHF Volume:	0	0	0	418	0	14	600	1161	0	0	775	130
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	418	0	14	600	1161	0	0	775	130
PCE 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
MLF 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
FinalVolume:	0	0	0	418	0	14	600	1161	0	0	775	130

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.94	0.00	0.06	2.00	3.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	3096	0	104	3200	4800	0	0	4800	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.13	0.00	0.14	0.19	0.24	0.00	0.00	0.16	0.08
Crit Moves:						****	****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #7 WESTERN AVE / I-405 NORTHBOUND RAMPS

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.745  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 56 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Ovl				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	3	0	0	0	0	0	0	0	1	0	1	0	0

Volume Module:

Base Vol:	0	1147	488	43	822	0	0	0	0	586	0	244
Growth 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
Initial Bse:	0	1147	488	43	822	0	0	0	0	586	0	244
User 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
PHF 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
PHF Volume:	0	1147	488	43	822	0	0	0	0	586	0	244
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1147	488	43	822	0	0	0	0	586	0	244
PCE 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
MLF 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
FinalVolume:	0	1147	488	43	822	0	0	0	0	586	0	244
OvlAdjVol:	73											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	3.00	0.00	0.00	0.00	0.00	1.41	0.00	0.59
Final Sat.:	0	3200	1600	1600	4800	0	0	0	0	2259	0	941

Capacity Analysis Module:

Vol/Sat:	0.00	0.36	0.31	0.03	0.17	0.00	0.00	0.00	0.00	0.26	0.00	0.26
OvlAdjV/S:	0.05											
Crit Moves:	****				****				****			

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #8 WESTERN AVE / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.625  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 42 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Ovl			Ovl			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	3	0	1	1	2	0	3	0	1	0

Volume Module:

Base Vol:	126	1145	233	111	992	302	250	1010	332	133	486	218
Growth 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
Initial Bse:	126	1145	233	111	992	302	250	1010	332	133	486	218
User 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
PHF 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
PHF Volume:	126	1145	233	111	992	302	250	1010	332	133	486	218
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	126	1145	233	111	992	302	250	1010	332	133	486	218
PCE 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
MLF 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
FinalVolume:	126	1145	233	111	992	302	250	1010	332	133	486	218
OvlAdjVol:	167			177			269					

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.07	0.93
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	3314	1486

Capacity Analysis Module:

Vol/Sat:	0.04	0.24	0.15	0.03	0.21	0.19	0.08	0.21	0.21	0.04	0.15	0.15
OvlAdjV/S:	0.10			0.11			0.17					
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #9 WESTERN AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.476  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 32 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	0	0	1	0	0	1	0

Volume Module:

Base Vol:	6	1417	3	12	1529	17	48	0	13	12	0	26
Growth 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
Initial Bse:	6	1417	3	12	1529	17	48	0	13	12	0	26
User 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
PHF 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
PHF Volume:	6	1417	3	12	1529	17	48	0	13	12	0	26
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	1417	3	12	1529	17	48	0	13	12	0	26
PCE 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
MLF 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
FinalVolume:	6	1417	3	12	1529	17	48	0	13	12	0	26

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.00	1.00	0.32	0.00	0.68
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	0	1600	505	0	1095

Capacity Analysis Module:

Vol/Sat:	0.00	0.30	0.00	0.01	0.32	0.01	0.03	0.00	0.01	0.01	0.00	0.02
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 EXISTING CONDITIONS  
 PM PEAK HOUR  
 -----

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #10 WESTERN AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.718  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 52 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	0	1	1	0	0	1	0

Volume Module:

Base Vol:	92	967	15	36	1253	349	489	79	229	21	22	35
Growth 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
Initial Bse:	92	967	15	36	1253	349	489	79	229	21	22	35
User 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
PHF 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
PHF Volume:	92	967	15	36	1253	349	489	79	229	21	22	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	92	967	15	36	1253	349	489	79	229	21	22	35
PCE 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
MLF 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
FinalVolume:	92	967	15	36	1253	349	489	79	229	21	22	35

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.35	0.65	1.72	0.28	1.00	0.27	0.28	0.45
Final Sat.:	1600	3200	1600	1600	3754	1046	2755	445	1600	431	451	718

Capacity Analysis Module:

Vol/Sat:	0.06	0.30	0.01	0.02	0.33	0.33	0.18	0.18	0.14	0.05	0.05	0.05
Crit Moves:	****				****		****			****		

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Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 5: Gramercy Place & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt		0.996			0.980			0.958			0.955	
Flt Protected		0.979			0.993			0.982			0.968	
Satd. Flow (prot)	0	1816	0	0	1813	0	0	1752	0	0	1722	0
Flt Permitted		0.979			0.993			0.982			0.968	
Satd. Flow (perm)	0	1816	0	0	1813	0	0	1752	0	0	1722	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1405			500			880			967	
Travel Time (s)		31.9			11.4			20.0			22.0	

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

5: Gramercy Place & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	13	16	1	4	20	4	15	12	12	10	0	5
Future Volume (vph)	13	16	1	4	20	4	15	12	12	10	0	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	16	20	1	5	24	5	18	15	15	12	0	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	37	0	0	34	0	0	48	0	0	18	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	16	1	4	20	4	15	12	12	10	0	5
Future Vol, veh/h	13	16	1	4	20	4	15	12	12	10	0	5
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	20	1	5	24	5	18	15	15	12	0	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.2	7.2	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	43%	14%	67%
Vol Thru, %	31%	53%	71%	0%
Vol Right, %	31%	3%	14%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	39	30	28	15
LT Vol	15	13	4	10
Through Vol	12	16	20	0
RT Vol	12	1	4	5
Lane Flow Rate	48	37	34	18
Geometry Grp	1	1	1	1
Degree of Util (X)	0.052	0.042	0.038	0.02
Departure Headway (Hd)	3.963	4.14	4.018	4.026
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	901	863	888	885
Service Time	1.999	2.174	2.054	2.068
HCM Lane V/C Ratio	0.053	0.043	0.038	0.02
HCM Control Delay	7.2	7.4	7.2	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0.1

Lanes and Geometrics  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	258			166	0	0
Storage Lanes	2			1	2	0
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850	0.995	
Flt Protected	0.950				0.954	
Satd. Flow (prot)	3433	5085	5085	1583	3430	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	3433	5085	5085	1583	3430	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				133	5	
Link Speed (mph)		30	30		30	
Link Distance (ft)		645	638		544	
Travel Time (s)		14.7	14.5		12.4	

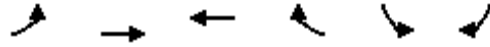
Intersection Summary

Area Type: Other

Volume  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



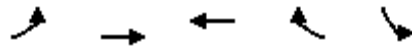
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	600	1161	775	130	418	14
Future Volume (vph)	600	1161	775	130	418	14
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	612	1185	791	133	427	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	612	1185	791	133	441	0
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

6: 190th Street & I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations	↔↔	↑↑↑	↑↑↑	↔	↔↔
Traffic Volume (vph)	600	1161	775	130	418
Future Volume (vph)	600	1161	775	130	418
Turn Type	Prot	NA	NA	Perm	Prot
Protected Phases	7	4	8		6
Permitted Phases				8	
Detector Phase	7	4	8	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	20.0	42.5	22.5	22.5	22.5
Total Split (%)	30.8%	65.4%	34.6%	34.6%	34.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	None	None	None	Max
Act Effect Green (s)	14.4	35.0	16.0	16.0	18.1
Actuated g/C Ratio	0.23	0.56	0.26	0.26	0.29
v/c Ratio	0.77	0.41	0.60	0.26	0.44
Control Delay	30.3	8.1	22.4	5.6	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	8.1	22.4	5.6	20.1
LOS	C	A	C	A	C
Approach Delay		15.7	20.0		20.1
Approach LOS		B	B		C

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 62.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 55.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: 190th Street & I-405 Ramp

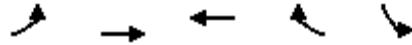


## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 6: 190th Street &amp; I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	612	1185	791	133	441
v/c Ratio	0.77	0.41	0.60	0.26	0.44
Control Delay	30.3	8.1	22.4	5.6	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	8.1	22.4	5.6	20.1
Queue Length 50th (ft)	115	82	97	0	73
Queue Length 95th (ft)	#170	108	133	35	111
Internal Link Dist (ft)		565	558		464
Turn Bay Length (ft)	258			166	
Base Capacity (vph)	861	3128	1482	555	1003
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.38	0.53	0.24	0.44

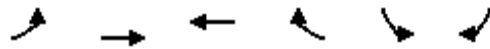
## Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCIAL CENTER PHASE 3 TRAFFIC STUDY  
 6: 190th Street & I-405 Ramp

10/06/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖↖	↖↖↖	↖↖↖	↗	↖↖			
Traffic Volume (veh/h)	600	1161	775	130	418	14		
Future Volume (veh/h)	600	1161	775	130	418	14		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	612	1185	791	133	440	0		
Adj No. of Lanes	2	3	3	1	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	0		
Cap, veh/h	755	2713	1203	374	1103	502		
Arrive On Green	0.22	0.53	0.24	0.24	0.31	0.00		
Sat Flow, veh/h	3442	5253	5253	1583	3548	1615		
Grp Volume(v), veh/h	612	1185	791	133	440	0		
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1774	1615		
Q Serve(g_s), s	9.8	8.2	8.1	4.1	5.6	0.0		
Cycle Q Clear(g_c), s	9.8	8.2	8.1	4.1	5.6	0.0		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	755	2713	1203	374	1103	502		
V/C Ratio(X)	0.81	0.44	0.66	0.36	0.40	0.00		
Avail Cap(c_a), veh/h	922	3338	1581	492	1103	502		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	21.5	8.2	20.0	18.4	15.7	0.0		
Incr Delay (d2), s/veh	4.6	0.1	0.6	0.6	1.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.1	3.8	3.9	1.8	2.9	0.0		
LnGrp Delay(d),s/veh	26.0	8.3	20.6	19.0	16.8	0.0		
LnGrp LOS	C	A	C	B	B			
Approach Vol, veh/h		1797	924		440			
Approach Delay, s/veh		14.4	20.4		16.8			
Approach LOS		B	C		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				35.4		22.5	17.2	18.2
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				38.0		18.0	15.5	18.0
Max Q Clear Time (g_c+I1), s				10.2		7.6	11.8	10.1
Green Ext Time (p_c), s				10.0		1.2	0.9	3.5
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			16.4					
HCM 2010 LOS			B					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street 10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↑↑	↗	↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	170	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.91
Ped Bike Factor						
Frt	0.956			0.850		
Flt Protected	0.966				0.950	
Satd. Flow (prot)	3337	0	3539	1583	1770	5085
Flt Permitted	0.966				0.950	
Satd. Flow (perm)	3337	0	3539	1583	1770	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	96			467		
Link Speed (mph)	30		30			30
Link Distance (ft)	1298		979			805
Travel Time (s)	29.5		22.3			18.3

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	586	244	1147	488	43	822
Future Volume (vph)	586	244	1147	488	43	822
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	644	268	1260	536	47	903
Shared Lane Traffic (%)						
Lane Group Flow (vph)	912	0	1260	536	47	903
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

	↙	↑	↘	↙	↓
Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↑↑	↘	↙	↑↑↑
Traffic Volume (vph)	586	1147	488	43	822
Future Volume (vph)	586	1147	488	43	822
Turn Type	Prot	NA	pm+ov	Prot	NA
Protected Phases	3	2	3	1	6
Permitted Phases			2		
Detector Phase	3	2	3	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5
Total Split (s)	25.0	35.5	25.0	9.5	45.0
Total Split (%)	35.7%	50.7%	35.7%	13.6%	64.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag		Lag		Lead	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	Max	None	None	Max
Act Effct Green (s)	20.0	34.9	61.2	5.0	40.5
Actuated g/C Ratio	0.29	0.50	0.88	0.07	0.58
v/c Ratio	0.89	0.71	0.37	0.37	0.30
Control Delay	33.6	17.5	1.1	39.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	17.5	1.1	39.7	7.8
LOS	C	B	A	D	A
Approach Delay	33.6	12.6			9.3
Approach LOS	C	B			A

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 69.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 17.0	Intersection LOS: B
Intersection Capacity Utilization 67.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Western Avenue/I-405 Ramp & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 7: Western Avenue/I-405 Ramp &amp; 190th Street

10/06/2021



Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	912	1260	536	47	903
v/c Ratio	0.89	0.71	0.37	0.37	0.30
Control Delay	33.6	17.5	1.1	39.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	17.5	1.1	39.7	7.8
Queue Length 50th (ft)	172	235	4	20	65
Queue Length 95th (ft)	#276	318	18	50	87
Internal Link Dist (ft)	1218	899			725
Turn Bay Length (ft)			150	170	
Base Capacity (vph)	1052	1775	1442	127	2965
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.71	0.37	0.37	0.30












## Intersection Summary

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

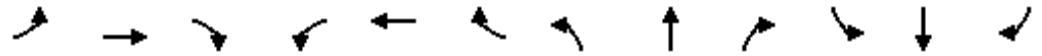
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	586	244	1147	488	43	822		
Future Volume (veh/h)	586	244	1147	488	43	822		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863		
Adj Flow Rate, veh/h	456	469	1260	536	47	903		
Adj No. of Lanes	1	1	2	1	1	3		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	520	473	1669	1210	76	2942		
Arrive On Green	0.29	0.29	0.47	0.47	0.04	0.58		
Sat Flow, veh/h	1774	1615	3632	1583	1774	5253		
Grp Volume(v), veh/h	456	469	1260	536	47	903		
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1583	1774	1695		
Q Serve(g_s), s	17.1	20.3	20.5	8.4	1.8	6.4		
Cycle Q Clear(g_c), s	17.1	20.3	20.5	8.4	1.8	6.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	520	473	1669	1210	76	2942		
V/C Ratio(X)	0.88	0.99	0.76	0.44	0.62	0.31		
Avail Cap(c_a), veh/h	520	473	1669	1210	127	2942		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	23.6	24.7	15.2	2.9	32.9	7.6		
Incr Delay (d2), s/veh	15.6	39.1	3.2	1.2	8.0	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.6	14.1	10.5	3.9	1.1	3.0		
LnGrp Delay(d),s/veh	39.2	63.8	18.4	4.1	40.9	7.8		
LnGrp LOS	D	E	B	A	D	A		
Approach Vol, veh/h	925		1796			950		
Approach Delay, s/veh	51.7		14.1			9.5		
Approach LOS	D		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.5	37.5				45.0		25.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.0	31.0				40.5		20.5
Max Q Clear Time (g_c+I1), s	3.8	22.5				8.4		22.3
Green Ext Time (p_c), s	0.0	6.3				7.5		0.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			22.4					
HCM 2010 LOS			C					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	148		190	232		0	150		316	280		250
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	4851	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	4851	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101		172				101			105
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		638			1305			584			979	
Travel Time (s)		14.5			29.7			13.3			22.3	

Intersection Summary

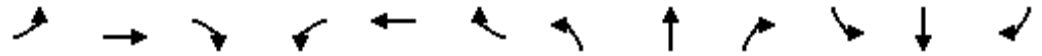
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	250	1010	332	133	486	218	126	1145	233	111	992	302
Future Volume (vph)	250	1010	332	133	486	218	126	1145	233	111	992	302
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	255	1031	339	136	496	222	129	1168	238	113	1012	308
Shared Lane Traffic (%)												
Lane Group Flow (vph)	255	1031	339	136	718	0	129	1168	238	113	1012	308
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↑	↗	↖↗	↑↑↑	↖↗	↑↑↑	↗	↖↗	↑↑↑	↗
Traffic Volume (vph)	250	1010	332	133	486	126	1145	233	111	992	302
Future Volume (vph)	250	1010	332	133	486	126	1145	233	111	992	302
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	3	1	6	7
Permitted Phases			4					2			6
Detector Phase	7	4	5	3	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	10.4	23.4	9.5	9.5	22.5	9.5	22.6	9.5	9.5	22.6	10.4
Total Split (%)	16.0%	36.0%	14.6%	14.6%	34.6%	14.6%	34.8%	14.6%	14.6%	34.8%	16.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	None
Act Effct Green (s)	5.9	18.2	27.7	5.0	17.3	5.0	20.1	29.6	5.0	18.1	28.5
Actuated g/C Ratio	0.09	0.28	0.43	0.08	0.27	0.08	0.31	0.46	0.08	0.28	0.44
v/c Ratio	0.81	0.72	0.46	0.51	0.50	0.48	0.74	0.30	0.42	0.71	0.41
Control Delay	51.3	24.0	11.2	36.0	16.2	35.2	24.4	8.4	33.8	24.1	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	24.0	11.2	36.0	16.2	35.2	24.4	8.4	33.8	24.1	9.9
LOS	D	C	B	D	B	D	C	A	C	C	A
Approach Delay		25.6			19.3		22.8			21.8	
Approach LOS		C			B		C			C	

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 64.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 22.8

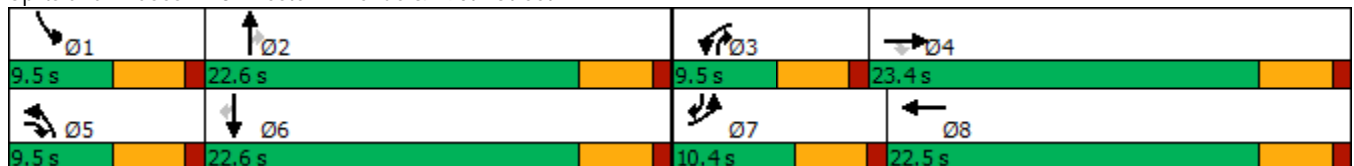
Intersection LOS: C

Intersection Capacity Utilization 65.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Western Avenue & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 8: Western Avenue &amp; 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	255	1031	339	136	718	129	1168	238	113	1012	308
v/c Ratio	0.81	0.72	0.46	0.51	0.50	0.48	0.74	0.30	0.42	0.71	0.41
Control Delay	51.3	24.0	11.2	36.0	16.2	35.2	24.4	8.4	33.8	24.1	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	24.0	11.2	36.0	16.2	35.2	24.4	8.4	33.8	24.1	9.9
Queue Length 50th (ft)	52	131	60	27	64	25	157	33	22	131	49
Queue Length 95th (ft)	#108	175	121	52	96	50	#208	76	45	174	104
Internal Link Dist (ft)		558			1225		504			899	
Turn Bay Length (ft)	148		190	232		150		316	280		250
Base Capacity (vph)	314	1494	739	267	1481	267	1588	783	267	1431	760
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.69	0.46	0.51	0.48	0.48	0.74	0.30	0.42	0.71	0.41

## Intersection Summary
























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

Queue shown is maximum after two cycles.



HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	1010	332	133	486	218	126	1145	233	111	992	302
Future Volume (veh/h)	250	1010	332	133	486	218	126	1145	233	111	992	302
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	255	1031	339	136	496	222	129	1168	238	113	1012	308
Adj No. of Lanes	2	3	1	2	3	0	2	3	1	2	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	1394	548	251	878	379	247	1496	581	238	1482	612
Arrive On Green	0.09	0.27	0.27	0.07	0.25	0.25	0.07	0.29	0.29	0.07	0.29	0.29
Sat Flow, veh/h	3442	5085	1583	3442	3484	1504	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	255	1031	339	136	482	236	129	1168	238	113	1012	308
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1597	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	4.5	11.5	11.1	2.4	7.7	8.0	2.2	13.1	7.0	2.0	10.9	9.2
Cycle Q Clear(g_c), s	4.5	11.5	11.1	2.4	7.7	8.0	2.2	13.1	7.0	2.0	10.9	9.2
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	327	1394	548	251	854	403	247	1496	581	238	1482	612
V/C Ratio(X)	0.78	0.74	0.62	0.54	0.56	0.59	0.52	0.78	0.41	0.48	0.68	0.50
Avail Cap(c_a), veh/h	327	1547	595	277	982	463	277	1496	581	277	1482	612
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	20.5	16.9	27.8	20.3	20.4	27.8	20.1	14.6	27.8	19.5	14.5
Incr Delay (d2), s/veh	11.5	1.7	1.7	1.8	0.6	1.4	1.7	4.1	2.1	1.5	2.6	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	5.6	5.0	1.2	3.7	3.7	1.1	6.6	3.3	1.0	5.4	4.4
LnGrp Delay(d),s/veh	38.9	22.2	18.6	29.6	20.8	21.8	29.5	24.2	16.8	29.3	22.0	17.5
LnGrp LOS	D	C	B	C	C	C	C	C	B	C	C	B
Approach Vol, veh/h		1625			854			1535			1433	
Approach Delay, s/veh		24.1			22.5			23.5			21.6	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	22.8	9.0	21.5	9.0	22.6	10.4	20.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.1	5.0	18.9	5.0	18.1	5.9	18.0				
Max Q Clear Time (g_c+I1), s	4.0	15.1	4.4	13.5	4.2	12.9	6.5	10.0				
Green Ext Time (p_c), s	0.0	2.2	0.0	3.6	0.0	3.3	0.0	2.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.0									
HCM 2010 LOS			C									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↑↑↑	↗	↖	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		50	0		0	114		306	200		190
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.907				0.850			0.850
Flt Protected		0.950			0.985		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1664	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.851			0.879		0.950			0.950		
Satd. Flow (perm)	0	1585	1583	0	1485	0	1770	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109				109			109
Link Speed (mph)		30			30			30				30
Link Distance (ft)		502			1333			1078				969
Travel Time (s)		11.4			30.3			24.5				22.0

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	48	0	13	12	0	26	6	1417	3	12	1529	17
Future Volume (vph)	48	0	13	12	0	26	6	1417	3	12	1529	17
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	0	13	12	0	27	6	1461	3	12	1576	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	13	0	39	0	6	1461	3	12	1576	18
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021

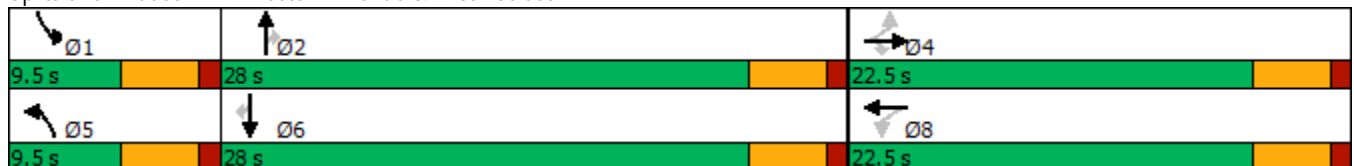


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔	↖	↑↑↑	↗	↖	↑↑↑	↗
Traffic Volume (vph)	48	0	13	12	0	6	1417	3	12	1529	17
Future Volume (vph)	48	0	13	12	0	6	1417	3	12	1529	17
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8				2			6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	28.0	28.0	9.5	28.0	28.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	15.8%	46.7%	46.7%	15.8%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		7.2	7.2		7.0	5.0	33.4	33.4	5.0	33.4	33.4
Actuated g/C Ratio		0.16	0.16		0.16	0.11	0.74	0.74	0.11	0.74	0.74
v/c Ratio		0.20	0.04		0.12	0.03	0.39	0.00	0.06	0.42	0.01
Control Delay		18.5	0.2		0.8	19.5	5.3	0.0	19.9	5.5	0.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		18.5	0.2		0.8	19.5	5.3	0.0	19.9	5.5	0.0
LOS		B	A		A	B	A	A	B	A	A
Approach Delay		14.7			0.8		5.4			5.6	
Approach LOS		B			A		A			A	

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 45.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 49.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: Western Avenue & 195th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 9: Western Avenue &amp; 195th Street

10/06/2021
























Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	49	13	39	6	1461	3	12	1576	18
v/c Ratio	0.20	0.04	0.12	0.03	0.39	0.00	0.06	0.42	0.01
Control Delay	18.5	0.2	0.8	19.5	5.3	0.0	19.9	5.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	0.2	0.8	19.5	5.3	0.0	19.9	5.5	0.0
Queue Length 50th (ft)	12	0	0	2	52	0	3	58	0
Queue Length 95th (ft)	36	0	1	10	155	0	16	172	0
Internal Link Dist (ft)	422		1253		998			889	
Turn Bay Length (ft)		50		114		306	200		190
Base Capacity (vph)	637	702	663	197	3768	1201	197	3768	1201
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.02	0.06	0.03	0.39	0.00	0.06	0.42	0.01

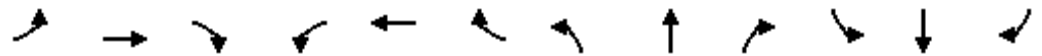
## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	0	13	12	0	26	6	1417	3	12	1529	17
Future Volume (veh/h)	48	0	13	12	0	26	6	1417	3	12	1529	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	49	0	13	12	0	27	6	1461	3	12	1576	18
Adj No. of Lanes	0	1	1	0	1	0	1	3	1	1	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	0	132	141	8	79	14	2911	906	28	2949	918
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.08	0.01	0.57	0.57	0.02	0.58	0.58
Sat Flow, veh/h	1532	0	1583	322	101	950	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	49	0	13	39	0	0	6	1461	3	12	1576	18
Grp Sat Flow(s),veh/h/ln	1532	0	1583	1372	0	0	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	0.3	0.3	0.0	0.0	0.1	7.1	0.0	0.3	7.7	0.2
Cycle Q Clear(g_c), s	1.1	0.0	0.3	1.3	0.0	0.0	0.1	7.1	0.0	0.3	7.7	0.2
Prop In Lane	1.00		1.00	0.31		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	0	132	229	0	0	14	2911	906	28	2949	918
V/C Ratio(X)	0.16	0.00	0.10	0.17	0.00	0.00	0.42	0.50	0.00	0.43	0.53	0.02
Avail Cap(c_a), veh/h	792	0	694	769	0	0	216	2911	906	216	2949	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	17.4	17.8	0.0	0.0	20.3	5.3	3.8	20.0	5.3	3.7
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.3	0.0	0.0	18.4	0.6	0.0	10.4	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	0.4	0.0	0.0	0.1	3.4	0.0	0.2	3.7	0.1
LnGrp Delay(d),s/veh	18.0	0.0	17.7	18.1	0.0	0.0	38.7	5.9	3.8	30.4	5.9	3.7
LnGrp LOS	B		B	B			D	A	A	C	A	A
Approach Vol, veh/h		62			39			1470			1606	
Approach Delay, s/veh		17.9			18.1			6.0			6.1	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	28.0		7.9	4.8	28.3		7.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	23.5		18.0	5.0	23.5		18.0				
Max Q Clear Time (g_c+I1), s	2.3	9.1		3.1	2.1	9.7		3.3				
Green Ext Time (p_c), s	0.0	8.8		0.2	0.0	9.1		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.4									
HCM 2010 LOS			A									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	62		64	0		0	200		50	92		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.940				0.850		0.967	
Flt Protected	0.950	0.965			0.987		0.950			0.950		
Satd. Flow (prot)	1681	1708	1583	0	1728	0	1770	3539	1583	1770	4917	0
Flt Permitted	0.950	0.965			0.987		0.098			0.209		
Satd. Flow (perm)	1681	1708	1583	0	1728	0	183	3539	1583	389	4917	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144		36				73		101	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1176			1320			1187			1078	
Travel Time (s)		26.7			30.0			27.0			24.5	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	489	79	229	21	22	35	92	967	15	36	1253	349
Future Volume (vph)	489	79	229	21	22	35	92	967	15	36	1253	349
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	509	82	239	22	23	36	96	1007	16	38	1305	364
Shared Lane Traffic (%)	42%											
Lane Group Flow (vph)	295	296	239	0	81	0	96	1007	16	38	1669	0
Intersection Summary												



Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021

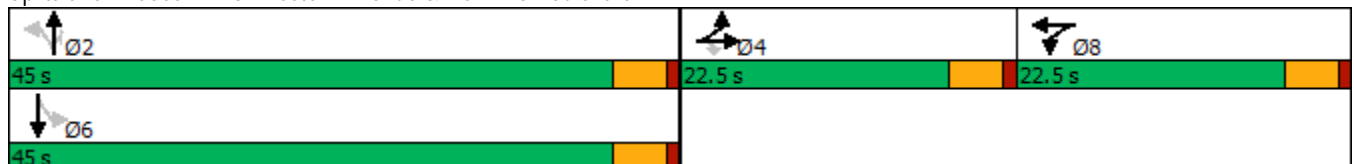


Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	489	79	229	22	92	967	15	36	1253
Future Volume (vph)	489	79	229	22	92	967	15	36	1253
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4	4		8		2			6
Permitted Phases			4		2		2	6	
Detector Phase	4	4	4	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	45.0	45.0	45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effect Green (s)	17.0	17.0	17.0	7.7	40.9	40.9	40.9	40.9	40.9
Actuated g/C Ratio	0.22	0.22	0.22	0.10	0.53	0.53	0.53	0.53	0.53
v/c Ratio	0.80	0.79	0.52	0.39	0.99	0.53	0.02	0.18	0.63
Control Delay	47.0	45.9	16.2	27.0	119.2	14.3	0.1	14.4	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	45.9	16.2	27.0	119.2	14.3	0.1	14.4	14.1
LOS	D	D	B	C	F	B	A	B	B
Approach Delay		37.7		27.0		23.1			14.1
Approach LOS		D		C		C			B

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 76.8  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.99  
 Intersection Signal Delay: 22.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 70.6%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 10: Western Avenue & Del Amo Boulevard



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 10: Western Avenue &amp; Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	295	296	239	81	96	1007	16	38	1669
v/c Ratio	0.80	0.79	0.52	0.39	0.99	0.53	0.02	0.18	0.63
Control Delay	47.0	45.9	16.2	27.0	119.2	14.3	0.1	14.4	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	45.9	16.2	27.0	119.2	14.3	0.1	14.4	14.1
Queue Length 50th (ft)	145	145	39	21	-52	170	0	10	197
Queue Length 95th (ft)	#289	#287	110	62	#151	247	0	32	270
Internal Link Dist (ft)		1096		1240		1107			998
Turn Bay Length (ft)	62		64		200		50	92	
Base Capacity (vph)	398	404	484	436	97	1885	877	207	2667
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.73	0.49	0.19	0.99	0.53	0.02	0.18	0.63

## Intersection Summary























~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

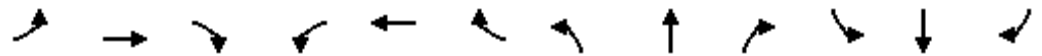
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	489	79	229	21	22	35	92	967	15	36	1253	349
Future Volume (veh/h)	489	79	229	21	22	35	92	967	15	36	1253	349
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	568	0	239	22	23	36	96	1007	16	38	1305	364
Adj No. of Lanes	2	0	1	0	1	0	1	2	1	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	710	0	317	29	30	47	197	1957	876	304	2188	609
Arrive On Green	0.20	0.00	0.20	0.06	0.06	0.06	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	3548	0	1583	463	484	758	296	3539	1583	549	3957	1102
Grp Volume(v), veh/h	568	0	239	81	0	0	96	1007	16	38	1118	551
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1706	0	0	296	1770	1583	549	1695	1668
Q Serve(g_s), s	11.2	0.0	10.4	3.4	0.0	0.0	23.5	13.0	0.3	3.4	16.1	16.2
Cycle Q Clear(g_c), s	11.2	0.0	10.4	3.4	0.0	0.0	39.6	13.0	0.3	16.4	16.1	16.2
Prop In Lane	1.00		1.00	0.27		0.44	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	710	0	317	107	0	0	197	1957	876	304	1875	923
V/C Ratio(X)	0.80	0.00	0.75	0.76	0.00	0.00	0.49	0.51	0.02	0.12	0.60	0.60
Avail Cap(c_a), veh/h	872	0	389	419	0	0	197	1957	876	304	1875	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	27.6	33.8	0.0	0.0	24.1	10.2	7.4	15.4	10.9	10.9
Incr Delay (d2), s/veh	4.4	0.0	6.5	10.5	0.0	0.0	8.4	1.0	0.0	0.8	1.4	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	5.1	1.9	0.0	0.0	2.4	6.6	0.2	0.6	7.8	8.1
LnGrp Delay(d),s/veh	32.3	0.0	34.1	44.2	0.0	0.0	32.6	11.2	7.4	16.2	12.3	13.8
LnGrp LOS	C		C	D			C	B	A	B	B	B
Approach Vol, veh/h		807			81			1119			1707	
Approach Delay, s/veh		32.8			44.2			13.0			12.9	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		19.1		45.0		9.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		40.5		18.0		40.5		18.0				
Max Q Clear Time (g_c+I1), s		41.6		13.2		18.4		5.4				
Green Ext Time (p_c), s		0.0		1.5		13.4		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			17.9									
HCM 2010 LOS			B									
<b>Notes</b>												

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 11: Project Access 1 & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt												0.946
Flt Protected	0.950			0.950								0.971
Satd. Flow (prot)	1770	5085	0	1770	3539	0	1863	1863	0	0	1711	0
Flt Permitted	0.950			0.950								0.971
Satd. Flow (perm)	1770	5085	0	1770	3539	0	1863	1863	0	0	1711	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1861			645			451				561
Travel Time (s)		42.3			14.7			10.3				12.8

Intersection Summary

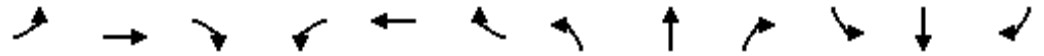
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

11: Project Access 1 & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	6	1749	0	1	777	0	0	0	0	23	0	15
Future Volume (vph)	6	1749	0	1	777	0	0	0	0	23	0	15
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	1861	0	1	827	0	0	0	0	24	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1861	0	1	827	0	0	0	0	0	40	0
Intersection Summary												

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	6	1749	0	1	777	0	0	0	0	23	0	15
Future Vol, veh/h	6	1749	0	1	777	0	0	0	0	23	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1861	0	1	827	0	0	0	0	24	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	827	0	0	1861	0	0	2289	2702	931	1585	2702	414
Stage 1	-	-	-	-	-	-	1873	1873	-	829	829	-
Stage 2	-	-	-	-	-	-	416	829	-	756	1873	-
Critical Hdwy	4.14	-	-	5.34	-	-	6.99	6.54	7.14	6.99	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.74	5.54	-
Follow-up Hdwy	2.22	-	-	3.12	-	-	3.67	4.02	3.92	3.67	4.02	3.32
Pot Cap-1 Maneuver	800	-	-	147	-	-	30	21	231	91	21	587
Stage 1	-	-	-	-	-	-	48	120	-	322	383	-
Stage 2	-	-	-	-	-	-	565	383	-	342	120	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	800	-	-	147	-	-	29	21	231	90	21	587
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	21	-	90	21	-
Stage 1	-	-	-	-	-	-	48	119	-	320	380	-
Stage 2	-	-	-	-	-	-	546	380	-	339	119	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	42.7
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	800	-	-	147	-	-	135
HCM Lane V/C Ratio	-	-	0.008	-	-	0.007	-	-	0.299
HCM Control Delay (s)	0	0	9.5	-	-	29.7	-	-	42.7
HCM Lane LOS	A	A	A	-	-	D	-	-	E
HCM 95th %tile Q(veh)	-	-	0	-	-	0	-	-	1.2

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 12: Western Avenue & Project Access 2 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↑↑↑		↙	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt	0.894											
Flt Protected	0.989											
Satd. Flow (prot)	0	1863	0	0	1647	0	1863	5085	0	1770	5085	0
Flt Permitted	0.989											
Satd. Flow (perm)	0	1863	0	0	1647	0	1863	5085	0	1770	5085	0
Link Speed (mph)	30											
Link Distance (ft)	781											
Travel Time (s)	17.8											
<b>Intersection Summary</b>												
Area Type:	Other											

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

12: Western Avenue & Project Access 2

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	3	0	10	0	1484	0	8	1539	0
Future Volume (vph)	0	0	0	3	0	10	0	1484	0	8	1539	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	3	0	11	0	1579	0	9	1637	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	14	0	0	1579	0	9	1637	0
Intersection Summary												



Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	0	0	0	3	0	10	0	1484	0	8	1539	0
Future Vol, veh/h	0	0	0	3	0	10	0	1484	0	8	1539	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	0	11	0	1579	0	9	1637	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2287	3234	819	2252	3234	790	1637	0	0	1579	0	0
Stage 1	1655	1655	-	1579	1579	-	-	-	-	-	-	-
Stage 2	632	1579	-	673	1655	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	42	9	273	44	9	286	190	-	-	204	-	-
Stage 1	68	154	-	78	168	-	-	-	-	-	-	-
Stage 2	396	168	-	374	154	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	39	9	273	43	9	286	190	-	-	204	-	-
Mov Cap-2 Maneuver	39	9	-	43	9	-	-	-	-	-	-	-
Stage 1	68	147	-	78	168	-	-	-	-	-	-	-
Stage 2	381	168	-	358	147	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	0		37.6		0		0.1			
HCM LOS	A		E							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	190	-	-	-	124	204	-
HCM Lane V/C Ratio	-	-	-	-	0.112	0.042	-
HCM Control Delay (s)	0	-	-	0	37.6	23.4	-
HCM Lane LOS	A	-	-	A	E	C	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.1	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	72		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.998
Satd. Flow (prot)	1611	0	1863	0	0	1859
Flt Permitted						0.998
Satd. Flow (perm)	1611	0	1863	0	0	1859
Link Speed (mph)	30		30		30	
Link Distance (ft)	795		967		440	
Travel Time (s)	18.1		22.0		10.0	

**Intersection Summary**

Area Type:      Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

13: Gramercy Place/Van Ness Avenue & Project Access 3

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	1	39	0	1	16
Future Volume (vph)	0	1	39	0	1	16
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	1	52	0	1	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	52	0	0	22
<b>Intersection Summary</b>						

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	1	39	0	1	16
Future Vol, veh/h	0	1	39	0	1	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	52	0	1	21

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	75	52	0	0	52	0
Stage 1	52	-	-	-	-	-
Stage 2	23	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	928	1016	-	-	1554	-
Stage 1	970	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	927	1016	-	-	1554	-
Mov Cap-2 Maneuver	927	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1016	1554
HCM Lane V/C Ratio	-	-	0.001	0.001
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 14: 195th Street & Project Access 4 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	98		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt	0.938											
Flt Protected	0.950											
Satd. Flow (prot)	1863	1863	0	1863	1747	0	0	1863	0	0	1770	0
Flt Permitted	0.950											
Satd. Flow (perm)	1863	1863	0	1863	1747	0	0	1863	0	0	1770	0
Link Speed (mph)	30				30				30		30	
Link Distance (ft)	500				713				827		834	
Travel Time (s)	11.4				16.2				18.8		19.0	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

14: 195th Street & Project Access 4

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	46	0	0	30	21	0	0	0	11	0	0
Future Volume (vph)	0	46	0	0	30	21	0	0	0	11	0	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	63	0	0	41	29	0	0	0	15	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	70	0	0	0	0	0	15	0
Intersection Summary												

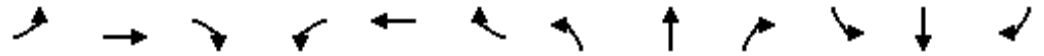
Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	0	46	0	0	30	21	0	0	0	11	0	0
Future Vol, veh/h	0	46	0	0	30	21	0	0	0	11	0	0
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	63	0	0	41	29	0	0	0	15	0	0
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.7	7.4	0	7.5
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	0%	0%	100%
Vol Thru, %	100%	100%	100%	100%	59%	0%
Vol Right, %	0%	0%	0%	0%	41%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	0	46	0	51	11
LT Vol	0	0	0	0	0	11
Through Vol	0	0	46	0	30	0
RT Vol	0	0	0	0	21	0
Lane Flow Rate	0	0	63	0	70	15
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0	0.08	0	0.083	0.018
Departure Headway (Hd)	4.174	4.594	4.594	4.59	4.302	4.363
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	0	781	0	833	810
Service Time	2.265	2.315	2.315	2.314	2.025	2.448
HCM Lane V/C Ratio	0	0	0.081	0	0.084	0.019
HCM Control Delay	7.3	7.3	7.7	7.3	7.4	7.5
HCM Lane LOS	N	N	A	N	A	A
HCM 95th-tile Q	0	0	0.3	0	0.3	0.1

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 15: 195th Street & Project Access 5 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	102		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.997							0.865
Flt Protected	0.950											
Satd. Flow (prot)	1770	1863	0	0	3529	0	0	1863	0	0	1611	0
Flt Permitted	0.950											
Satd. Flow (perm)	1770	1863	0	0	3529	0	0	1863	0	0	1611	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		713			502			847			825	
Travel Time (s)		16.2			11.4			19.3			18.8	

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

15: 195th Street & Project Access 5

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	53	0	0	55	1	0	0	0	0	0	3
Future Volume (vph)	4	53	0	0	55	1	0	0	0	0	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	90	0	0	93	2	0	0	0	0	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	90	0	0	95	0	0	0	0	0	5	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	53	0	0	55	1	0	0	0	0	0	3
Future Vol, veh/h	4	53	0	0	55	1	0	0	0	0	0	3
Peak Hour Factor	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	90	0	0	93	2	0	0	0	0	0	5
Number of Lanes	1	1	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.9	7.6	0	6.8
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	0%
Vol Thru, %	100%	0%	100%	100%	95%	0%
Vol Right, %	0%	0%	0%	0%	5%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	4	53	37	19	3
LT Vol	0	4	0	0	0	0
Through Vol	0	0	53	37	18	0
RT Vol	0	0	0	0	1	3
Lane Flow Rate	0	7	90	62	33	5
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.01	0.115	0.079	0.041	0.005
Departure Headway (Hd)	4.39	5.09	4.589	4.59	4.553	3.782
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	705	782	782	787	952
Service Time	2.39	2.81	2.309	2.31	2.274	1.782
HCM Lane V/C Ratio	0	0.01	0.115	0.079	0.042	0.005
HCM Control Delay	7.4	7.9	7.9	7.7	7.5	6.8
HCM Lane LOS	N	A	A	A	A	A
HCM 95th-tile Q	0	0	0.4	0.3	0.1	0

## **Appendix E**

Forecast Opening Year (2023) Without Project Conditions  
Intersection Analysis Worksheets

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TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
OPENING YEAR WITHOUT PROJECT CONDITIONS  
AM PEAK HOUR

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Scenario Report

Scenario: OY NP\_AM  
Command: OY NP\_AM  
Volume: EX AM  
Geometry: EXISTING  
Impact Fee: Default Impact Fee  
Trip Generation: CUMULLATIVES AM  
Trip Distribution: DEFAULT  
Paths: Default Path  
Routes: Default Route  
Configuration: OPENING YEAR

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
 -----

Turning Movement Report  
 CUMULATIVES AM

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#1 VAN NESS AVE / 190TH ST													
Base	57	270	121	71	548	283	90	1088	79	97	869	60	3631
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	57	270	121	71	548	283	90	1088	79	97	869	60	3631
#2 VAN NESS AVE / 195TH ST													
Base	0	458	19	15	686	0	0	0	0	12	0	11	1201
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	458	19	15	686	0	0	0	0	12	0	11	1201
#3 VAN NESS AVE / DEL AMO BLVD													
Base	46	306	45	33	457	208	133	275	51	87	538	25	2205
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	46	306	45	33	457	208	133	275	51	87	538	25	2205
#4 GRAMERCY PL / 190TH ST													
Base	1	2	15	2	2	0	0	1263	5	20	1079	1	2390
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	2	15	2	2	0	0	1263	5	20	1079	1	2390
#5 GRMAERCY PL / 195TH ST													
Base	4	2	2	2	12	7	10	7	18	32	27	11	135
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	2	2	2	12	7	10	7	18	32	27	11	135
#6 I-405 SOUTHBOUND RAMPS / 190TH ST													
Base	0	0	0	491	0	72	768	515	0	0	1050	146	3042
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	491	0	72	768	515	0	0	1050	146	3042
#7 WESTERN AVE / I-405 NORTHBOUND RAMPS													
Base	0	851	459	54	918	0	0	0	0	724	0	108	3114
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	851	459	54	918	0	0	0	0	724	0	108	3114
#8 WESTERN AVE / 190TH ST													
Base	119	1096	112	114	1144	357	132	429	369	217	669	90	4848
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	119	1096	112	114	1144	357	132	429	369	217	669	90	4848
#9 WESTERN AVE / 195TH ST													
Base	23	1321	12	35	1598	83	10	0	5	3	0	6	3097
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	23	1321	12	35	1598	83	10	0	5	3	0	6	3097

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#10 WESTERN AVE / DEL AMO BLVD													
Base	145	936	11	17	1115	578	180	15	108	20	69	38	3233
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	145	936	11	17	1115	578	180	15	108	20	69	38	3233
#11 PROJECT ACCESS 1 / 190TH ST													
Base	0	0	1	3	0	1	8	1293	1	3	1106	7	2423
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	3	0	1	8	1293	1	3	1106	7	2423
#12 WESTERN AVE / PROJECT ACCESS 2													
Base	0	1329	8	11	1720	0	0	0	0	1	0	5	3074
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1329	8	11	1720	0	0	0	0	1	0	5	3074
#13 GRAMERCY PL / PROJECT ACCESS 3													
Base	0	20	0	2	22	0	0	0	0	0	0	1	45
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	20	0	2	22	0	0	0	0	0	0	1	45
#14 PROJECT ACCESS 4 / 195TH ST													
Base	0	0	0	4	0	2	1	12	0	0	103	7	129
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	2	1	12	0	0	103	7	129
#15 PROJECT ACCESS 5 / 195TH ST													
Base	0	0	0	2	0	0	2	15	0	0	105	0	124
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	2	15	0	0	105	0	124

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #1 VAN NESS AVE / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.617  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 41 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	2	0	1	1	1	0	3	0	1	1

Volume Module:

Base Vol:	56	267	120	70	543	280	89	1077	78	96	860	59
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	57	270	121	71	548	283	90	1088	79	97	869	60
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	57	270	121	71	548	283	90	1088	79	97	869	60
User 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
PHF 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
PHF Volume:	57	270	121	71	548	283	90	1088	79	97	869	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	270	121	71	548	283	90	1088	79	97	869	60
PCE 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
MLF 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
FinalVolume:	57	270	121	71	548	283	90	1088	79	97	869	60
OvlAdjVol:	193											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3200	3200	1600	1600	3200	1600	1600	4800	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.02	0.08	0.08	0.04	0.17	0.18	0.06	0.23	0.05	0.06	0.27	0.04	
OvlAdjV/S:	0.12												
Crit Moves:	****	****					****	****					

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #2 VAN NESS AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.321  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 26 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	0	2	0	0	1

Volume Module:

Base Vol:	0	453	19	15	679	0	0	0	0	12	0	11
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	458	19	15	686	0	0	0	0	12	0	11
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	458	19	15	686	0	0	0	0	12	0	11
User 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
PHF 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
PHF Volume:	0	458	19	15	686	0	0	0	0	12	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	458	19	15	686	0	0	0	0	12	0	11
PCE 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
MLF 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
FinalVolume:	0	458	19	15	686	0	0	0	0	12	0	11
OvlAdjVol:	8											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	0	3200	1600	1600	3200	0	0	0	0	3200	0	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.14	0.01	0.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.01
OvlAdjV/S:	0.01											
Crit Moves:	****			****						****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #3 VAN NESS AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.563  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 37 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	2	0	1	1	0	2

Volume Module:

Base Vol:	46	303	45	33	452	206	132	272	50	86	533	25
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	46	306	45	33	457	208	133	275	51	87	538	25
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	46	306	45	33	457	208	133	275	51	87	538	25
User 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
PHF 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
PHF Volume:	46	306	45	33	457	208	133	275	51	87	538	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	46	306	45	33	457	208	133	275	51	87	538	25
PCE 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
MLF 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
FinalVolume:	46	306	45	33	457	208	133	275	51	87	538	25

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.74	0.26	1.00	1.37	0.63	2.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	2786	414	1600	2198	1002	3200	1600	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.03	0.11	0.11	0.02	0.21	0.21	0.04	0.17	0.03	0.05	0.17	0.02
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #4 GRAMERCY PL / 190TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.449  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	0	1	0	2	1	0	1

Volume Module:

Base Vol:	1	2	15	2	2	0	0	1250	5	20	1068	1
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	1	2	15	2	2	0	0	1263	5	20	1079	1
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	2	15	2	2	0	0	1263	5	20	1079	1
User 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
PHF 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
PHF Volume:	1	2	15	2	2	0	0	1263	5	20	1079	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	2	15	2	2	0	0	1263	5	20	1079	1
PCE 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
MLF 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
FinalVolume:	1	2	15	2	2	0	0	1263	5	20	1079	1

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.12	0.88	1.00	1.00	0.00	1.00	2.99	0.01	1.00	1.99	0.01
Final Sat.:	1600	188	1412	1600	1600	0	1600	4781	19	1600	3197	3

Capacity Analysis Module:

Vol/Sat:	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.26	0.26	0.01	0.34	0.34
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #6 I-405 SOUTHBOUND RAMPS / 190TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.735  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 55 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	1	0	0	0	2	0	3

Volume Module:

Base Vol:	0	0	0	486	0	71	760	510	0	0	1040	145
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	0	0	491	0	72	768	515	0	0	1050	146
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	491	0	72	768	515	0	0	1050	146
User 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
PHF 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
PHF Volume:	0	0	0	491	0	72	768	515	0	0	1050	146
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	491	0	72	768	515	0	0	1050	146
PCE 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
MLF 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
FinalVolume:	0	0	0	491	0	72	768	515	0	0	1050	146

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.74	0.01	0.25	2.00	3.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	2792	0	408	3200	4800	0	0	4800	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.18	0.24	0.11	0.00	0.00	0.22	0.09
Crit Moves:				****		****	****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #7 WESTERN AVE / I-405 NORTHBOUND RAMP

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.660  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 45 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Ovl				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	3	0	0	0	0	0	0	0	1	0	1	0	0

Volume Module:

Base Vol:	0	843	454	53	909	0	0	0	0	0	717	0	107		
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01		
Initial Bse:	0	851	459	54	918	0	0	0	0	0	724	0	108		
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:	0	851	459	54	918	0	0	0	0	0	724	0	108		
User 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	1.00		
PHF 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	1.00		
PHF Volume:	0	851	459	54	918	0	0	0	0	0	724	0	108		
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced Vol:	0	851	459	54	918	0	0	0	0	0	724	0	108		
PCE 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	1.00		
MLF 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	1.00		
FinalVolume:	0	851	459	54	918	0	0	0	0	0	724	0	108		
OvlAdjVol:	42														

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	3.00	0.00	0.00	0.00	0.00	0.00	1.74	0.01	0.25
Final Sat.:	0	3200	1600	1600	4800	0	0	0	0	0	2784	0	416

Capacity Analysis Module:

Vol/Sat:	0.00	0.27	0.29	0.03	0.19	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.26		
OvlAdjV/S:	0.03														
Crit Moves:	****			****								****			

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #8 WESTERN AVE / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.637  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 43 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Ovl				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	3	0	1	2	0	3	0	1	2	0	3	0	1	2	0	2	1	0

Volume Module:

Base Vol:	118	1085	111	113	1133	353	131	425	365	215	662	89
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	119	1096	112	114	1144	357	132	429	369	217	669	90
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	119	1096	112	114	1144	357	132	429	369	217	669	90
User 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
PHF 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
PHF Volume:	119	1096	112	114	1144	357	132	429	369	217	669	90
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	119	1096	112	114	1144	357	132	429	369	217	669	90
PCE 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
MLF 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
FinalVolume:	119	1096	112	114	1144	357	132	429	369	217	669	90
OvlAdjVol:			4			290			309			

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.64	0.36
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	4231	569

Capacity Analysis Module:

Vol/Sat:	0.04	0.23	0.07	0.04	0.24	0.22	0.04	0.09	0.23	0.07	0.16	0.16
OvlAdjV/S:			0.00			0.18			0.19			
Crit Moves:	****				****			****	****			

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #9 WESTERN AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.459  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	23	1308	12	35	1582	82	10	0	5	3	0	6
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	23	1321	12	35	1598	83	10	0	5	3	0	6
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	23	1321	12	35	1598	83	10	0	5	3	0	6
User 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
PHF 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
PHF Volume:	23	1321	12	35	1598	83	10	0	5	3	0	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	1321	12	35	1598	83	10	0	5	3	0	6
PCE 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
MLF 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
FinalVolume:	23	1321	12	35	1598	83	10	0	5	3	0	6

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.00	1.00	0.33	0.00	0.67
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	0	1600	533	0	1067

Capacity Analysis Module:

Vol/Sat:	0.01	0.28	0.01	0.02	0.33	0.05	0.01	0.00	0.00	0.00	0.00	0.01
Crit Moves:	****			****			****				****	

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #10 WESTERN AVE / DEL AMO BLVD

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.699  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 50 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Permitted				Permitted				Split Phase				Split Phase							
Rights:	Include				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	1	0	2	1	0	1	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	144	927	11	17	1104	572	178	15	107	20	68	38
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	145	936	11	17	1115	578	180	15	108	20	69	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	145	936	11	17	1115	578	180	15	108	20	69	38
User 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
PHF 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
PHF Volume:	145	936	11	17	1115	578	180	15	108	20	69	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	145	936	11	17	1115	578	180	15	108	20	69	38
PCE 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
MLF 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
FinalVolume:	145	936	11	17	1115	578	180	15	108	20	69	38

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.84	0.16	1.00	0.16	0.54	0.30
Final Sat.:	1600	3200	1600	1600	3200	1600	2951	249	1600	254	863	483

Capacity Analysis Module:

Vol/Sat:	0.09	0.29	0.01	0.01	0.35	0.36	0.06	0.06	0.07	0.08	0.08	0.08
Crit Moves:	****					****			****	****		

\*\*\*\*\*

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 5: Gramercy Place & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt		0.931			0.979			0.963			0.955	
Flt Protected		0.986			0.978			0.978			0.994	
Satd. Flow (prot)	0	1710	0	0	1784	0	0	1754	0	0	1768	0
Flt Permitted		0.986			0.978			0.978			0.994	
Satd. Flow (perm)	0	1710	0	0	1784	0	0	1754	0	0	1768	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1405			500			880			967	
Travel Time (s)		31.9			11.4			20.0			22.0	

Intersection Summary

Area Type: Other

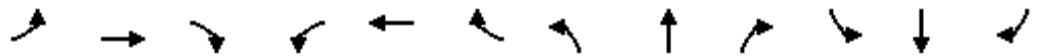


Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

5: Gramercy Place & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	10	7	18	32	27	11	4	2	2	2	12	7
Future Volume (vph)	10	7	18	32	27	11	4	2	2	2	12	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	13	9	23	41	35	14	5	3	3	3	15	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	0	90	0	0	11	0	0	27	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	7	18	32	27	11	4	2	2	2	12	7
Future Vol, veh/h	10	7	18	32	27	11	4	2	2	2	12	7
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	9	23	41	35	14	5	3	3	3	15	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	7.5	7.2	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	29%	46%	10%
Vol Thru, %	25%	20%	39%	57%
Vol Right, %	25%	51%	16%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	35	70	21
LT Vol	4	10	32	2
Through Vol	2	7	27	12
RT Vol	2	18	11	7
Lane Flow Rate	10	45	90	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.048	0.1	0.03
Departure Headway (Hd)	4.138	3.815	4.03	3.994
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	858	936	889	889
Service Time	2.198	1.849	2.054	2.05
HCM Lane V/C Ratio	0.012	0.048	0.101	0.03
HCM Control Delay	7.2	7	7.5	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.3	0.1

Lanes and Geometrics  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	258			166	0	0
Storage Lanes	2			1	2	0
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850	0.981	
Flt Protected	0.950				0.958	
Satd. Flow (prot)	3433	5085	5085	1583	3396	0
Flt Permitted	0.950				0.958	
Satd. Flow (perm)	3433	5085	5085	1583	3396	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				152	23	
Link Speed (mph)		30	30		30	
Link Distance (ft)		645	638		544	
Travel Time (s)		14.7	14.5		12.4	

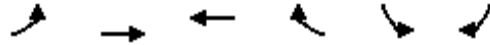
Intersection Summary

Area Type: Other

Volume  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



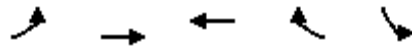
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	768	515	1050	146	491	72
Future Volume (vph)	768	515	1050	146	491	72
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	800	536	1094	152	511	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	800	536	1094	152	586	0
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

6: 190th Street & I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations	↖↗	↑↑↑	↑↑↑	↖	↖↗
Traffic Volume (vph)	768	515	1050	146	491
Future Volume (vph)	768	515	1050	146	491
Turn Type	Prot	NA	NA	Perm	Prot
Protected Phases	7	4	8		6
Permitted Phases				8	
Detector Phase	7	4	8	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	24.0	47.0	23.0	23.0	23.0
Total Split (%)	34.3%	67.1%	32.9%	32.9%	32.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	None	None	None	Max
Act Effect Green (s)	18.8	41.7	18.4	18.4	18.5
Actuated g/C Ratio	0.27	0.60	0.27	0.27	0.27
v/c Ratio	0.86	0.17	0.81	0.29	0.63
Control Delay	35.1	6.3	29.7	5.6	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	6.3	29.7	5.6	25.3
LOS	D	A	C	A	C
Approach Delay		23.5	26.8		25.3
Approach LOS		C	C		C

Intersection Summary

Cycle Length: 70  
 Actuated Cycle Length: 69.2  
 Natural Cycle: 65  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 25.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 69.7%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 6: 190th Street & I-405 Ramp

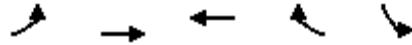


## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 6: 190th Street &amp; I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	800	536	1094	152	586
v/c Ratio	0.86	0.17	0.81	0.29	0.63
Control Delay	35.1	6.3	29.7	5.6	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	6.3	29.7	5.6	25.3
Queue Length 50th (ft)	165	32	161	0	110
Queue Length 95th (ft)	#256	46	209	39	160
Internal Link Dist (ft)		565	558		464
Turn Bay Length (ft)	258			166	
Base Capacity (vph)	968	3124	1359	535	925
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.17	0.81	0.28	0.63

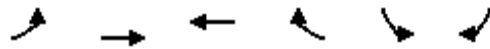
## Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCIAL CENTER PHASE 3 TRAFFIC STUDY  
 6: 190th Street & I-405 Ramp

10/06/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖↖	↗↗↗	↖↖↖	↗	↘↘↘			
Traffic Volume (veh/h)	768	515	1050	146	491	72		
Future Volume (veh/h)	768	515	1050	146	491	72		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	800	536	1094	152	581	0		
Adj No. of Lanes	2	3	3	1	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	0		
Cap, veh/h	913	3015	1327	413	972	442		
Arrive On Green	0.27	0.59	0.26	0.26	0.27	0.00		
Sat Flow, veh/h	3442	5253	5253	1583	3548	1615		
Grp Volume(v), veh/h	800	536	1094	152	581	0		
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1774	1615		
Q Serve(g_s), s	15.0	3.2	13.7	5.3	9.6	0.0		
Cycle Q Clear(g_c), s	15.0	3.2	13.7	5.3	9.6	0.0		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	913	3015	1327	413	972	442		
V/C Ratio(X)	0.88	0.18	0.82	0.37	0.60	0.00		
Avail Cap(c_a), veh/h	993	3199	1393	434	972	442		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	23.8	6.3	23.5	20.4	21.3	0.0		
Incr Delay (d2), s/veh	8.4	0.0	4.0	0.5	2.7	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.2	1.5	6.9	2.4	5.0	0.0		
LnGrp Delay(d),s/veh	32.2	6.3	27.5	21.0	24.0	0.0		
LnGrp LOS	C	A	C	C	C			
Approach Vol, veh/h		1336	1246		581			
Approach Delay, s/veh		21.8	26.7		24.0			
Approach LOS		C	C		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				44.6		23.0	22.4	22.1
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				42.5		18.5	19.5	18.5
Max Q Clear Time (g_c+I1), s				5.2		11.6	17.0	15.7
Green Ext Time (p_c), s				4.1		1.3	0.9	1.9
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			24.1					
HCM 2010 LOS			C					
<b>Notes</b>								

Lanes and Geometrics      TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street      10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	170	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.91
Ped Bike Factor						
Frt	0.981			0.850		
Flt Protected	0.958				0.950	
Satd. Flow (prot)	3396	0	3539	1583	1770	5085
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	3396	0	3539	1583	1770	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	31			445		
Link Speed (mph)	30		30			30
Link Distance (ft)	1298		979			805
Travel Time (s)	29.5		22.3			18.3

**Intersection Summary**

Area Type:      Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	724	108	851	459	54	918
Future Volume (vph)	724	108	851	459	54	918
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	787	117	925	499	59	998
Shared Lane Traffic (%)						
Lane Group Flow (vph)	904	0	925	499	59	998
<b>Intersection Summary</b>						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

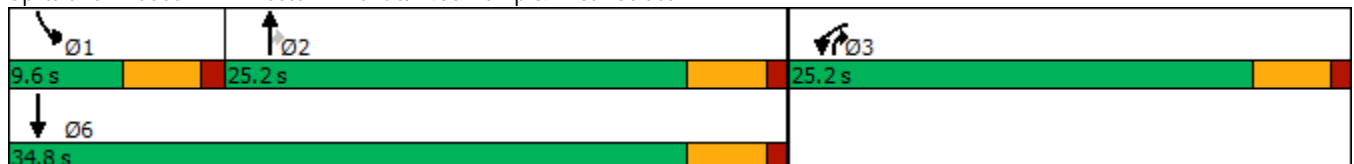
10/06/2021

	↙	↑	↘	↙	↓
Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↑↑	↘	↙	↑↑↑
Traffic Volume (vph)	724	851	459	54	918
Future Volume (vph)	724	851	459	54	918
Turn Type	Prot	NA	pm+ov	Prot	NA
Protected Phases	3	2	3	1	6
Permitted Phases			2		
Detector Phase	3	2	3	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5
Total Split (s)	25.2	25.2	25.2	9.6	34.8
Total Split (%)	42.0%	42.0%	42.0%	16.0%	58.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag		Lag		Lead	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	Max	None	None	Max
Act Effect Green (s)	19.3	24.7	50.3	5.1	30.3
Actuated g/C Ratio	0.33	0.42	0.86	0.09	0.52
v/c Ratio	0.80	0.62	0.35	0.38	0.38
Control Delay	23.3	17.3	1.1	33.6	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	17.3	1.1	33.6	9.3
LOS	C	B	A	C	A
Approach Delay	23.3	11.6			10.6
Approach LOS	C	B			B

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 58.6	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 63.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 7: Western Avenue/I-405 Ramp & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 7: Western Avenue/I-405 Ramp &amp; 190th Street

10/06/2021


















Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	904	925	499	59	998
v/c Ratio	0.80	0.62	0.35	0.38	0.38
Control Delay	23.3	17.3	1.1	33.6	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	17.3	1.1	33.6	9.3
Queue Length 50th (ft)	141	152	3	21	75
Queue Length 95th (ft)	202	216	18	52	100
Internal Link Dist (ft)	1218	899			725
Turn Bay Length (ft)			150	170	
Base Capacity (vph)	1220	1491	1409	154	2631
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.62	0.35	0.38	0.38

## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 		 			  		
Traffic Volume (veh/h)	724	108	851	459	54	918		
Future Volume (veh/h)	724	108	851	459	54	918		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863		
Adj Flow Rate, veh/h	896	0	925	499	59	998		
Adj No. of Lanes	2	1	2	1	1	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	1078	491	1428	1120	95	2729		
Arrive On Green	0.30	0.00	0.40	0.40	0.05	0.54		
Sat Flow, veh/h	3548	1615	3632	1583	1774	5253		
Grp Volume(v), veh/h	896	0	925	499	59	998		
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1583	1774	1695		
Q Serve(g_s), s	13.3	0.0	11.9	7.6	1.8	6.4		
Cycle Q Clear(g_c), s	13.3	0.0	11.9	7.6	1.8	6.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	1078	491	1428	1120	95	2729		
V/C Ratio(X)	0.83	0.00	0.65	0.45	0.62	0.37		
Avail Cap(c_a), veh/h	1301	592	1428	1120	160	2729		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	18.3	0.0	13.6	3.5	26.2	7.5		
Incr Delay (d2), s/veh	4.0	0.0	2.3	1.3	6.5	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.1	0.0	6.2	3.7	1.1	3.1		
LnGrp Delay(d),s/veh	22.3	0.0	15.9	4.8	32.7	7.9		
LnGrp LOS	C		B	A	C	A		
Approach Vol, veh/h	896		1424			1057		
Approach Delay, s/veh	22.3		12.0			9.3		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.5	27.3				34.8		21.7
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.1	20.7				30.3		20.7
Max Q Clear Time (g_c+I1), s	3.8	13.9				8.4		15.3
Green Ext Time (p_c), s	0.0	4.3				7.5		1.9
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			13.9					
HCM 2010 LOS			B					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗↘	↑↑↑	↗	↗↘	↑↑↑		↗↘	↑↑↑	↗	↗↘	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	148		190	232		0	150		316	280		250
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.982				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	4994	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	4994	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101		37				115			101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		638			1305			584			979	
Travel Time (s)		14.5			29.7			13.3			22.3	

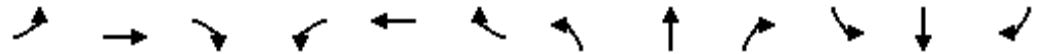
Intersection Summary

Area Type: Other

Volume  
8: Western Avenue & 190th Street

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	132	429	369	217	669	90	119	1096	112	114	1144	357
Future Volume (vph)	132	429	369	217	669	90	119	1096	112	114	1144	357
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	136	442	380	224	690	93	123	1130	115	118	1179	368
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	442	380	224	783	0	123	1130	115	118	1179	368
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021

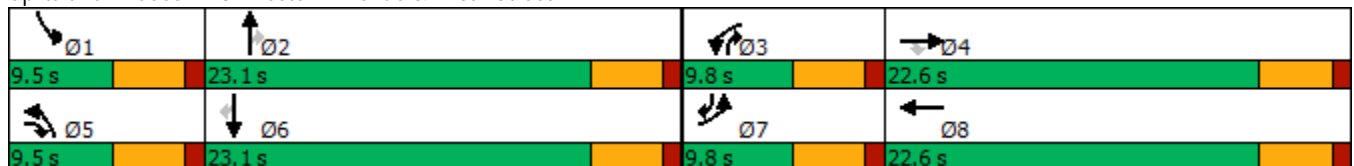


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↑↑↑	↗	↖↖	↑↑↑	↖↖	↑↑↑	↗	↖↖	↑↑↑	↗
Traffic Volume (vph)	132	429	369	217	669	119	1096	112	114	1144	357
Future Volume (vph)	132	429	369	217	669	119	1096	112	114	1144	357
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	3	1	6	7
Permitted Phases			4					2			6
Detector Phase	7	4	5	3	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	9.8	22.6	9.5	9.8	22.6	9.5	23.1	9.8	9.5	23.1	9.8
Total Split (%)	15.1%	34.8%	14.6%	15.1%	34.8%	14.6%	35.5%	15.1%	14.6%	35.5%	15.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	None
Act Effct Green (s)	5.3	15.9	25.4	5.3	15.9	5.0	20.7	30.5	5.0	18.6	28.5
Actuated g/C Ratio	0.08	0.25	0.40	0.08	0.25	0.08	0.33	0.48	0.08	0.30	0.45
v/c Ratio	0.47	0.34	0.54	0.78	0.61	0.45	0.68	0.14	0.43	0.78	0.48
Control Delay	33.9	19.8	13.5	49.5	21.8	34.0	21.9	3.1	33.6	25.3	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	19.8	13.5	49.5	21.8	34.0	21.9	3.1	33.6	25.3	11.4
LOS	C	B	B	D	C	C	C	A	C	C	B
Approach Delay		19.3			28.0		21.4			22.8	
Approach LOS		B			C		C			C	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 62.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 22.8	Intersection LOS: C
Intersection Capacity Utilization 62.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: Western Avenue & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 8: Western Avenue &amp; 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	442	380	224	783	123	1130	115	118	1179	368
v/c Ratio	0.47	0.34	0.54	0.78	0.61	0.45	0.68	0.14	0.43	0.78	0.48
Control Delay	33.9	19.8	13.5	49.5	21.8	34.0	21.9	3.1	33.6	25.3	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	19.8	13.5	49.5	21.8	34.0	21.9	3.1	33.6	25.3	11.4
Queue Length 50th (ft)	26	50	74	45	91	24	146	0	23	154	66
Queue Length 95th (ft)	52	74	147	#98	126	48	196	24	46	206	137
Internal Link Dist (ft)		558			1225		504			899	
Turn Bay Length (ft)	148		190	232		150		316	280		250
Base Capacity (vph)	289	1466	700	289	1466	273	1672	826	273	1507	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.30	0.54	0.78	0.53	0.45	0.68	0.14	0.43	0.78	0.48
























## Intersection Summary

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

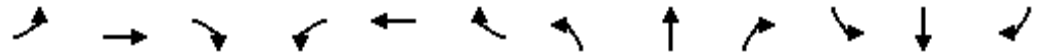
Queue shown is maximum after two cycles.



HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street 10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	429	369	217	669	90	119	1096	112	114	1144	357
Future Volume (veh/h)	132	429	369	217	669	90	119	1096	112	114	1144	357
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	136	442	380	224	690	93	123	1130	115	118	1179	368
Adj No. of Lanes	2	3	1	2	3	0	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	1336	527	290	1248	167	242	1510	604	239	1506	583
Arrive On Green	0.07	0.26	0.26	0.08	0.27	0.27	0.07	0.30	0.30	0.07	0.30	0.30
Sat Flow, veh/h	3442	5085	1583	3442	4540	606	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	136	442	380	224	514	269	123	1130	115	118	1179	368
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1756	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	2.4	4.4	13.2	4.0	8.1	8.3	2.2	12.6	3.0	2.1	13.3	12.0
Cycle Q Clear(g_c), s	2.4	4.4	13.2	4.0	8.1	8.3	2.2	12.6	3.0	2.1	13.3	12.0
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	1336	527	290	932	483	242	1510	604	239	1506	583
V/C Ratio(X)	0.55	0.33	0.72	0.77	0.55	0.56	0.51	0.75	0.19	0.49	0.78	0.63
Avail Cap(c_a), veh/h	290	1465	568	290	977	506	274	1510	604	274	1506	583
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	18.7	18.4	28.2	19.5	19.5	28.2	20.0	13.0	28.2	20.3	16.3
Incr Delay (d2), s/veh	1.9	0.1	4.1	12.0	0.6	1.2	1.7	3.4	0.7	1.6	4.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.1	6.3	2.4	3.9	4.1	1.1	6.3	1.4	1.0	6.8	6.0
LnGrp Delay(d),s/veh	30.0	18.8	22.5	40.2	20.1	20.8	29.8	23.4	13.7	29.7	24.4	21.5
LnGrp LOS	C	B	C	D	C	C	C	C	B	C	C	C
Approach Vol, veh/h		958			1007			1368			1665	
Approach Delay, s/veh		21.9			24.7			23.2			24.1	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	23.2	9.8	21.0	8.9	23.1	9.0	21.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.6	5.3	18.1	5.0	18.6	5.3	18.1				
Max Q Clear Time (g_c+I1), s	4.1	14.6	6.0	15.2	4.2	15.3	4.4	10.3				
Green Ext Time (p_c), s	0.0	2.7	0.0	1.3	0.0	2.5	0.0	3.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.6									
HCM 2010 LOS			C									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↑↑↑	↗	↖	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		50	0		0	114		306	200		190
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.905				0.850			0.850
Flt Protected		0.950			0.985		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1660	0	1770	5085	1583	1770	5085	1583
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1863	1583	0	1686	0	1770	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109				109			109
Link Speed (mph)		30			30			30				30
Link Distance (ft)		502			1333			1078				969
Travel Time (s)		11.4			30.3			24.5				22.0

Intersection Summary

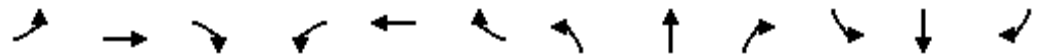
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	10	0	5	3	0	6	23	1321	12	35	1598	83
Future Volume (vph)	10	0	5	3	0	6	23	1321	12	35	1598	83
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	11	0	5	3	0	7	25	1452	13	38	1756	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	5	0	10	0	25	1452	13	38	1756	91
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021

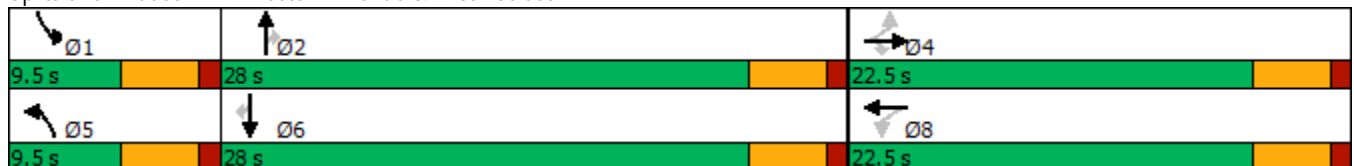


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↖	↑↑↑	↗	↖	↑↑↑	↗
Traffic Volume (vph)	10	0	5	3	0	23	1321	12	35	1598	83
Future Volume (vph)	10	0	5	3	0	23	1321	12	35	1598	83
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8				2			6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	28.0	28.0	9.5	28.0	28.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	15.8%	46.7%	46.7%	15.8%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		6.0	6.0		5.8	5.1	38.1	38.1	5.1	38.1	38.1
Actuated g/C Ratio		0.14	0.14		0.14	0.12	0.90	0.90	0.12	0.90	0.90
v/c Ratio		0.04	0.02		0.03	0.12	0.32	0.01	0.18	0.39	0.06
Control Delay		16.4	0.0		0.2	18.7	2.9	0.0	19.6	3.2	1.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.4	0.0		0.2	18.7	2.9	0.0	19.6	3.2	1.4
LOS		B	A		A	B	A	A	B	A	A
Approach Delay		11.3			0.2		3.1			3.4	
Approach LOS		B			A		A			A	

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 42.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 3.3	Intersection LOS: A
Intersection Capacity Utilization 50.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: Western Avenue & 195th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 9: Western Avenue &amp; 195th Street

10/06/2021




























Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	11	5	10	25	1452	13	38	1756	91
v/c Ratio	0.04	0.02	0.03	0.12	0.32	0.01	0.18	0.39	0.06
Control Delay	16.4	0.0	0.2	18.7	2.9	0.0	19.6	3.2	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	0.0	0.2	18.7	2.9	0.0	19.6	3.2	1.4
Queue Length 50th (ft)	2	0	0	6	0	0	9	0	0
Queue Length 95th (ft)	13	0	0	24	136	0	32	178	13
Internal Link Dist (ft)	422		1253		998			889	
Turn Bay Length (ft)		50		114		306	200		190
Base Capacity (vph)	798	741	785	210	4557	1430	210	4557	1430
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.01	0.12	0.32	0.01	0.18	0.39	0.06

## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	10	0	5	3	0	6	23	1321	12	35	1598	83
Future Volume (veh/h)	10	0	5	3	0	6	23	1321	12	35	1598	83
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	11	0	5	3	0	7	25	1452	13	38	1756	91
Adj No. of Lanes	0	1	1	0	1	0	1	3	1	1	3	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	0	50	129	0	27	54	2989	931	76	3054	951
Arrive On Green	0.03	0.00	0.03	0.03	0.00	0.03	0.03	0.59	0.59	0.04	0.60	0.60
Sat Flow, veh/h	1550	0	1583	369	0	862	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	11	0	5	10	0	0	25	1452	13	38	1756	91
Grp Sat Flow(s),veh/h/ln	1551	0	1583	1231	0	0	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	0.1	0.3	0.0	0.0	0.6	6.6	0.1	0.8	8.4	1.0
Cycle Q Clear(g_c), s	0.2	0.0	0.1	0.5	0.0	0.0	0.6	6.6	0.1	0.8	8.4	1.0
Prop In Lane	1.00		1.00	0.30		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	0	50	156	0	0	54	2989	931	76	3054	951
V/C Ratio(X)	0.05	0.00	0.10	0.06	0.00	0.00	0.46	0.49	0.01	0.50	0.57	0.10
Avail Cap(c_a), veh/h	816	0	713	795	0	0	222	2989	931	222	3054	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	0.0	18.8	19.1	0.0	0.0	19.1	4.8	3.4	18.7	4.9	3.4
Incr Delay (d2), s/veh	0.1	0.0	0.9	0.2	0.0	0.0	6.1	0.6	0.0	4.9	0.8	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.1	0.0	0.0	0.4	3.1	0.1	0.5	4.0	0.5
LnGrp Delay(d),s/veh	19.0	0.0	19.7	19.3	0.0	0.0	25.2	5.3	3.5	23.6	5.7	3.6
LnGrp LOS	B		B	B			C	A	A	C	A	A
Approach Vol, veh/h		16			10			1490			1885	
Approach Delay, s/veh		19.2			19.3			5.6			5.9	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	28.0		5.8	5.7	28.5		5.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	23.5		18.0	5.0	23.5		18.0				
Max Q Clear Time (g_c+I1), s	2.8	8.6		2.2	2.6	10.4		2.5				
Green Ext Time (p_c), s	0.0	9.0		0.0	0.0	9.7		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			5.9									
HCM 2010 LOS			A									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	62		64	0		0	200		50	92		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.959				0.850		0.949	
Flt Protected	0.950	0.960			0.992		0.950			0.950		
Satd. Flow (prot)	1681	1699	1583	0	1772	0	1770	3539	1583	1770	4826	0
Flt Permitted	0.950	0.960			0.992		0.093			0.250		
Satd. Flow (perm)	1681	1699	1583	0	1772	0	173	3539	1583	466	4826	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113		15				55		189	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1176			1320			1187			1078	
Travel Time (s)		26.7			30.0			27.0			24.5	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	180	15	108	20	69	38	145	936	11	17	1115	578
Future Volume (vph)	180	15	108	20	69	38	145	936	11	17	1115	578
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	188	16	113	21	72	40	151	975	11	18	1161	602
Shared Lane Traffic (%)	46%											
Lane Group Flow (vph)	102	102	113	0	133	0	151	975	11	18	1763	0
Intersection Summary												



Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	180	15	108	69	145	936	11	17	1115
Future Volume (vph)	180	15	108	69	145	936	11	17	1115
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4	4		8		2			6
Permitted Phases			4		2		2	6	
Detector Phase	4	4	4	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	75.0	75.0	75.0	75.0	75.0
Total Split (%)	18.8%	18.8%	18.8%	18.8%	62.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effect Green (s)	12.0	12.0	12.0	12.5	70.8	70.8	70.8	70.8	70.8
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.65	0.65	0.65	0.65	0.65
v/c Ratio	0.55	0.55	0.41	0.62	1.35	0.42	0.01	0.06	0.55
Control Delay	57.9	57.6	13.1	53.7	229.5	10.8	0.0	9.8	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	57.6	13.1	53.7	229.5	10.8	0.0	9.8	10.7
LOS	E	E	B	D	F	B	A	A	B
Approach Delay		41.8		53.7		39.8			10.6
Approach LOS		D		D		D			B

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 108.9  
 Natural Cycle: 150  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.35  
 Intersection Signal Delay: 25.1  
 Intersection Capacity Utilization 67.5%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 10: Western Avenue & Del Amo Boulevard



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 10: Western Avenue &amp; Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	102	102	113	133	151	975	11	18	1763
v/c Ratio	0.55	0.55	0.41	0.62	1.35	0.42	0.01	0.06	0.55
Control Delay	57.9	57.6	13.1	53.7	229.5	10.8	0.0	9.8	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	57.6	13.1	53.7	229.5	10.8	0.0	9.8	10.7
Queue Length 50th (ft)	71	71	0	79	-138	157	0	4	197
Queue Length 95th (ft)	135	135	53	149	#222	264	0	17	315
Internal Link Dist (ft)		1096		1240		1107			998
Turn Bay Length (ft)	62		64		200		50	92	
Base Capacity (vph)	279	281	357	306	112	2301	1048	302	3204
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.36	0.32	0.43	1.35	0.42	0.01	0.06	0.55

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.























Queue shown is maximum after two cycles.

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

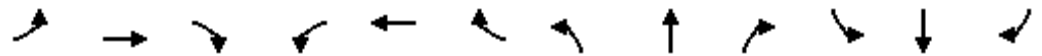
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	15	108	20	69	38	145	936	11	17	1115	578
Future Volume (veh/h)	180	15	108	20	69	38	145	936	11	17	1115	578
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	199	0	112	21	72	40	151	975	11	18	1161	602
Adj No. of Lanes	2	0	1	0	1	0	1	2	1	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	337	0	150	26	90	50	200	2406	1076	387	2305	1076
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	3548	0	1583	277	950	528	270	3539	1583	568	3390	1583
Grp Volume(v), veh/h	199	0	112	133	0	0	151	975	11	18	1161	602
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1756	0	0	270	1770	1583	568	1695	1583
Q Serve(g_s), s	5.6	0.0	7.1	7.7	0.0	0.0	50.1	12.6	0.2	1.5	17.3	20.4
Cycle Q Clear(g_c), s	5.6	0.0	7.1	7.7	0.0	0.0	70.5	12.6	0.2	14.1	17.3	20.4
Prop In Lane	1.00		1.00	0.16		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	337	0	150	167	0	0	200	2406	1076	387	2305	1076
V/C Ratio(X)	0.59	0.00	0.74	0.80	0.00	0.00	0.75	0.41	0.01	0.05	0.50	0.56
Avail Cap(c_a), veh/h	616	0	275	305	0	0	200	2406	1076	387	2305	1076
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	45.7	46.0	0.0	0.0	30.2	7.3	5.4	10.5	8.1	8.6
Incr Delay (d2), s/veh	1.6	0.0	7.1	8.4	0.0	0.0	22.9	0.5	0.0	0.2	0.8	2.1
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	3.4	4.1	0.0	0.0	5.6	6.3	0.1	0.3	8.2	9.3
LnGrp Delay(d),s/veh	46.6	0.0	52.8	54.4	0.0	0.0	53.1	7.8	5.4	10.7	8.9	10.7
LnGrp LOS	D		D	D			D	A	A	B	A	B
Approach Vol, veh/h		311			133			1137			1781	
Approach Delay, s/veh		48.9			54.4			13.8			9.5	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.0		14.3		75.0		14.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		70.5		18.0		70.5		18.0				
Max Q Clear Time (g_c+I1), s		72.5		9.1		22.4		9.7				
Green Ext Time (p_c), s		0.0		0.7		21.6		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.4									
HCM 2010 LOS			B									
<b>Notes</b>												

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 11: Project Access 1 & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.999			0.850				0.966
Flt Protected	0.950			0.950								0.964
Satd. Flow (prot)	1770	5085	0	1770	3536	0	1863	1583	0	0	1735	0
Flt Permitted	0.950			0.950								0.964
Satd. Flow (perm)	1770	5085	0	1770	3536	0	1863	1583	0	0	1735	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1861			645			451				561
Travel Time (s)		42.3			14.7			10.3				12.8

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

11: Project Access 1 & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	8	1293	1	3	1106	7	0	0	1	3	0	1
Future Volume (vph)	8	1293	1	3	1106	7	0	0	1	3	0	1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	1333	1	3	1140	7	0	0	1	3	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1334	0	3	1147	0	0	1	0	0	4	0
Intersection Summary												

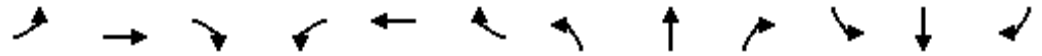
Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↑↑↑			↔ ↑↑			↔ ↑			↔		
Traffic Vol, veh/h	8	1293	1	3	1106	7	0	0	1	3	0	1
Future Vol, veh/h	8	1293	1	3	1106	7	0	0	1	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1333	1	3	1140	7	0	0	1	3	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1147	0	0	1334	0	0	1926	2503	667	1699	2500	574
Stage 1	-	-	-	-	-	-	1350	1350	-	1150	1150	-
Stage 2	-	-	-	-	-	-	576	1153	-	549	1350	-
Critical Hdwy	4.14	-	-	5.34	-	-	6.99	6.54	7.14	6.99	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.74	5.54	-
Follow-up Hdwy	2.22	-	-	3.12	-	-	3.67	4.02	3.92	3.67	4.02	3.32
Pot Cap-1 Maneuver	605	-	-	269	-	-	53	28	344	76	28	462
Stage 1	-	-	-	-	-	-	115	217	-	206	271	-
Stage 2	-	-	-	-	-	-	455	270	-	458	217	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	605	-	-	269	-	-	52	27	344	74	27	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	52	27	-	74	27	-
Stage 1	-	-	-	-	-	-	114	214	-	203	268	-
Stage 2	-	-	-	-	-	-	449	267	-	451	214	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	15.5	45
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	344	605	-	-	269	-	-	94
HCM Lane V/C Ratio	-	0.003	0.014	-	-	0.011	-	-	0.044
HCM Control Delay (s)	0	15.5	11	-	-	18.5	-	-	45
HCM Lane LOS	A	C	B	-	-	C	-	-	E
HCM 95th %tile Q(veh)	-	0	0	-	-	0	-	-	0.1

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 12: Western Avenue & Project Access 2 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↑↑↑		↙	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt					0.887			0.999				
Flt Protected					0.992					0.950		
Satd. Flow (prot)	0	1863	0	0	1639	0	1863	5080	0	1770	5085	0
Flt Permitted					0.992					0.950		
Satd. Flow (perm)	0	1863	0	0	1639	0	1863	5080	0	1770	5085	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		781			1291			969			584	
Travel Time (s)		17.8			29.3			22.0			13.3	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

12: Western Avenue & Project Access 2

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	1	0	5	0	1329	8	11	1720	0
Future Volume (vph)	0	0	0	1	0	5	0	1329	8	11	1720	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	1	0	5	0	1414	9	12	1830	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	6	0	0	1423	0	12	1830	0
Intersection Summary												



Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	0	0	0	1	0	5	0	1329	8	11	1720	0
Future Vol, veh/h	0	0	0	1	0	5	0	1329	8	11	1720	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	1	0	5	0	1414	9	12	1830	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2420	3277	915	2175	3273	712	1830	0	0	1423	0	0
Stage 1	1854	1854	-	1419	1419	-	-	-	-	-	-	-
Stage 2	566	1423	-	756	1854	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	35	9	236	49	9	322	152	-	-	243	-	-
Stage 1	49	122	-	101	201	-	-	-	-	-	-	-
Stage 2	434	200	-	333	122	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	33	9	236	47	9	322	152	-	-	243	-	-
Mov Cap-2 Maneuver	33	9	-	47	9	-	-	-	-	-	-	-
Stage 1	49	116	-	101	201	-	-	-	-	-	-	-
Stage 2	427	200	-	317	116	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	28	0	0.1
HCM LOS	A	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	152	-	-	-	163	243	-
HCM Lane V/C Ratio	-	-	-	-	0.039	0.048	-
HCM Control Delay (s)	0	-	-	0	28	20.6	-
HCM Lane LOS	A	-	-	A	D	C	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.2	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	72		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.995
Satd. Flow (prot)	1611	0	1863	0	0	1853
Flt Permitted						0.995
Satd. Flow (perm)	1611	0	1863	0	0	1853
Link Speed (mph)	30		30		30	
Link Distance (ft)	795		967		440	
Travel Time (s)	18.1		22.0		10.0	

**Intersection Summary**

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

13: Gramercy Place/Van Ness Avenue & Project Access 3

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	1	20	0	2	22
Future Volume (vph)	0	1	20	0	2	22
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	1	25	0	3	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	25	0	0	31
<b>Intersection Summary</b>						

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	20	0	2	22
Future Vol, veh/h	0	1	20	0	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	25	0	3	28

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	59	25	0	0	25	0
Stage 1	25	-	-	-	-	-
Stage 2	34	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	948	1051	-	-	1589	-
Stage 1	998	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	946	1051	-	-	1589	-
Mov Cap-2 Maneuver	946	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1051	1589
HCM Lane V/C Ratio	-	-	0.001	0.002
HCM Control Delay (s)	-	-	8.4	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 14: 195th Street & Project Access 4 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	98		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt					0.990							0.955
Flt Protected	0.950											0.968
Satd. Flow (prot)	1770	1863	0	1863	1844	0	0	1863	0	0	1722	0
Flt Permitted	0.950											0.968
Satd. Flow (perm)	1770	1863	0	1863	1844	0	0	1863	0	0	1722	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		500			713			827			834	
Travel Time (s)		11.4			16.2			18.8			19.0	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

14: 195th Street & Project Access 4

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	12	0	0	103	7	0	0	0	4	0	2
Future Volume (vph)	1	12	0	0	103	7	0	0	0	4	0	2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	17	0	0	147	10	0	0	0	6	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	17	0	0	157	0	0	0	0	0	9	0
Intersection Summary												

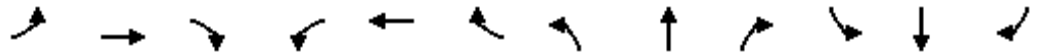
Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	1	12	0	0	103	7	0	0	0	4	0	2
Future Vol, veh/h	1	12	0	0	103	7	0	0	0	4	0	2
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	17	0	0	147	10	0	0	0	6	0	3
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.5	8.3	0	7.3
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	67%
Vol Thru, %	100%	0%	100%	100%	94%	0%
Vol Right, %	0%	0%	0%	0%	6%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	1	12	0	110	6
LT Vol	0	1	0	0	0	4
Through Vol	0	0	12	0	103	0
RT Vol	0	0	0	0	7	2
Lane Flow Rate	0	1	17	0	157	9
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.002	0.022	0	0.197	0.01
Departure Headway (Hd)	4.368	5.127	4.626	4.558	4.514	4.29
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	697	773	0	798	839
Service Time	2.368	2.862	2.361	2.267	2.222	2.29
HCM Lane V/C Ratio	0	0.001	0.022	0	0.197	0.011
HCM Control Delay	7.4	7.9	7.5	7.3	8.3	7.3
HCM Lane LOS	N	A	A	N	A	A
HCM 95th-tile Q	0	0	0.1	0	0.7	0

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 15: 195th Street & Project Access 5 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	102		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Fr <sub>t</sub>												
Fl <sub>t</sub> Protected	0.950										0.950	
Satd. Flow (prot)	1770	1863	0	0	3539	0	0	1863	0	0	1770	0
Fl <sub>t</sub> Permitted	0.950										0.950	
Satd. Flow (perm)	1770	1863	0	0	3539	0	0	1863	0	0	1770	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		713			502			847			825	
Travel Time (s)		16.2			11.4			19.3			18.8	

Intersection Summary

Area Type: Other

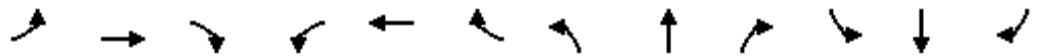


Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

15: 195th Street & Project Access 5

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	2	15	0	0	105	0	0	0	0	2	0	0
Future Volume (vph)	2	15	0	0	105	0	0	0	0	2	0	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	20	0	0	140	0	0	0	0	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	20	0	0	140	0	0	0	0	0	3	0
Intersection Summary												

**Intersection**

Intersection Delay, s/veh	6.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷			↔			↔			↔	
Traffic Vol, veh/h	2	15	0	0	105	0	0	0	0	2	0	0
Future Vol, veh/h	2	15	0	0	105	0	0	0	0	2	0	0
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	20	0	0	140	0	0	0	0	3	0	0
Number of Lanes	1	1	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.4	6.7	0	7.5
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	100%
Vol Thru, %	100%	0%	100%	100%	100%	0%
Vol Right, %	0%	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	2	15	53	53	2
LT Vol	0	2	0	0	0	2
Through Vol	0	0	15	53	53	0
RT Vol	0	0	0	0	0	0
Lane Flow Rate	0	3	20	70	70	3
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.004	0.026	0.088	0.055	0.003
Departure Headway (Hd)	4.202	5.106	4.606	4.548	2.814	4.4
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	703	780	791	1278	809
Service Time	2.255	2.819	2.318	2.256	0.521	2.452
HCM Lane V/C Ratio	0	0.004	0.026	0.088	0.055	0.004
HCM Control Delay	7.3	7.8	7.4	7.7	5.7	7.5
HCM Lane LOS	N	A	A	A	A	A
HCM 95th-tile Q	0	0	0.1	0.3	0.2	0

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TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
OPENING YEAR WITHOUT PROJECT CONDITIONS  
PM PEAK HOUR  
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Scenario Report

Scenario: OY NP\_PM  
Command: OY NP\_PM  
Volume: EX PM  
Geometry: EXISTING  
Impact Fee: Default Impact Fee  
Trip Generation: CUMULATIVES PM  
Trip Distribution: DEFAULT  
Paths: Default Path  
Routes: Default Route  
Configuration: OPENING YEAR

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Turning Movement Report  
 CUMULATIVES PM

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#1 VAN NESS AVE / 190TH ST													
Base	71	518	185	62	357	161	180	1504	92	59	684	62	3932
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	71	518	185	62	357	161	180	1504	92	59	684	62	3932
#2 VAN NESS AVE / 195TH ST													
Base	0	719	4	6	536	0	0	0	0	11	0	25	1302
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	719	4	6	536	0	0	0	0	11	0	25	1302
#3 VAN NESS AVE / DEL AMO BLVD													
Base	59	468	65	60	359	107	243	563	93	53	383	38	2489
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	59	468	65	60	359	107	243	563	93	53	383	38	2489
#4 GRAMERCY PL / 190TH ST													
Base	9	1	36	1	0	0	0	1726	1	4	765	27	2570
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	1	36	1	0	0	0	1726	1	4	765	27	2570
#5 GRMAERCY PL / 195TH ST													
Base	15	12	12	10	0	5	13	16	1	4	20	4	113
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	12	12	10	0	5	13	16	1	4	20	4	113
#6 I-405 SOUTHBOUND RAMPS / 190TH ST													
Base	0	0	0	422	0	14	606	1173	0	0	783	131	3129
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	422	0	14	606	1173	0	0	783	131	3129
#7 WESTERN AVE / I-405 NORTHBOUND RAMPS													
Base	0	1158	493	43	830	0	0	0	0	592	0	246	3363
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1158	493	43	830	0	0	0	0	592	0	246	3363
#8 WESTERN AVE / 190TH ST													
Base	127	1156	235	112	1002	305	253	1020	335	134	491	220	5391
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	127	1156	235	112	1002	305	253	1020	335	134	491	220	5391
#9 WESTERN AVE / 195TH ST													
Base	6	1431	3	12	1544	17	48	0	13	12	0	26	3114
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	1431	3	12	1544	17	48	0	13	12	0	26	3114

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#10 WESTERN AVE / DEL AMO BLVD													
Base	93	977	15	36	1266	352	494	80	231	21	22	35	3623
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	977	15	36	1266	352	494	80	231	21	22	35	3623
#11 PROJECT ACCESS 1 / 190TH ST													
Base	0	0	0	23	0	15	6	1766	0	1	785	0	2597
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	23	0	15	6	1766	0	1	785	0	2597
#12 WESTERN AVE / PROJECT ACCESS 2													
Base	0	1499	0	8	1554	0	0	0	0	3	0	10	3074
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1499	0	8	1554	0	0	0	0	3	0	10	3074
#13 GRAMERCY PL / PROJECT ACCESS 3													
Base	0	39	0	1	16	0	0	0	0	0	0	1	58
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	39	0	1	16	0	0	0	0	0	0	1	58
#14 PROJECT ACCESS 4 / 195TH ST													
Base	0	0	0	11	0	0	0	46	0	0	30	21	109
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	11	0	0	0	46	0	0	30	21	109
#15 PROJECT ACCESS 5 / 195TH ST													
Base	0	0	0	0	0	3	4	54	0	0	56	1	117
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	4	54	0	0	56	1	117

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #1 VAN NESS AVE / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.650  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 44 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	2	0	1	1	1	0	3	0	1	1

Volume Module:

Base Vol:	70	513	183	61	353	159	178	1489	91	58	677	61
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	71	518	185	62	357	161	180	1504	92	59	684	62
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	71	518	185	62	357	161	180	1504	92	59	684	62
User 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
PHF 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
PHF Volume:	71	518	185	62	357	161	180	1504	92	59	684	62
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	71	518	185	62	357	161	180	1504	92	59	684	62
PCE 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
MLF 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
FinalVolume:	71	518	185	62	357	161	180	1504	92	59	684	62
OvlAdjVol:	0											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3200	3200	1600	1600	3200	1600	1600	4800	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.02	0.16	0.12	0.04	0.11	0.10	0.11	0.31	0.06	0.04	0.21	0.04
OvlAdjV/S:							0.00					
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #2 VAN NESS AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.344  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 26 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	T	R		L	T	R		L	T	R		L	T	R					
Control:	Permitted				Permitted				Split Phase				Split Phase							
Rights:	Ovl				Include				Include				Include							
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0					
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0					
Lanes:	0	0	2	0	1	1	0	2	0	0	0	0	0	0	0	2	0	0	0	1

Volume Module:

Base Vol:	0	712	4	6	531	0	0	0	0	11	0	25
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	719	4	6	536	0	0	0	0	11	0	25
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	719	4	6	536	0	0	0	0	11	0	25
User 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
PHF 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
PHF Volume:	0	719	4	6	536	0	0	0	0	11	0	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	719	4	6	536	0	0	0	0	11	0	25
PCE 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
MLF 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
FinalVolume:	0	719	4	6	536	0	0	0	0	11	0	25
OvlAdjVol:	0											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	0	3200	1600	1600	3200	0	0	0	0	3200	0	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.22	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.02
OvlAdjV/S:	0.00											
Crit Moves:	****				****				****			

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #3 VAN NESS AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.688  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 49 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	2	0	1	1	0	2

Volume Module:

Base Vol:	58	463	64	59	355	106	241	557	92	52	379	38
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	59	468	65	60	359	107	243	563	93	53	383	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	59	468	65	60	359	107	243	563	93	53	383	38
User 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
PHF 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
PHF Volume:	59	468	65	60	359	107	243	563	93	53	383	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	59	468	65	60	359	107	243	563	93	53	383	38
PCE 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
MLF 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
FinalVolume:	59	468	65	60	359	107	243	563	93	53	383	38

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.76	0.24	1.00	1.54	0.46	2.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	2811	389	1600	2464	736	3200	1600	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.04	0.17	0.17	0.04	0.15	0.15	0.08	0.35	0.06	0.03	0.12	0.02
Crit Moves:	***			***			***			***		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #4 GRAMERCY PL / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.486  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 33 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	0	1	0	2	1	0	1

Volume Module:

Base Vol:	9	1	36	1	0	0	0	1709	1	4	757	27
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	9	1	36	1	0	0	0	1726	1	4	765	27
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	1	36	1	0	0	0	1726	1	4	765	27
User 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
PHF 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
PHF Volume:	9	1	36	1	0	0	0	1726	1	4	765	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	9	1	36	1	0	0	0	1726	1	4	765	27
PCE 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
MLF 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
FinalVolume:	9	1	36	1	0	0	0	1726	1	4	765	27

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.03	0.97	1.00	1.00	0.00	1.00	2.99	0.01	1.00	1.93	0.07
Final Sat.:	1600	43	1557	1600	1600	0	1600	4797	3	1600	3090	110

Capacity Analysis Module:

Vol/Sat:	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.36	0.36	0.00	0.25	0.25
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #6 I-405 SOUTHBOUND RAMPS / 190TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.589  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 39 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	1	0	0	0	2	0	3

Volume Module:

Base Vol:	0	0	0	418	0	14	600	1161	0	0	775	130
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	0	0	422	0	14	606	1173	0	0	783	131
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	422	0	14	606	1173	0	0	783	131
User 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
PHF 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
PHF Volume:	0	0	0	422	0	14	606	1173	0	0	783	131
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	422	0	14	606	1173	0	0	783	131
PCE 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
MLF 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
FinalVolume:	0	0	0	422	0	14	606	1173	0	0	783	131

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.94	0.00	0.06	2.00	3.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	3096	0	104	3200	4800	0	0	4800	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.14	0.00	0.14	0.19	0.24	0.00	0.00	0.16	0.08
Crit Moves:				****		****				****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #7 WESTERN AVE / I-405 NORTHBOUND RAMPS

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.751  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 57 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	T	R		L	T	R		L	T	R		L	T	R					
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Ovl				Include				Include				Include							
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0					
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0					
Lanes:	0	0	2	0	1	1	0	3	0	0	0	0	0	0	0	1	0	1	0	0

Volume Module:

Base Vol:	0	1147	488	43	822	0	0	0	0	586	0	244
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	1158	493	43	830	0	0	0	0	592	0	246
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1158	493	43	830	0	0	0	0	592	0	246
User 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
PHF 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
PHF Volume:	0	1158	493	43	830	0	0	0	0	592	0	246
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1158	493	43	830	0	0	0	0	592	0	246
PCE 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
MLF 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
FinalVolume:	0	1158	493	43	830	0	0	0	0	592	0	246
OvlAdjVol:			74									

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	3.00	0.00	0.00	0.00	0.00	1.41	xxxx	0.59
Final Sat.:	0	3200	1600	1600	4800	0	0	0	0	2259	0	941

Capacity Analysis Module:

Vol/Sat:	0.00	0.36	0.31	0.03	0.17	0.00	0.00	0.00	0.00	0.26	0.00	0.26
OvlAdjV/S:			0.05									
Crit Moves:	****			****								****

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #8 WESTERN AVE / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.630  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 43 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Ovl				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	3	0	1	2	0	3	0	1	2	0	3	0	1	2	0	2	1	0

Volume Module:

Base Vol:	126	1145	233	111	992	302	250	1010	332	133	486	218
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	127	1156	235	112	1002	305	253	1020	335	134	491	220
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	127	1156	235	112	1002	305	253	1020	335	134	491	220
User 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
PHF 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
PHF Volume:	127	1156	235	112	1002	305	253	1020	335	134	491	220
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	127	1156	235	112	1002	305	253	1020	335	134	491	220
PCE 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
MLF 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
FinalVolume:	127	1156	235	112	1002	305	253	1020	335	134	491	220
OvlAdjVol:	168				179				272			

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.07	0.93
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	3314	1486

Capacity Analysis Module:

Vol/Sat:	0.04	0.24	0.15	0.04	0.21	0.19	0.08	0.21	0.21	0.04	0.15	0.15
OvlAdjV/S:	0.11		0.11		0.17		0.17		0.17		0.17	
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #9 WESTERN AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.480  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 32 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	6	1417	3	12	1529	17	48	0	13	12	0	26
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	6	1431	3	12	1544	17	48	0	13	12	0	26
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	1431	3	12	1544	17	48	0	13	12	0	26
User 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
PHF 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
PHF Volume:	6	1431	3	12	1544	17	48	0	13	12	0	26
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	1431	3	12	1544	17	48	0	13	12	0	26
PCE 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
MLF 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
FinalVolume:	6	1431	3	12	1544	17	48	0	13	12	0	26

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.00	1.00	0.32	0.00	0.68
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	0	1600	505	0	1095

Capacity Analysis Module:

Vol/Sat:	0.00	0.30	0.00	0.01	0.32	0.01	0.03	0.00	0.01	0.01	0.00	0.02
Crit Moves:	****			****			****					****

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITHOUT PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #10 WESTERN AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.724  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 53 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Permitted				Permitted				Split Phase				Split Phase							
Rights:	Include				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	1	0	2	1	0	1	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	92	967	15	36	1253	349	489	79	229	21	22	35
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	93	977	15	36	1266	352	494	80	231	21	22	35
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	977	15	36	1266	352	494	80	231	21	22	35
User 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
PHF 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
PHF Volume:	93	977	15	36	1266	352	494	80	231	21	22	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	977	15	36	1266	352	494	80	231	21	22	35
PCE 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
MLF 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
FinalVolume:	93	977	15	36	1266	352	494	80	231	21	22	35

Saturation Flow Module:

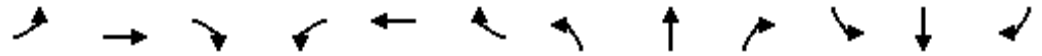
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.35	0.65	1.72	0.28	1.00	0.27	0.28	0.45
Final Sat.:	1600	3200	1600	1600	3754	1046	2755	445	1600	431	451	718

Capacity Analysis Module:

Vol/Sat:	0.06	0.31	0.01	0.02	0.34	0.34	0.18	0.18	0.14	0.05	0.05	0.05
Crit Moves:	****				****			****			****	

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Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 5: Gramercy Place & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt		0.996			0.980			0.958			0.955	
Flt Protected		0.979			0.993			0.982			0.968	
Satd. Flow (prot)	0	1816	0	0	1813	0	0	1752	0	0	1722	0
Flt Permitted		0.979			0.993			0.982			0.968	
Satd. Flow (perm)	0	1816	0	0	1813	0	0	1752	0	0	1722	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1405			500			880			967	
Travel Time (s)		31.9			11.4			20.0			22.0	

Intersection Summary

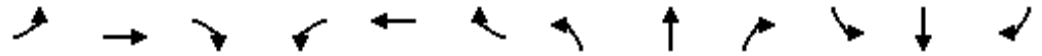
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

5: Gramercy Place & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	13	16	1	4	20	4	15	12	12	10	0	5
Future Volume (vph)	13	16	1	4	20	4	15	12	12	10	0	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	16	20	1	5	24	5	18	15	15	12	0	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	37	0	0	34	0	0	48	0	0	18	0
Intersection Summary												



Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	16	1	4	20	4	15	12	12	10	0	5
Future Vol, veh/h	13	16	1	4	20	4	15	12	12	10	0	5
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	20	1	5	24	5	18	15	15	12	0	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.2	7.2	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	43%	14%	67%
Vol Thru, %	31%	53%	71%	0%
Vol Right, %	31%	3%	14%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	39	30	28	15
LT Vol	15	13	4	10
Through Vol	12	16	20	0
RT Vol	12	1	4	5
Lane Flow Rate	48	37	34	18
Geometry Grp	1	1	1	1
Degree of Util (X)	0.052	0.042	0.038	0.02
Departure Headway (Hd)	3.963	4.14	4.018	4.026
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	901	863	888	885
Service Time	1.999	2.174	2.054	2.068
HCM Lane V/C Ratio	0.053	0.043	0.038	0.02
HCM Control Delay	7.2	7.4	7.2	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0.1

Lanes and Geometrics  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	258			166	0	0
Storage Lanes	2			1	2	0
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850	0.995	
Flt Protected	0.950				0.954	
Satd. Flow (prot)	3433	5085	5085	1583	3430	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	3433	5085	5085	1583	3430	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				134	5	
Link Speed (mph)		30	30		30	
Link Distance (ft)		645	638		544	
Travel Time (s)		14.7	14.5		12.4	

Intersection Summary

Area Type: Other

Volume  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



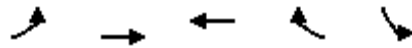
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	606	1173	783	131	422	14
Future Volume (vph)	606	1173	783	131	422	14
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	618	1197	799	134	431	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	618	1197	799	134	445	0
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

6: 190th Street & I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations	↖↖	↑↑↑	↑↑↑	↗	↖↖
Traffic Volume (vph)	606	1173	783	131	422
Future Volume (vph)	606	1173	783	131	422
Turn Type	Prot	NA	NA	Perm	Prot
Protected Phases	7	4	8		6
Permitted Phases				8	
Detector Phase	7	4	8	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	20.0	42.5	22.5	22.5	22.5
Total Split (%)	30.8%	65.4%	34.6%	34.6%	34.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	None	None	None	Max
Act Effect Green (s)	14.5	35.3	16.3	16.3	18.1
Actuated g/C Ratio	0.23	0.57	0.26	0.26	0.29
v/c Ratio	0.78	0.42	0.60	0.26	0.45
Control Delay	30.7	8.1	22.4	5.5	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	8.1	22.4	5.5	20.3
LOS	C	A	C	A	C
Approach Delay		15.8	20.0		20.3
Approach LOS		B	B		C

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 62.4	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 56.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: 190th Street & I-405 Ramp



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 6: 190th Street &amp; I-405 Ramp

10/06/2021



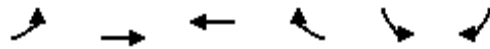
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	618	1197	799	134	445
v/c Ratio	0.78	0.42	0.60	0.26	0.45
Control Delay	30.7	8.1	22.4	5.5	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	8.1	22.4	5.5	20.3
Queue Length 50th (ft)	117	83	98	0	74
Queue Length 95th (ft)	#173	109	134	35	112
Internal Link Dist (ft)		565	558		464
Turn Bay Length (ft)	258			166	
Base Capacity (vph)	856	3111	1474	554	997
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.38	0.54	0.24	0.45

## Intersection Summary

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

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 6: 190th Street & I-405 Ramp

10/06/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖ ↗	↑ ↑ ↑	↑ ↑ ↑	↖	↖ ↗			
Traffic Volume (veh/h)	606	1173	783	131	422	14		
Future Volume (veh/h)	606	1173	783	131	422	14		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	618	1197	799	134	444	0		
Adj No. of Lanes	2	3	3	1	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	0		
Cap, veh/h	759	2723	1208	376	1099	500		
Arrive On Green	0.22	0.54	0.24	0.24	0.31	0.00		
Sat Flow, veh/h	3442	5253	5253	1583	3548	1615		
Grp Volume(v), veh/h	618	1197	799	134	444	0		
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1774	1615		
Q Serve(g_s), s	9.9	8.3	8.3	4.1	5.7	0.0		
Cycle Q Clear(g_c), s	9.9	8.3	8.3	4.1	5.7	0.0		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	759	2723	1208	376	1099	500		
V/C Ratio(X)	0.81	0.44	0.66	0.36	0.40	0.00		
Avail Cap(c_a), veh/h	918	3324	1575	490	1099	500		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	21.5	8.2	20.0	18.5	15.8	0.0		
Incr Delay (d2), s/veh	4.8	0.1	0.7	0.6	1.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.2	3.9	3.9	1.8	2.9	0.0		
LnGrp Delay(d),s/veh	26.3	8.3	20.7	19.0	16.9	0.0		
LnGrp LOS	C	A	C	B	B			
Approach Vol, veh/h		1815	933		444			
Approach Delay, s/veh		14.4	20.5		16.9			
Approach LOS		B	C		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				35.6		22.5	17.3	18.3
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				38.0		18.0	15.5	18.0
Max Q Clear Time (g_c+I1), s				10.3		7.7	11.9	10.3
Green Ext Time (p_c), s				10.2		1.2	0.9	3.5
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			16.5					
HCM 2010 LOS			B					
<b>Notes</b>								

Lanes and Geometrics      TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street      10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	170	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.91
Ped Bike Factor						
Frt	0.956			0.850		
Flt Protected	0.966				0.950	
Satd. Flow (prot)	3337	0	3539	1583	1770	5085
Flt Permitted	0.966				0.950	
Satd. Flow (perm)	3337	0	3539	1583	1770	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	96			467		
Link Speed (mph)	30		30			30
Link Distance (ft)	1298		979			805
Travel Time (s)	29.5		22.3			18.3

Intersection Summary

Area Type:      Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	592	246	1158	493	43	830
Future Volume (vph)	592	246	1158	493	43	830
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	651	270	1273	542	47	912
Shared Lane Traffic (%)						
Lane Group Flow (vph)	921	0	1273	542	47	912
Intersection Summary						



Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

	↙	↑	↘	↙	↓
Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↑↑	↘	↙	↑↑↑
Traffic Volume (vph)	592	1158	493	43	830
Future Volume (vph)	592	1158	493	43	830
Turn Type	Prot	NA	pm+ov	Prot	NA
Protected Phases	3	2	3	1	6
Permitted Phases			2		
Detector Phase	3	2	3	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5
Total Split (s)	25.0	35.5	25.0	9.5	45.0
Total Split (%)	35.7%	50.7%	35.7%	13.6%	64.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag		Lag		Lead	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	Max	None	None	Max
Act Effct Green (s)	20.0	34.8	61.2	5.0	40.5
Actuated g/C Ratio	0.29	0.50	0.88	0.07	0.58
v/c Ratio	0.90	0.72	0.37	0.37	0.31
Control Delay	34.3	17.8	1.1	39.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	17.8	1.1	39.7	7.8
LOS	C	B	A	D	A
Approach Delay	34.3	12.8			9.4
Approach LOS	C	B			A

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 69.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 17.3	Intersection LOS: B
Intersection Capacity Utilization 67.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Western Avenue/I-405 Ramp & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 7: Western Avenue/I-405 Ramp &amp; 190th Street

10/06/2021



Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	921	1273	542	47	912
v/c Ratio	0.90	0.72	0.37	0.37	0.31
Control Delay	34.3	17.8	1.1	39.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	17.8	1.1	39.7	7.8
Queue Length 50th (ft)	174	240	4	20	66
Queue Length 95th (ft)	#281	323	18	50	88
Internal Link Dist (ft)	1218	899			725
Turn Bay Length (ft)			150	170	
Base Capacity (vph)	1051	1773	1441	127	2962
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.88	0.72	0.38	0.37	0.31
















## Intersection Summary

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

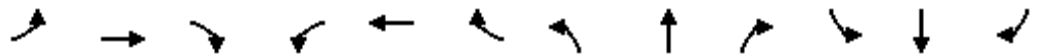
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 		 			  		
Traffic Volume (veh/h)	592	246	1158	493	43	830		
Future Volume (veh/h)	592	246	1158	493	43	830		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863		
Adj Flow Rate, veh/h	460	474	1273	542	47	912		
Adj No. of Lanes	1	1	2	1	1	3		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	520	473	1669	1210	76	2942		
Arrive On Green	0.29	0.29	0.47	0.47	0.04	0.58		
Sat Flow, veh/h	1774	1615	3632	1583	1774	5253		
Grp Volume(v), veh/h	460	474	1273	542	47	912		
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1583	1774	1695		
Q Serve(g_s), s	17.3	20.5	20.8	8.6	1.8	6.4		
Cycle Q Clear(g_c), s	17.3	20.5	20.8	8.6	1.8	6.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	520	473	1669	1210	76	2942		
V/C Ratio(X)	0.89	1.00	0.76	0.45	0.62	0.31		
Avail Cap(c_a), veh/h	520	473	1669	1210	127	2942		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	23.6	24.7	15.3	3.0	32.9	7.6		
Incr Delay (d2), s/veh	16.6	41.9	3.4	1.2	8.0	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.8	14.6	10.9	4.1	1.1	3.0		
LnGrp Delay(d),s/veh	40.2	66.7	18.6	4.2	40.9	7.8		
LnGrp LOS	D	F	B	A	D	A		
Approach Vol, veh/h	934		1815			959		
Approach Delay, s/veh	53.7		14.3			9.5		
Approach LOS	D		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.5	37.5				45.0		25.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.0	31.0				40.5		20.5
Max Q Clear Time (g_c+I1), s	3.8	22.8				8.4		22.5
Green Ext Time (p_c), s	0.0	6.1				7.6		0.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			23.0					
HCM 2010 LOS			C					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	148		190	232		0	150		316	280		250
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	4851	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	4851	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101		172				101			103
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		638			1305			584			979	
Travel Time (s)		14.5			29.7			13.3			22.3	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	253	1020	335	134	491	220	127	1156	235	112	1002	305
Future Volume (vph)	253	1020	335	134	491	220	127	1156	235	112	1002	305
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	258	1041	342	137	501	224	130	1180	240	114	1022	311
Shared Lane Traffic (%)												
Lane Group Flow (vph)	258	1041	342	137	725	0	130	1180	240	114	1022	311
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	253	1020	335	134	491	127	1156	235	112	1002	305
Future Volume (vph)	253	1020	335	134	491	127	1156	235	112	1002	305
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	3	1	6	7
Permitted Phases			4					2			6
Detector Phase	7	4	5	3	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	10.4	23.4	9.5	9.5	22.5	9.5	22.6	9.5	9.5	22.6	10.4
Total Split (%)	16.0%	36.0%	14.6%	14.6%	34.6%	14.6%	34.8%	14.6%	14.6%	34.8%	16.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	None
Act Effct Green (s)	5.9	18.2	27.7	5.0	17.3	5.0	20.1	29.6	5.0	18.1	28.5
Actuated g/C Ratio	0.09	0.28	0.43	0.08	0.27	0.08	0.31	0.46	0.08	0.28	0.44
v/c Ratio	0.82	0.72	0.46	0.51	0.51	0.49	0.74	0.31	0.43	0.71	0.41
Control Delay	52.4	24.1	11.3	36.1	16.3	35.3	24.7	8.4	33.9	24.3	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	24.1	11.3	36.1	16.3	35.3	24.7	8.4	33.9	24.3	10.0
LOS	D	C	B	D	B	D	C	A	C	C	B
Approach Delay		25.9			19.4		23.0			22.0	
Approach LOS		C			B		C			C	

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 64.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 23.0

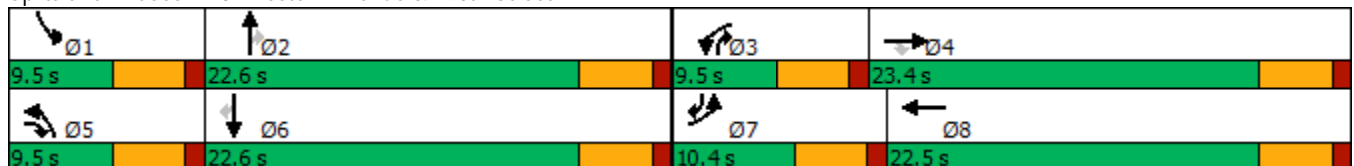
Intersection LOS: C

Intersection Capacity Utilization 65.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Western Avenue & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 8: Western Avenue &amp; 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	258	1041	342	137	725	130	1180	240	114	1022	311
v/c Ratio	0.82	0.72	0.46	0.51	0.51	0.49	0.74	0.31	0.43	0.71	0.41
Control Delay	52.4	24.1	11.3	36.1	16.3	35.3	24.7	8.4	33.9	24.3	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	24.1	11.3	36.1	16.3	35.3	24.7	8.4	33.9	24.3	10.0
Queue Length 50th (ft)	53	133	61	27	65	26	159	33	22	132	51
Queue Length 95th (ft)	#111	176	122	52	97	50	#214	77	45	176	106
Internal Link Dist (ft)		558			1225		504			899	
Turn Bay Length (ft)	148		190	232		150		316	280		250
Base Capacity (vph)	314	1494	739	267	1481	267	1587	782	267	1430	758
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.70	0.46	0.51	0.49	0.49	0.74	0.31	0.43	0.71	0.41




































## Intersection Summary

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

Queue shown is maximum after two cycles.

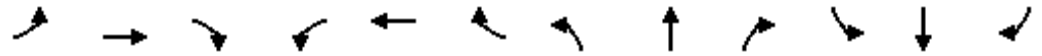
HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  		 	  	
Traffic Volume (veh/h)	253	1020	335	134	491	220	127	1156	235	112	1002	305
Future Volume (veh/h)	253	1020	335	134	491	220	127	1156	235	112	1002	305
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	258	1041	342	137	501	224	130	1180	240	114	1022	311
Adj No. of Lanes	2	3	1	2	3	0	2	3	1	2	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	1399	549	251	882	381	247	1493	580	238	1479	611
Arrive On Green	0.09	0.28	0.28	0.07	0.25	0.25	0.07	0.29	0.29	0.07	0.29	0.29
Sat Flow, veh/h	3442	5085	1583	3442	3484	1503	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	258	1041	342	137	487	238	130	1180	240	114	1022	311
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1597	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	4.6	11.6	11.2	2.4	7.8	8.1	2.3	13.3	7.0	2.0	11.1	9.3
Cycle Q Clear(g_c), s	4.6	11.6	11.2	2.4	7.8	8.1	2.3	13.3	7.0	2.0	11.1	9.3
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	326	1399	549	251	858	404	247	1493	580	238	1479	611
V/C Ratio(X)	0.79	0.74	0.62	0.55	0.57	0.59	0.53	0.79	0.41	0.48	0.69	0.51
Avail Cap(c_a), veh/h	326	1545	595	277	981	462	277	1493	580	277	1479	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	20.6	16.9	27.9	20.3	20.4	27.9	20.2	14.7	27.9	19.6	14.6
Incr Delay (d2), s/veh	12.4	1.8	1.8	1.9	0.6	1.5	1.7	4.3	2.2	1.5	2.7	3.0
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	2.7	5.6	5.1	1.2	3.7	3.7	1.1	6.7	3.4	1.0	5.6	4.6
LnGrp Delay(d),s/veh	39.9	22.4	18.7	29.7	20.9	21.9	29.6	24.6	16.9	29.4	22.2	17.6
LnGrp LOS	D	C	B	C	C	C	C	C	B	C	C	B
Approach Vol, veh/h		1641			862			1550			1447	
Approach Delay, s/veh		24.4			22.6			23.8			21.8	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	22.8	9.0	21.6	9.0	22.6	10.4	20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.1	5.0	18.9	5.0	18.1	5.9	18.0				
Max Q Clear Time (g_c+I1), s	4.0	15.3	4.4	13.6	4.3	13.1	6.6	10.1				
Green Ext Time (p_c), s	0.0	2.1	0.0	3.5	0.0	3.3	0.0	2.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.2									
HCM 2010 LOS			C									



Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↑↑↑	↗	↗	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		50	0		0	114		306	200		190
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.907				0.850			0.850
Flt Protected		0.950			0.985		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1664	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.851			0.879		0.950			0.950		
Satd. Flow (perm)	0	1585	1583	0	1485	0	1770	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109				109			109
Link Speed (mph)		30			30			30				30
Link Distance (ft)		502			1333			1078				969
Travel Time (s)		11.4			30.3			24.5				22.0

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	48	0	13	12	0	26	6	1431	3	12	1544	17
Future Volume (vph)	48	0	13	12	0	26	6	1431	3	12	1544	17
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	0	13	12	0	27	6	1475	3	12	1592	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	13	0	39	0	6	1475	3	12	1592	18
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021

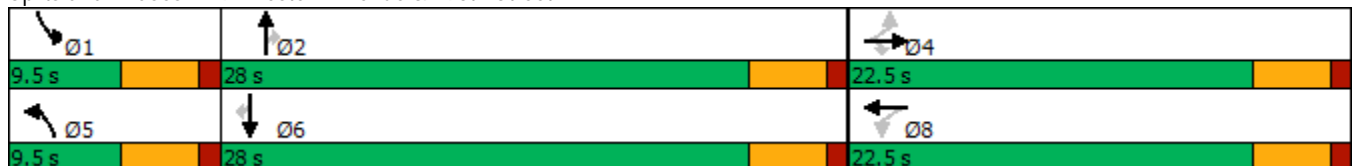


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↖	↑↑↑	↗	↖	↑↑↑	↗
Traffic Volume (vph)	48	0	13	12	0	6	1431	3	12	1544	17
Future Volume (vph)	48	0	13	12	0	6	1431	3	12	1544	17
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8				2			6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	28.0	28.0	9.5	28.0	28.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	15.8%	46.7%	46.7%	15.8%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		7.2	7.2		7.0	5.0	33.4	33.4	5.0	33.4	33.4
Actuated g/C Ratio		0.16	0.16		0.16	0.11	0.74	0.74	0.11	0.74	0.74
v/c Ratio		0.20	0.04		0.12	0.03	0.39	0.00	0.06	0.42	0.01
Control Delay		18.5	0.2		0.8	19.5	5.4	0.0	19.9	5.6	0.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		18.5	0.2		0.8	19.5	5.4	0.0	19.9	5.6	0.0
LOS		B	A		A	B	A	A	B	A	A
Approach Delay		14.7			0.8		5.4			5.6	
Approach LOS		B			A		A			A	

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 45.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 49.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: Western Avenue & 195th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 9: Western Avenue &amp; 195th Street

10/06/2021
























Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	49	13	39	6	1475	3	12	1592	18
v/c Ratio	0.20	0.04	0.12	0.03	0.39	0.00	0.06	0.42	0.01
Control Delay	18.5	0.2	0.8	19.5	5.4	0.0	19.9	5.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	0.2	0.8	19.5	5.4	0.0	19.9	5.6	0.0
Queue Length 50th (ft)	12	0	0	2	53	0	3	59	0
Queue Length 95th (ft)	36	0	1	10	157	0	16	175	0
Internal Link Dist (ft)	422		1253		998			889	
Turn Bay Length (ft)		50		114		306	200		190
Base Capacity (vph)	637	702	663	197	3768	1201	197	3768	1201
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.02	0.06	0.03	0.39	0.00	0.06	0.42	0.01

## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	0	13	12	0	26	6	1431	3	12	1544	17
Future Volume (veh/h)	48	0	13	12	0	26	6	1431	3	12	1544	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	49	0	13	12	0	27	6	1475	3	12	1592	18
Adj No. of Lanes	0	1	1	0	1	0	1	3	1	1	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	0	132	141	8	79	14	2911	906	28	2949	918
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.08	0.01	0.57	0.57	0.02	0.58	0.58
Sat Flow, veh/h	1532	0	1583	322	101	950	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	49	0	13	39	0	0	6	1475	3	12	1592	18
Grp Sat Flow(s),veh/h/ln	1532	0	1583	1372	0	0	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	0.3	0.3	0.0	0.0	0.1	7.2	0.0	0.3	7.9	0.2
Cycle Q Clear(g_c), s	1.1	0.0	0.3	1.3	0.0	0.0	0.1	7.2	0.0	0.3	7.9	0.2
Prop In Lane	1.00		1.00	0.31		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	0	132	229	0	0	14	2911	906	28	2949	918
V/C Ratio(X)	0.16	0.00	0.10	0.17	0.00	0.00	0.42	0.51	0.00	0.43	0.54	0.02
Avail Cap(c_a), veh/h	792	0	694	769	0	0	216	2911	906	216	2949	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	17.4	17.8	0.0	0.0	20.3	5.3	3.8	20.0	5.3	3.7
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.3	0.0	0.0	18.4	0.6	0.0	10.4	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	0.4	0.0	0.0	0.1	3.4	0.0	0.2	3.7	0.1
LnGrp Delay(d),s/veh	18.0	0.0	17.7	18.1	0.0	0.0	38.7	5.9	3.8	30.4	6.0	3.7
LnGrp LOS	B		B	B			D	A	A	C	A	A
Approach Vol, veh/h		62			39			1484			1622	
Approach Delay, s/veh		17.9			18.1			6.1			6.1	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	28.0		7.9	4.8	28.3		7.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	23.5		18.0	5.0	23.5		18.0				
Max Q Clear Time (g_c+I1), s	2.3	9.2		3.1	2.1	9.9		3.3				
Green Ext Time (p_c), s	0.0	8.8		0.2	0.0	9.2		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.5									
HCM 2010 LOS			A									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	62		64	0		0	200		50	92		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.940				0.850		0.967	
Flt Protected	0.950	0.965			0.987		0.950			0.950		
Satd. Flow (prot)	1681	1708	1583	0	1728	0	1770	3539	1583	1770	4917	0
Flt Permitted	0.950	0.965			0.987		0.098			0.205		
Satd. Flow (perm)	1681	1708	1583	0	1728	0	183	3539	1583	382	4917	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		36				73		101	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1176			1320			1187			1078	
Travel Time (s)		26.7			30.0			27.0			24.5	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	494	80	231	21	22	35	93	977	15	36	1266	352
Future Volume (vph)	494	80	231	21	22	35	93	977	15	36	1266	352
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	515	83	241	22	23	36	97	1018	16	38	1319	367
Shared Lane Traffic (%)	42%											
Lane Group Flow (vph)	299	299	241	0	81	0	97	1018	16	38	1686	0
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021

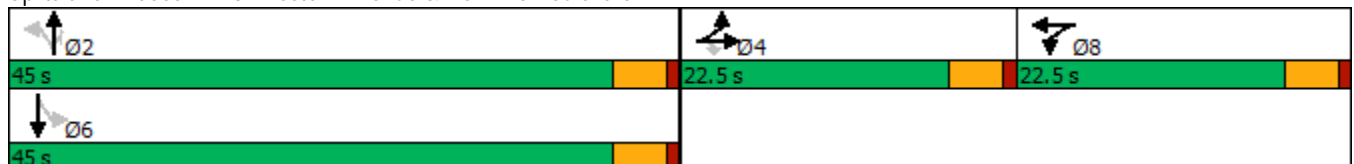


Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	494	80	231	22	93	977	15	36	1266
Future Volume (vph)	494	80	231	22	93	977	15	36	1266
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4	4		8		2			6
Permitted Phases			4		2		2	6	
Detector Phase	4	4	4	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	45.0	45.0	45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effect Green (s)	17.1	17.1	17.1	7.7	40.9	40.9	40.9	40.9	40.9
Actuated g/C Ratio	0.22	0.22	0.22	0.10	0.53	0.53	0.53	0.53	0.53
v/c Ratio	0.80	0.79	0.52	0.39	1.00	0.54	0.02	0.19	0.63
Control Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.6	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.6	14.3
LOS	D	D	B	C	F	B	A	B	B
Approach Delay		38.2		27.1		23.5			14.3
Approach LOS		D		C		C			B

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 76.9  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.00  
 Intersection Signal Delay: 22.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 71.2%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 10: Western Avenue & Del Amo Boulevard





## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 10: Western Avenue &amp; Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	299	299	241	81	97	1018	16	38	1686
v/c Ratio	0.80	0.79	0.52	0.39	1.00	0.54	0.02	0.19	0.63
Control Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.6	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.6	14.3
Queue Length 50th (ft)	147	147	40	21	~53	172	0	10	200
Queue Length 95th (ft)	#294	#291	112	62	#109	250	0	32	274
Internal Link Dist (ft)		1096		1240		1107			998
Turn Bay Length (ft)	62		64		200		50	92	
Base Capacity (vph)	397	403	483	436	97	1882	876	203	2663
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.74	0.50	0.19	1.00	0.54	0.02	0.19	0.63

## Intersection Summary























~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

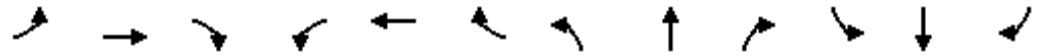
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	494	80	231	21	22	35	93	977	15	36	1266	352
Future Volume (veh/h)	494	80	231	21	22	35	93	977	15	36	1266	352
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	574	0	241	22	23	36	97	1018	16	38	1319	367
Adj No. of Lanes	2	0	1	0	1	0	1	2	1	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	715	0	319	29	30	47	194	1954	874	300	2186	607
Arrive On Green	0.20	0.00	0.20	0.06	0.06	0.06	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	3548	0	1583	463	484	758	291	3539	1583	543	3960	1099
Grp Volume(v), veh/h	574	0	241	81	0	0	97	1018	16	38	1129	557
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1706	0	0	291	1770	1583	543	1695	1669
Q Serve(g_s), s	11.3	0.0	10.5	3.4	0.0	0.0	24.0	13.3	0.3	3.5	16.4	16.5
Cycle Q Clear(g_c), s	11.3	0.0	10.5	3.4	0.0	0.0	40.5	13.3	0.3	16.7	16.4	16.5
Prop In Lane	1.00		1.00	0.27		0.44	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	715	0	319	107	0	0	194	1954	874	300	1871	921
V/C Ratio(X)	0.80	0.00	0.76	0.76	0.00	0.00	0.50	0.52	0.02	0.13	0.60	0.60
Avail Cap(c_a), veh/h	871	0	388	419	0	0	194	1954	874	300	1871	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	27.6	33.8	0.0	0.0	24.9	10.3	7.4	15.6	11.0	11.1
Incr Delay (d2), s/veh	4.6	0.0	6.7	10.5	0.0	0.0	9.0	1.0	0.0	0.9	1.5	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	5.1	1.9	0.0	0.0	2.4	6.6	0.2	0.6	7.9	8.2
LnGrp Delay(d),s/veh	32.5	0.0	34.3	44.3	0.0	0.0	33.9	11.3	7.5	16.5	12.5	14.0
LnGrp LOS	C		C	D			C	B	A	B	B	B
Approach Vol, veh/h		815			81			1131			1724	
Approach Delay, s/veh		33.0			44.3			13.2			13.1	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		19.3		45.0		9.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		40.5		18.0		40.5		18.0				
Max Q Clear Time (g_c+I1), s		42.5		13.3		18.7		5.4				
Green Ext Time (p_c), s		0.0		1.5		13.4		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.1									
HCM 2010 LOS			B									
<b>Notes</b>												

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 11: Project Access 1 & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt												0.946
Flt Protected	0.950			0.950								0.971
Satd. Flow (prot)	1770	5085	0	1770	3539	0	1863	1863	0	0	1711	0
Flt Permitted	0.950			0.950								0.971
Satd. Flow (perm)	1770	5085	0	1770	3539	0	1863	1863	0	0	1711	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1861			645			451				561
Travel Time (s)		42.3			14.7			10.3				12.8

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

11: Project Access 1 & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	6	1766	0	1	785	0	0	0	0	23	0	15
Future Volume (vph)	6	1766	0	1	785	0	0	0	0	23	0	15
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	1879	0	1	835	0	0	0	0	24	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1879	0	1	835	0	0	0	0	0	40	0
Intersection Summary												

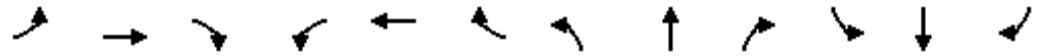
Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙ ↑↑↑			↙ ↑↑			↙ ↑				↕	
Traffic Vol, veh/h	6	1766	0	1	785	0	0	0	0	23	0	15
Future Vol, veh/h	6	1766	0	1	785	0	0	0	0	23	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1879	0	1	835	0	0	0	0	24	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	835	0	0	1879	0	0	2311	2728	940	1601	2728	418
Stage 1	-	-	-	-	-	-	1891	1891	-	837	837	-
Stage 2	-	-	-	-	-	-	420	837	-	764	1891	-
Critical Hdwy	4.14	-	-	5.34	-	-	6.99	6.54	7.14	6.99	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.74	5.54	-
Follow-up Hdwy	2.22	-	-	3.12	-	-	3.67	4.02	3.92	3.67	4.02	3.32
Pot Cap-1 Maneuver	794	-	-	144	-	-	29	20	227	89	20	584
Stage 1	-	-	-	-	-	-	47	117	-	319	380	-
Stage 2	-	-	-	-	-	-	562	380	-	338	117	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	794	-	-	144	-	-	28	20	227	88	20	584
Mov Cap-2 Maneuver	-	-	-	-	-	-	28	20	-	88	20	-
Stage 1	-	-	-	-	-	-	47	116	-	316	377	-
Stage 2	-	-	-	-	-	-	543	377	-	335	116	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			43.9		
HCM LOS							A			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	794	-	-	144	-	-	132
HCM Lane V/C Ratio	-	-	0.008	-	-	0.007	-	-	0.306
HCM Control Delay (s)	0	0	9.6	-	-	30.2	-	-	43.9
HCM Lane LOS	A	A	A	-	-	D	-	-	E
HCM 95th %tile Q(veh)	-	-	0	-	-	0	-	-	1.2

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 12: Western Avenue & Project Access 2 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↑↑↑		↙	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt					0.894							
Flt Protected					0.989					0.950		
Satd. Flow (prot)	0	1863	0	0	1647	0	1863	5085	0	1770	5085	0
Flt Permitted					0.989					0.950		
Satd. Flow (perm)	0	1863	0	0	1647	0	1863	5085	0	1770	5085	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		781			1291			969			584	
Travel Time (s)		17.8			29.3			22.0			13.3	

Intersection Summary

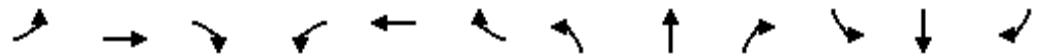
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

12: Western Avenue & Project Access 2

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	3	0	10	0	1499	0	8	1554	0
Future Volume (vph)	0	0	0	3	0	10	0	1499	0	8	1554	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	3	0	11	0	1595	0	9	1653	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	14	0	0	1595	0	9	1653	0
Intersection Summary												

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	0	0	0	3	0	10	0	1499	0	8	1554	0
Future Vol, veh/h	0	0	0	3	0	10	0	1499	0	8	1554	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	0	11	0	1595	0	9	1653	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2309	3266	827	2274	3266	798	1653	0	0	1595	0	0
Stage 1	1671	1671	-	1595	1595	-	-	-	-	-	-	-
Stage 2	638	1595	-	679	1671	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	41	9	270	43	9	282	187	-	-	200	-	-
Stage 1	67	151	-	76	165	-	-	-	-	-	-	-
Stage 2	393	165	-	371	151	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	38	9	270	42	9	282	187	-	-	200	-	-
Mov Cap-2 Maneuver	38	9	-	42	9	-	-	-	-	-	-	-
Stage 1	67	144	-	76	165	-	-	-	-	-	-	-
Stage 2	378	165	-	354	144	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	38.2	0	0.1
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	187	-	-	-	122	200	-
HCM Lane V/C Ratio	-	-	-	-	0.113	0.043	-
HCM Control Delay (s)	0	-	-	0	38.2	23.8	-
HCM Lane LOS	A	-	-	A	E	C	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.1	-



Lanes and Geometrics      TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 13: Gramercy Place/Van Ness Avenue & Project Access 3      10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	72		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.998
Satd. Flow (prot)	1611	0	1863	0	0	1859
Flt Permitted						0.998
Satd. Flow (perm)	1611	0	1863	0	0	1859
Link Speed (mph)	30		30		30	
Link Distance (ft)	795		967		440	
Travel Time (s)	18.1		22.0		10.0	

**Intersection Summary**

Area Type:      Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

13: Gramercy Place/Van Ness Avenue & Project Access 3

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	1	39	0	1	16
Future Volume (vph)	0	1	39	0	1	16
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	1	52	0	1	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	52	0	0	22
<b>Intersection Summary</b>						

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	1	39	0	1	16
Future Vol, veh/h	0	1	39	0	1	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	52	0	1	21

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	75	52	0	0	52	0
Stage 1	52	-	-	-	-	-
Stage 2	23	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	928	1016	-	-	1554	-
Stage 1	970	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	927	1016	-	-	1554	-
Mov Cap-2 Maneuver	927	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1016	1554
HCM Lane V/C Ratio	-	-	0.001	0.001
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 14: 195th Street & Project Access 4 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	98		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt					0.938							
Flt Protected												0.950
Satd. Flow (prot)	1863	1863	0	1863	1747	0	0	1863	0	0	1770	0
Flt Permitted												0.950
Satd. Flow (perm)	1863	1863	0	1863	1747	0	0	1863	0	0	1770	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		500			713			827				834
Travel Time (s)		11.4			16.2			18.8				19.0

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

14: 195th Street & Project Access 4

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	46	0	0	30	21	0	0	0	11	0	0
Future Volume (vph)	0	46	0	0	30	21	0	0	0	11	0	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	63	0	0	41	29	0	0	0	15	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	70	0	0	0	0	0	15	0
Intersection Summary												

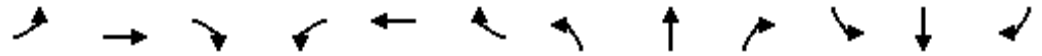
Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	0	46	0	0	30	21	0	0	0	11	0	0
Future Vol, veh/h	0	46	0	0	30	21	0	0	0	11	0	0
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	63	0	0	41	29	0	0	0	15	0	0
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.7	7.4	0	7.5
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	0%	0%	100%
Vol Thru, %	100%	100%	100%	100%	59%	0%
Vol Right, %	0%	0%	0%	0%	41%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	0	46	0	51	11
LT Vol	0	0	0	0	0	11
Through Vol	0	0	46	0	30	0
RT Vol	0	0	0	0	21	0
Lane Flow Rate	0	0	63	0	70	15
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0	0.08	0	0.083	0.018
Departure Headway (Hd)	4.174	4.594	4.594	4.59	4.302	4.363
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	0	781	0	833	810
Service Time	2.265	2.315	2.315	2.314	2.025	2.448
HCM Lane V/C Ratio	0	0	0.081	0	0.084	0.019
HCM Control Delay	7.3	7.3	7.7	7.3	7.4	7.5
HCM Lane LOS	N	N	A	N	A	A
HCM 95th-tile Q	0	0	0.3	0	0.3	0.1

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 15: 195th Street & Project Access 5 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	102		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.997							0.865
Flt Protected	0.950											
Satd. Flow (prot)	1770	1863	0	0	3529	0	0	1863	0	0	1611	0
Flt Permitted	0.950											
Satd. Flow (perm)	1770	1863	0	0	3529	0	0	1863	0	0	1611	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		713			502			847			825	
Travel Time (s)		16.2			11.4			19.3			18.8	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

15: 195th Street & Project Access 5

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	54	0	0	56	1	0	0	0	0	0	3
Future Volume (vph)	4	54	0	0	56	1	0	0	0	0	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	92	0	0	95	2	0	0	0	0	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	92	0	0	97	0	0	0	0	0	5	0
Intersection Summary												



**Intersection**

Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷			↔			↔			↔	
Traffic Vol, veh/h	4	54	0	0	56	1	0	0	0	0	0	3
Future Vol, veh/h	4	54	0	0	56	1	0	0	0	0	0	3
Peak Hour Factor	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	92	0	0	95	2	0	0	0	0	0	5
Number of Lanes	1	1	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.9	7.6	0	6.8
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	0%
Vol Thru, %	100%	0%	100%	100%	95%	0%
Vol Right, %	0%	0%	0%	0%	5%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	4	54	37	20	3
LT Vol	0	4	0	0	0	0
Through Vol	0	0	54	37	19	0
RT Vol	0	0	0	0	1	3
Lane Flow Rate	0	7	92	63	33	5
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.01	0.117	0.081	0.042	0.005
Departure Headway (Hd)	4.399	5.091	4.59	4.59	4.554	3.791
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	704	783	781	787	950
Service Time	2.399	2.811	2.311	2.312	2.276	1.791
HCM Lane V/C Ratio	0	0.01	0.117	0.081	0.042	0.005
HCM Control Delay	7.4	7.9	7.9	7.7	7.5	6.8
HCM Lane LOS	N	A	A	A	A	A
HCM 95th-tile Q	0	0	0.4	0.3	0.1	0

## **Appendix F**

Forecast Opening Year (2023) With Project Conditions  
Intersection Analysis Worksheets

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TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
OPENING YEAR WITH PROJECT CONDITIONS  
AM PEAK HOUR

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Scenario Report

Scenario: OY+P\_AM  
Command: OY+P\_AM  
Volume: WP\_AM  
Geometry: EXISTING  
Impact Fee: Default Impact Fee  
Trip Generation: P+C\_AM  
Trip Distribution: DEFAULT  
Paths: Default Path  
Routes: Default Route  
Configuration: OPENING YEAR

-----  
 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
 -----

Trip Generation Report

Forecast for PROJECT AM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	PROJECT	1.00	PROJECT	293.00	68.00	293	68	361	100.0
	Zone 1 Subtotal					293	68	361	100.0
TOTAL						293	68	361	100.0

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
 -----

Turning Movement Report  
 PROJECT AM + CUMULATIVES AM

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#1 VAN NESS AVE / 190TH ST													
Base	57	270	121	71	548	283	90	1088	79	97	869	60	3631
Added	2	1	0	15	15	0	0	29	15	0	8	5	90
Total	59	271	121	86	563	283	90	1117	94	97	877	65	3721
#2 VAN NESS AVE / 195TH ST													
Base	0	458	19	15	686	0	0	0	0	12	0	11	1201
Added	0	0	29	29	0	0	0	0	0	7	0	3	68
Total	0	458	48	44	686	0	0	0	0	19	0	14	1269
#3 VAN NESS AVE / DEL AMO BLVD													
Base	46	306	45	33	457	208	133	275	51	87	538	25	2205
Added	0	15	0	0	3	3	15	0	0	0	0	0	36
Total	46	321	45	33	460	211	148	275	51	87	538	25	2241
#4 GRAMERCY PL / 190TH ST													
Base	1	2	15	2	2	0	0	1263	5	20	1079	1	2390
Added	10	0	0	0	0	0	0	23	21	29	3	0	86
Total	11	2	15	2	2	0	0	1286	26	49	1082	1	2476
#5 GRAMERCY PL / 195TH ST													
Base	4	2	2	2	12	7	10	7	18	32	27	11	135
Added	0	0	0	0	0	0	15	44	0	0	10	0	69
Total	4	2	2	2	12	7	25	51	18	32	37	11	204
#6 I-405 SOUTHBOUND RAMPS / 190TH ST													
Base	0	0	0	491	0	72	768	515	0	0	1050	146	3042
Added	0	0	0	0	0	44	12	7	0	0	47	7	117
Total	0	0	0	491	0	116	780	522	0	0	1097	153	3159
#7 WESTERN AVE / I-405 NORTHBOUND RAMPS													
Base	0	851	459	54	918	0	0	0	0	724	0	108	3114
Added	0	7	10	0	29	0	0	0	0	82	0	0	128
Total	0	858	469	54	947	0	0	0	0	806	0	108	3242
#8 WESTERN AVE / 190TH ST													
Base	119	1096	112	114	1144	357	132	429	369	217	669	90	4848
Added	7	10	1	0	67	44	7	1	0	3	3	0	143
Total	126	1106	113	114	1211	401	139	430	369	220	672	90	4991
#9 WESTERN AVE / 195TH ST													
Base	23	1321	12	35	1598	83	10	0	5	3	0	6	3097
Added	12	18	0	0	4	0	0	0	3	0	0	0	37
Total	35	1339	12	35	1602	83	10	0	8	3	0	6	3134

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#10 WESTERN AVE / DEL AMO BLVD													
Base	145	936	11	17	1115	578	180	15	108	20	69	38	3233
Added	0	29	0	0	7	0	0	0	0	0	0	0	36
Total	145	965	11	17	1122	578	180	15	108	20	69	38	3269
#11 PROJECT ACCESS 1 / 190TH ST													
Base	0	0	0	3	0	1	8	1293	0	0	1106	7	2418
Added	3	0	20	0	0	0	0	0	23	62	29	0	137
Total	3	0	20	3	0	1	8	1293	23	62	1135	7	2555
#12 WESTERN AVE / PROJECT ACCESS 2													
Base	0	1329	8	11	1720	0	0	0	0	1	0	5	3074
Added	18	0	0	0	0	70	18	0	4	0	0	0	110
Total	18	1329	8	11	1720	70	18	0	4	1	0	5	3184
#13 GRAMERCY PL / PROJECT ACCESS 3													
Base	0	20	0	0	22	0	0	0	0	0	0	0	42
Added	0	0	15	50	0	0	0	0	0	0	0	10	75
Total	0	20	15	50	22	0	0	0	0	0	0	10	117
#14 PROJECT ACCESS 4 / 195TH ST													
Base	0	0	0	0	0	0	0	12	0	0	103	0	115
Added	0	0	0	1	0	7	29	15	0	0	3	6	61
Total	0	0	0	1	0	7	29	27	0	0	106	6	176
#15 PROJECT ACCESS 5 / 195TH ST													
Base	0	0	0	0	0	0	0	15	0	0	105	0	120
Added	0	0	0	1	0	3	15	1	0	0	6	6	32
Total	0	0	0	1	0	3	15	16	0	0	111	6	152

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #1 VAN NESS AVE / 190TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.624  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 42 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	2	0	1	1	1	0	3	0	1	1

Volume Module:

Base Vol:	56	267	120	70	543	280	89	1077	78	96	860	59
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	57	270	121	71	548	283	90	1088	79	97	869	60
Added Vol:	2	1	0	15	15	0	0	29	15	0	8	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	59	271	121	86	563	283	90	1117	94	97	877	65
User 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
PHF 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
PHF Volume:	59	271	121	86	563	283	90	1117	94	97	877	65
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	59	271	121	86	563	283	90	1117	94	97	877	65
PCE 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
MLF 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
FinalVolume:	59	271	121	86	563	283	90	1117	94	97	877	65
OvlAdjVol:							193					

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3200	3200	1600	1600	3200	1600	1600	4800	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.02	0.08	0.08	0.05	0.18	0.18	0.06	0.23	0.06	0.06	0.27	0.04
OvlAdjV/S:							0.12					
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #2 VAN NESS AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.323  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 26 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Permitted				Permitted				Split Phase				Split Phase							
Rights:	Ovl				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	2	0	0	0	0	0	0	0	2	0	0	0	1

Volume Module:

Base Vol:	0	453	19	15	679	0	0	0	0	0	12	0	11
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	458	19	15	686	0	0	0	0	0	12	0	11
Added Vol:	0	0	29	29	0	0	0	0	0	0	7	0	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	458	48	44	686	0	0	0	0	0	19	0	14
User 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	1.00
PHF 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	1.00
PHF Volume:	0	458	48	44	686	0	0	0	0	0	19	0	14
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	458	48	44	686	0	0	0	0	0	19	0	14
PCE 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	1.00
MLF 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	1.00
FinalVolume:	0	458	48	44	686	0	0	0	0	0	19	0	14
OvlAdjVol:	34												

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	0	3200	1600	1600	3200	0	0	0	0	0	3200	0	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.14	0.03	0.03	0.21	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
OvlAdjV/S:	0.02												
Crit Moves:	****					****					****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #3 VAN NESS AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.553  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 37 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	2	0	1	1	0	2

Volume Module:

Base Vol:	46	303	45	33	452	206	132	272	50	86	533	25
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	46	306	45	33	457	208	133	275	51	87	538	25
Added Vol:	0	15	0	0	3	3	15	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	46	321	45	33	460	211	148	275	51	87	538	25
User 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
PHF 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
PHF Volume:	46	321	45	33	460	211	148	275	51	87	538	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	46	321	45	33	460	211	148	275	51	87	538	25
PCE 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
MLF 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
FinalVolume:	46	321	45	33	460	211	148	275	51	87	538	25

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.75	0.25	1.00	1.37	0.63	2.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	2803	397	1600	2193	1007	3200	1600	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.03	0.11	0.11	0.02	0.21	0.21	0.05	0.17	0.03	0.05	0.17	0.02
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #4 GRAMERCY PL / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.446  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	0	1	0	2	1	0	1

Volume Module:

Base Vol:	1	2	15	2	2	0	0	1250	5	20	1068	1
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	1	2	15	2	2	0	0	1263	5	20	1079	1
Added Vol:	10	0	0	0	0	0	0	23	21	29	3	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	11	2	15	2	2	0	0	1286	26	49	1082	1
User 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
PHF 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
PHF Volume:	11	2	15	2	2	0	0	1286	26	49	1082	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	11	2	15	2	2	0	0	1286	26	49	1082	1
PCE 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
MLF 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
FinalVolume:	11	2	15	2	2	0	0	1286	26	49	1082	1

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.12	0.88	1.00	1.00	0.00	1.00	2.94	0.06	1.00	1.99	0.01
Final Sat.:	1600	188	1412	1600	1600	0	1600	4705	95	1600	3197	3

Capacity Analysis Module:

Vol/Sat:	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.27	0.27	0.03	0.34	0.34
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #6 I-405 SOUTHBOUND RAMPS / 190TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.762  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 59 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	1	2	0	3	0	0	3

Volume Module:

Base Vol:	0	0	0	486	0	71	760	510	0	0	1040	145
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	0	0	491	0	72	768	515	0	0	1050	146
Added Vol:	0	0	0	0	0	44	12	7	0	0	47	7
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	491	0	116	780	522	0	0	1097	153
User 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
PHF 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
PHF Volume:	0	0	0	491	0	116	780	522	0	0	1097	153
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	491	0	116	780	522	0	0	1097	153
PCE 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
MLF 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
FinalVolume:	0	0	0	491	0	116	780	522	0	0	1097	153

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.61	0.01	0.38	2.00	3.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	2590	0	610	3200	4800	0	0	4800	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.19	0.00	0.19	0.24	0.11	0.00	0.00	0.23	0.10
Crit Moves:				****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #7 WESTERN AVE / I-405 NORTHBOUND RAMP

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.687  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 48 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Ovl				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	3	0	0	0	0	0	0	0	1	0	1	0	0

Volume Module:

Base Vol:	0	843	454	53	909	0	0	0	0	0	717	0	107		
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01		
Initial Bse:	0	851	459	54	918	0	0	0	0	0	724	0	108		
Added Vol:	0	7	10	0	29	0	0	0	0	0	82	0	0		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:	0	858	469	54	947	0	0	0	0	0	806	0	108		
User 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	1.00		
PHF 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	1.00		
PHF Volume:	0	858	469	54	947	0	0	0	0	0	806	0	108		
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced Vol:	0	858	469	54	947	0	0	0	0	0	806	0	108		
PCE 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	1.00		
MLF 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	1.00		
FinalVolume:	0	858	469	54	947	0	0	0	0	0	806	0	108		
OvlAdjVol:	11														

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	3.00	0.00	0.00	0.00	0.00	0.00	1.76	0.01	0.23
Final Sat.:	0	3200	1600	1600	4800	0	0	0	0	0	2822	0	378

Capacity Analysis Module:

Vol/Sat:	0.00	0.27	0.29	0.03	0.20	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.29		
OvlAdjV/S:	0.01														
Crit Moves:	****			****								****			

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #8 WESTERN AVE / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.652  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 45 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected					Protected					Protected					Protected				
Rights:	Ovl					Ovl					Ovl					Include				
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	3	0	1	2	0	3	0	1	2	0	3	0	1	2	0	2	1	0

Volume Module:

Base Vol:	118	1085	111	113	1133	353	131	425	365	215	662	89			
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01			
Initial Bse:	119	1096	112	114	1144	357	132	429	369	217	669	90			
Added Vol:	7	10	1	0	67	44	7	1	0	3	3	0			
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut:	126	1106	113	114	1211	401	139	430	369	220	672	90			
User 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			
PHF 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			
PHF Volume:	126	1106	113	114	1211	401	139	430	369	220	672	90			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0			
Reduced Vol:	126	1106	113	114	1211	401	139	430	369	220	672	90			
PCE 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			
MLF 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			
FinalVolume:	126	1106	113	114	1211	401	139	430	369	220	672	90			
OvlAdjVol:	3					331					306				

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.65	0.35
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	4233	567

Capacity Analysis Module:

Vol/Sat:	0.04	0.23	0.07	0.04	0.25	0.25	0.04	0.09	0.23	0.07	0.16	0.16
OvlAdjV/S:	0.00			0.21			0.19					
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #9 WESTERN AVE / 195TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.468  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 32 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0	3	0	1	1	0	3	0	1	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	23	1308	12	35	1582	82	10	0	5	3	0	6
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	23	1321	12	35	1598	83	10	0	5	3	0	6
Added Vol:	12	18	0	0	4	0	0	0	3	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	35	1339	12	35	1602	83	10	0	8	3	0	6
User 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
PHF 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
PHF Volume:	35	1339	12	35	1602	83	10	0	8	3	0	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	35	1339	12	35	1602	83	10	0	8	3	0	6
PCE 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
MLF 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
FinalVolume:	35	1339	12	35	1602	83	10	0	8	3	0	6

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.00	1.00	0.33	0.00	0.67
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	0	1600	533	0	1067

Capacity Analysis Module:

Vol/Sat:	0.02	0.28	0.01	0.02	0.33	0.05	0.01	0.00	0.01	0.00	0.00	0.01
Crit Moves:	****			****			****					****

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 AM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #10 WESTERN AVE / DEL AMO BLVD

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.699  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 50 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	0	1	1	0	0	1	0

Volume Module:

Base Vol:	144	927	11	17	1104	572	178	15	107	20	68	38
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	145	936	11	17	1115	578	180	15	108	20	69	38
Added Vol:	0	29	0	0	7	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	145	965	11	17	1122	578	180	15	108	20	69	38
User 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
PHF 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
PHF Volume:	145	965	11	17	1122	578	180	15	108	20	69	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	145	965	11	17	1122	578	180	15	108	20	69	38
PCE 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
MLF 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
FinalVolume:	145	965	11	17	1122	578	180	15	108	20	69	38

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.84	0.16	1.00	0.16	0.54	0.30
Final Sat.:	1600	3200	1600	1600	3200	1600	2951	249	1600	254	863	483

Capacity Analysis Module:

Vol/Sat:	0.09	0.30	0.01	0.01	0.35	0.36	0.06	0.06	0.07	0.08	0.08	0.08
Crit Moves:	****					****			****	****		

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Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 5: Gramercy Place & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt		0.974			0.981			0.963			0.955	
Flt Protected		0.987			0.980			0.978			0.994	
Satd. Flow (prot)	0	1791	0	0	1791	0	0	1754	0	0	1768	0
Flt Permitted		0.987			0.980			0.978			0.994	
Satd. Flow (perm)	0	1791	0	0	1791	0	0	1754	0	0	1768	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1405			500			880			967	
Travel Time (s)		31.9			11.4			20.0			22.0	

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

5: Gramercy Place & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	25	51	18	32	37	11	4	2	2	2	12	7
Future Volume (vph)	25	51	18	32	37	11	4	2	2	2	12	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	32	65	23	41	47	14	5	3	3	3	15	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	102	0	0	11	0	0	27	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	51	18	32	37	11	4	2	2	2	12	7
Future Vol, veh/h	25	51	18	32	37	11	4	2	2	2	12	7
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	65	23	41	47	14	5	3	3	3	15	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.7	7.5	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	27%	40%	10%
Vol Thru, %	25%	54%	46%	57%
Vol Right, %	25%	19%	14%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	94	80	21
LT Vol	4	25	32	2
Through Vol	2	51	37	12
RT Vol	2	18	11	7
Lane Flow Rate	10	121	103	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.013	0.134	0.116	0.032
Departure Headway (Hd)	4.393	4.014	4.087	4.243
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	819	888	873	849
Service Time	2.394	2.059	2.134	2.244
HCM Lane V/C Ratio	0.012	0.136	0.118	0.032
HCM Control Delay	7.5	7.7	7.7	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.5	0.4	0.1

Lanes and Geometrics  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	258			166	0	0
Storage Lanes	2			1	2	0
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850	0.971	
Flt Protected	0.950				0.961	
Satd. Flow (prot)	3433	5085	5085	1583	3372	0
Flt Permitted	0.950				0.961	
Satd. Flow (perm)	3433	5085	5085	1583	3372	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				159	41	
Link Speed (mph)		30	30		30	
Link Distance (ft)		645	638		544	
Travel Time (s)		14.7	14.5		12.4	

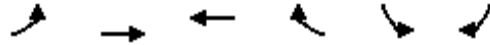
Intersection Summary

Area Type: Other

Volume  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



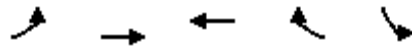
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	780	522	1097	153	491	116
Future Volume (vph)	780	522	1097	153	491	116
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	813	544	1143	159	511	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	813	544	1143	159	632	0
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

6: 190th Street & I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations	↖↖	↑↑↑	↑↑↑	↗	↖↖
Traffic Volume (vph)	780	522	1097	153	491
Future Volume (vph)	780	522	1097	153	491
Turn Type	Prot	NA	NA	Perm	Prot
Protected Phases	7	4	8		6
Permitted Phases				8	
Detector Phase	7	4	8	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	24.0	47.0	23.0	23.0	23.0
Total Split (%)	34.3%	67.1%	32.9%	32.9%	32.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	None	None	None	Max
Act Effect Green (s)	18.9	41.9	18.5	18.5	18.5
Actuated g/C Ratio	0.27	0.60	0.27	0.27	0.27
v/c Ratio	0.87	0.18	0.84	0.29	0.68
Control Delay	36.2	6.3	31.5	5.6	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	6.3	31.5	5.6	25.7
LOS	D	A	C	A	C
Approach Delay		24.2	28.3		25.7
Approach LOS		C	C		C

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 69.4	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: 190th Street & I-405 Ramp

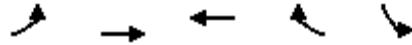


## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 6: 190th Street &amp; I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	813	544	1143	159	632
v/c Ratio	0.87	0.18	0.84	0.29	0.68
Control Delay	36.2	6.3	31.5	5.6	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	6.3	31.5	5.6	25.7
Queue Length 50th (ft)	169	33	170	0	117
Queue Length 95th (ft)	#262	47	#240	40	171
Internal Link Dist (ft)		565	558		464
Turn Bay Length (ft)	258			166	
Base Capacity (vph)	965	3117	1356	539	929
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.17	0.84	0.29	0.68

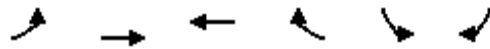
## Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCIAL CENTER PHASE 3 TRAFFIC STUDY  
 6: 190th Street & I-405 Ramp

10/06/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖ ↗	↑ ↑ ↑	↑ ↑ ↑	↖	↖ ↗			
Traffic Volume (veh/h)	780	522	1097	153	491	116		
Future Volume (veh/h)	780	522	1097	153	491	116		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	812	544	1143	159	316	330		
Adj No. of Lanes	2	3	3	1	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	0		
Cap, veh/h	919	3034	1341	417	481	438		
Arrive On Green	0.27	0.60	0.26	0.26	0.27	0.27		
Sat Flow, veh/h	3442	5253	5253	1583	1774	1615		
Grp Volume(v), veh/h	812	544	1143	159	316	330		
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1774	1615		
Q Serve(g_s), s	15.4	3.3	14.6	5.6	10.8	12.8		
Cycle Q Clear(g_c), s	15.4	3.3	14.6	5.6	10.8	12.8		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	919	3034	1341	417	481	438		
V/C Ratio(X)	0.88	0.18	0.85	0.38	0.66	0.75		
Avail Cap(c_a), veh/h	984	3170	1380	430	481	438		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	24.0	6.2	23.8	20.6	22.0	22.8		
Incr Delay (d2), s/veh	9.2	0.0	5.3	0.6	6.8	11.4		
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	1.5	7.4	2.5	6.2	7.1		
LnGrp Delay(d),s/veh	33.1	6.2	29.1	21.1	28.9	34.1		
LnGrp LOS	C	A	C	C	C	C		
Approach Vol, veh/h		1356	1302		646			
Approach Delay, s/veh		22.3	28.1		31.6			
Approach LOS		C	C		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				45.2		23.0	22.7	22.5
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				42.5		18.5	19.5	18.5
Max Q Clear Time (g_c+I1), s				5.3		14.8	17.4	16.6
Green Ext Time (p_c), s				4.2		0.9	0.8	1.4
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			26.4					
HCM 2010 LOS			C					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street 10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶↶		↶↶	↷	↶	↶↶↶
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	170	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.91
Ped Bike Factor						
Frt	0.982			0.850		
Flt Protected	0.958				0.950	
Satd. Flow (prot)	3400	0	3539	1583	1770	5085
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	3400	0	3539	1583	1770	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	27			445		
Link Speed (mph)	30		30			30
Link Distance (ft)	1298		979			805
Travel Time (s)	29.5		22.3			18.3

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	806	108	858	469	54	947
Future Volume (vph)	806	108	858	469	54	947
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	876	117	933	510	59	1029
Shared Lane Traffic (%)						
Lane Group Flow (vph)	993	0	933	510	59	1029
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

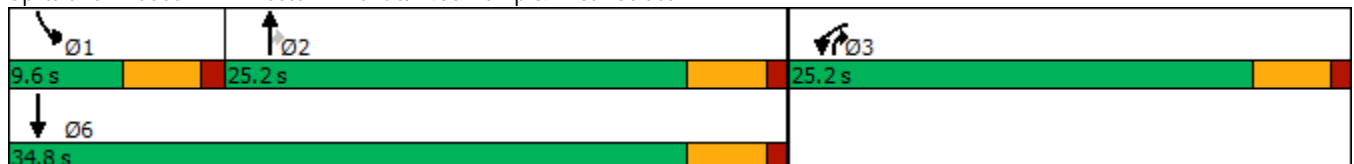
10/06/2021

	↙	↑	↘	↙	↓
Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↑↑	↘	↙	↑↑↑
Traffic Volume (vph)	806	858	469	54	947
Future Volume (vph)	806	858	469	54	947
Turn Type	Prot	NA	pm+ov	Prot	NA
Protected Phases	3	2	3	1	6
Permitted Phases			2		
Detector Phase	3	2	3	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5
Total Split (s)	25.2	25.2	25.2	9.6	34.8
Total Split (%)	42.0%	42.0%	42.0%	16.0%	58.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag		Lag		Lead	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	Max	None	None	Max
Act Effct Green (s)	20.0	24.6	50.9	5.1	30.3
Actuated g/C Ratio	0.34	0.41	0.86	0.09	0.51
v/c Ratio	0.85	0.63	0.36	0.39	0.40
Control Delay	26.9	17.7	1.1	33.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	17.7	1.1	33.9	9.6
LOS	C	B	A	C	A
Approach Delay	26.9	11.9			10.9
Approach LOS	C	B			B

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 59.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 65.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Western Avenue/I-405 Ramp & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 7: Western Avenue/I-405 Ramp &amp; 190th Street

10/06/2021


















Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	993	933	510	59	1029
v/c Ratio	0.85	0.63	0.36	0.39	0.40
Control Delay	26.9	17.7	1.1	33.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	17.7	1.1	33.9	9.6
Queue Length 50th (ft)	161	154	4	21	78
Queue Length 95th (ft)	#262	218	19	52	104
Internal Link Dist (ft)	1218	899			725
Turn Bay Length (ft)			150	170	
Base Capacity (vph)	1205	1470	1418	152	2600
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.63	0.36	0.39	0.40

## Intersection Summary

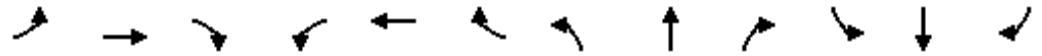
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCIAL CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 		 			  		
Traffic Volume (veh/h)	806	108	858	469	54	947		
Future Volume (veh/h)	806	108	858	469	54	947		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863		
Adj Flow Rate, veh/h	985	0	933	510	59	1029		
Adj No. of Lanes	2	1	2	1	1	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	1141	519	1389	1131	94	2660		
Arrive On Green	0.32	0.00	0.39	0.39	0.05	0.52		
Sat Flow, veh/h	3548	1615	3632	1583	1774	5253		
Grp Volume(v), veh/h	985	0	933	510	59	1029		
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1583	1774	1695		
Q Serve(g_s), s	15.1	0.0	12.6	7.9	1.9	7.0		
Cycle Q Clear(g_c), s	15.1	0.0	12.6	7.9	1.9	7.0		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	1141	519	1389	1131	94	2660		
V/C Ratio(X)	0.86	0.00	0.67	0.45	0.63	0.39		
Avail Cap(c_a), veh/h	1268	577	1389	1131	156	2660		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	18.5	0.0	14.5	3.5	26.9	8.3		
Incr Delay (d2), s/veh	5.9	0.0	2.6	1.3	6.7	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.3	0.0	6.6	3.7	1.1	3.3		
LnGrp Delay(d),s/veh	24.4	0.0	17.1	4.8	33.6	8.7		
LnGrp LOS	C		B	A	C	A		
Approach Vol, veh/h	985		1443			1088		
Approach Delay, s/veh	24.4		12.8			10.0		
Approach LOS	C		B			B		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.6	27.2				34.8		23.1
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.1	20.7				30.3		20.7
Max Q Clear Time (g_c+I1), s	3.9	14.6				9.0		17.1
Green Ext Time (p_c), s	0.0	4.0				7.6		1.5
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.2					
HCM 2010 LOS			B					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↑	↖	↖↗	↑↑↑		↖↗	↑↑↑	↖	↖↗	↑↑↑	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	148		190	232		0	150		316	280		250
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.982				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	4994	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	4994	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101		37				116			101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		638			1305			584			979	
Travel Time (s)		14.5			29.7			13.3			22.3	

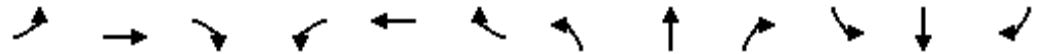
Intersection Summary

Area Type: Other

Volume  
8: Western Avenue & 190th Street

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	139	430	369	220	672	90	126	1106	113	114	1211	401
Future Volume (vph)	139	430	369	220	672	90	126	1106	113	114	1211	401
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	143	443	380	227	693	93	130	1140	116	118	1248	413
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	443	380	227	786	0	130	1140	116	118	1248	413
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021

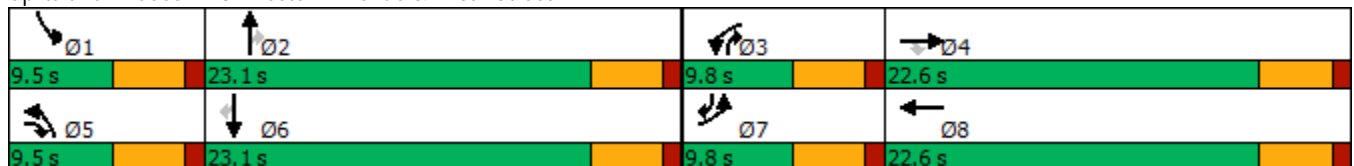


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	139	430	369	220	672	126	1106	113	114	1211	401
Future Volume (vph)	139	430	369	220	672	126	1106	113	114	1211	401
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	3	1	6	7
Permitted Phases			4					2			6
Detector Phase	7	4	5	3	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	9.8	22.6	9.5	9.8	22.6	9.5	23.1	9.8	9.5	23.1	9.8
Total Split (%)	15.1%	34.8%	14.6%	15.1%	34.8%	14.6%	35.5%	15.1%	14.6%	35.5%	15.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	None
Act Effect Green (s)	5.3	15.9	25.4	5.3	15.9	5.0	20.7	30.5	5.0	18.6	28.4
Actuated g/C Ratio	0.08	0.25	0.40	0.08	0.25	0.08	0.33	0.48	0.08	0.30	0.45
v/c Ratio	0.49	0.34	0.54	0.79	0.61	0.48	0.68	0.14	0.43	0.83	0.54
Control Delay	34.5	19.8	13.5	50.6	21.8	34.6	22.1	3.1	33.6	27.2	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	19.8	13.5	50.6	21.8	34.6	22.1	3.1	33.6	27.2	12.7
LOS	C	B	B	D	C	C	C	A	C	C	B
Approach Delay		19.5			28.3		21.6			24.3	
Approach LOS		B			C		C			C	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 62.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 23.5	Intersection LOS: C
Intersection Capacity Utilization 63.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: Western Avenue & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 8: Western Avenue &amp; 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	143	443	380	227	786	130	1140	116	118	1248	413
v/c Ratio	0.49	0.34	0.54	0.79	0.61	0.48	0.68	0.14	0.43	0.83	0.54
Control Delay	34.5	19.8	13.5	50.6	21.8	34.6	22.1	3.1	33.6	27.2	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	19.8	13.5	50.6	21.8	34.6	22.1	3.1	33.6	27.2	12.7
Queue Length 50th (ft)	28	50	74	45	91	25	147	0	23	166	82
Queue Length 95th (ft)	54	75	147	#100	127	50	198	24	46	#243	162
Internal Link Dist (ft)		558			1225		504			899	
Turn Bay Length (ft)	148		190	232		150		316	280		250
Base Capacity (vph)	289	1465	700	289	1465	273	1670	826	273	1506	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.30	0.54	0.79	0.54	0.48	0.68	0.14	0.43	0.83	0.54

## Intersection Summary
























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

Queue shown is maximum after two cycles.



HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	430	369	220	672	90	126	1106	113	114	1211	401
Future Volume (veh/h)	139	430	369	220	672	90	126	1106	113	114	1211	401
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	143	443	380	227	693	93	130	1140	116	118	1248	413
Adj No. of Lanes	2	3	1	2	3	0	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	1334	528	290	1243	165	245	1514	605	239	1504	584
Arrive On Green	0.07	0.26	0.26	0.08	0.27	0.27	0.07	0.30	0.30	0.07	0.30	0.30
Sat Flow, veh/h	3442	5085	1583	3442	4542	604	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	143	443	380	227	516	270	130	1140	116	118	1248	413
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1756	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	2.5	4.4	13.2	4.1	8.2	8.3	2.3	12.8	3.1	2.1	14.4	14.0
Cycle Q Clear(g_c), s	2.5	4.4	13.2	4.1	8.2	8.3	2.3	12.8	3.1	2.1	14.4	14.0
Prop In Lane	1.00		1.00	1.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	251	1334	528	290	928	481	245	1514	605	239	1504	584
V/C Ratio(X)	0.57	0.33	0.72	0.78	0.56	0.56	0.53	0.75	0.19	0.49	0.83	0.71
Avail Cap(c_a), veh/h	290	1464	569	290	976	505	274	1514	605	274	1504	584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	18.7	18.4	28.2	19.6	19.6	28.2	20.0	13.0	28.2	20.7	17.0
Incr Delay (d2), s/veh	2.0	0.1	4.1	13.0	0.6	1.3	1.8	3.5	0.7	1.6	5.4	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.1	6.3	2.4	3.9	4.2	1.1	6.4	1.4	1.0	7.5	7.2
LnGrp Delay(d),s/veh	30.2	18.9	22.4	41.2	20.2	20.9	30.0	23.5	13.7	29.8	26.1	24.0
LnGrp LOS	C	B	C	D	C	C	C	C	B	C	C	C
Approach Vol, veh/h		966			1013			1386			1779	
Approach Delay, s/veh		22.0			25.1			23.3			25.9	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	23.2	9.8	21.0	9.0	23.1	9.1	21.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.6	5.3	18.1	5.0	18.6	5.3	18.1				
Max Q Clear Time (g_c+I1), s	4.1	14.8	6.1	15.2	4.3	16.4	4.5	10.3				
Green Ext Time (p_c), s	0.0	2.6	0.0	1.3	0.0	1.8	0.0	3.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			24.3									
HCM 2010 LOS			C									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↑↑↑	↗	↖	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		50	0		0	114		306	200		190
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.905				0.850			0.850
Flt Protected		0.950			0.985		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1660	0	1770	5085	1583	1770	5085	1583
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1863	1583	0	1686	0	1770	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109				109			109
Link Speed (mph)		30			30			30				30
Link Distance (ft)		502			1333			1078				969
Travel Time (s)		11.4			30.3			24.5				22.0

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	10	0	8	3	0	6	35	1339	12	35	1602	83
Future Volume (vph)	10	0	8	3	0	6	35	1339	12	35	1602	83
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	11	0	9	3	0	7	38	1471	13	38	1760	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	9	0	10	0	38	1471	13	38	1760	91
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021

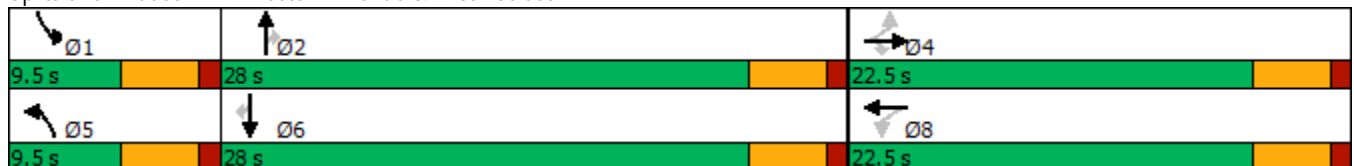


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔	↖	↑↑↑	↗	↖	↑↑↑	↗
Traffic Volume (vph)	10	0	8	3	0	35	1339	12	35	1602	83
Future Volume (vph)	10	0	8	3	0	35	1339	12	35	1602	83
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8				2			6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	28.0	28.0	9.5	28.0	28.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	15.8%	46.7%	46.7%	15.8%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		6.0	6.0		5.8	5.1	37.7	37.7	5.1	37.7	37.7
Actuated g/C Ratio		0.14	0.14		0.14	0.12	0.90	0.90	0.12	0.90	0.90
v/c Ratio		0.04	0.03		0.03	0.18	0.32	0.01	0.18	0.39	0.06
Control Delay		16.1	0.1		0.2	19.2	2.9	0.0	19.2	3.2	1.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.1	0.1		0.2	19.2	2.9	0.0	19.2	3.2	1.4
LOS		B	A		A	B	A	A	B	A	A
Approach Delay		8.9			0.2		3.3			3.4	
Approach LOS		A			A		A			A	

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 42.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 3.4	Intersection LOS: A
Intersection Capacity Utilization 50.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: Western Avenue & 195th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 9: Western Avenue &amp; 195th Street

10/06/2021
























Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	11	9	10	38	1471	13	38	1760	91
v/c Ratio	0.04	0.03	0.03	0.18	0.32	0.01	0.18	0.39	0.06
Control Delay	16.1	0.1	0.2	19.2	2.9	0.0	19.2	3.2	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	0.1	0.2	19.2	2.9	0.0	19.2	3.2	1.4
Queue Length 50th (ft)	2	0	0	9	0	0	9	0	0
Queue Length 95th (ft)	13	0	0	32	138	0	32	179	13
Internal Link Dist (ft)	422		1253		998			889	
Turn Bay Length (ft)		50		114		306	200		190
Base Capacity (vph)	809	749	794	213	4557	1430	213	4557	1430
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.01	0.18	0.32	0.01	0.18	0.39	0.06

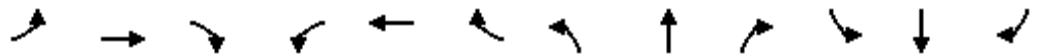
## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	8	3	0	6	35	1339	12	35	1602	83
Future Volume (veh/h)	10	0	8	3	0	6	35	1339	12	35	1602	83
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	11	0	9	3	0	7	38	1471	13	38	1760	91
Adj No. of Lanes	0	1	1	0	1	0	1	3	1	1	3	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	0	56	130	0	31	76	2977	927	76	2977	927
Arrive On Green	0.04	0.00	0.04	0.04	0.00	0.04	0.04	0.59	0.59	0.04	0.59	0.59
Sat Flow, veh/h	1533	0	1583	379	0	885	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	11	0	9	10	0	0	38	1471	13	38	1760	91
Grp Sat Flow(s),veh/h/ln	1533	0	1583	1265	0	0	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	0.2	0.3	0.0	0.0	0.8	6.8	0.1	0.8	8.8	1.0
Cycle Q Clear(g_c), s	0.2	0.0	0.2	0.5	0.0	0.0	0.8	6.8	0.1	0.8	8.8	1.0
Prop In Lane	1.00		1.00	0.30		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	234	0	56	161	0	0	76	2977	927	76	2977	927
V/C Ratio(X)	0.05	0.00	0.16	0.06	0.00	0.00	0.50	0.49	0.01	0.50	0.59	0.10
Avail Cap(c_a), veh/h	813	0	710	790	0	0	221	2977	927	221	2977	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	0.0	18.8	19.0	0.0	0.0	18.8	4.9	3.5	18.8	5.3	3.7
Incr Delay (d2), s/veh	0.1	0.0	1.3	0.2	0.0	0.0	4.9	0.6	0.0	4.9	0.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.1	0.0	0.0	0.5	3.3	0.1	0.5	4.3	0.5
LnGrp Delay(d),s/veh	18.9	0.0	20.1	19.2	0.0	0.0	23.7	5.4	3.5	23.7	6.1	3.9
LnGrp LOS	B		C	B			C	A	A	C	A	A
Approach Vol, veh/h		20			10			1522			1889	
Approach Delay, s/veh		19.4			19.2			5.9			6.4	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	28.0		5.9	6.2	28.0		5.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	23.5		18.0	5.0	23.5		18.0				
Max Q Clear Time (g_c+I1), s	2.8	8.8		2.2	2.8	10.8		2.5				
Green Ext Time (p_c), s	0.0	9.0		0.0	0.0	9.5		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.3									
HCM 2010 LOS			A									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	62		64	0		0	200		50	92		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.959				0.850		0.949	
Flt Protected	0.950	0.960			0.992		0.950			0.950		
Satd. Flow (prot)	1681	1699	1583	0	1772	0	1770	3539	1583	1770	4826	0
Flt Permitted	0.950	0.960			0.992		0.092			0.240		
Satd. Flow (perm)	1681	1699	1583	0	1772	0	171	3539	1583	447	4826	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113		15				55		188	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1176			1320			1187			1078	
Travel Time (s)		26.7			30.0			27.0			24.5	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	180	15	108	20	69	38	145	965	11	17	1122	578
Future Volume (vph)	180	15	108	20	69	38	145	965	11	17	1122	578
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	188	16	113	21	72	40	151	1005	11	18	1169	602
Shared Lane Traffic (%)	46%											
Lane Group Flow (vph)	102	102	113	0	133	0	151	1005	11	18	1771	0
Intersection Summary												



Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	180	15	108	69	145	965	11	17	1122
Future Volume (vph)	180	15	108	69	145	965	11	17	1122
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4	4		8		2			6
Permitted Phases			4		2		2	6	
Detector Phase	4	4	4	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	75.0	75.0	75.0	75.0	75.0
Total Split (%)	18.8%	18.8%	18.8%	18.8%	62.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effect Green (s)	12.0	12.0	12.0	12.5	70.8	70.8	70.8	70.8	70.8
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.65	0.65	0.65	0.65	0.65
v/c Ratio	0.55	0.55	0.41	0.62	1.36	0.44	0.01	0.06	0.55
Control Delay	57.9	57.6	13.1	53.7	234.7	11.0	0.0	9.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	57.6	13.1	53.7	234.7	11.0	0.0	9.9	10.7
LOS	E	E	B	D	F	B	A	A	B
Approach Delay		41.8		53.7		39.8			10.7
Approach LOS		D		D		D			B

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 108.9	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.36	
Intersection Signal Delay: 25.3	Intersection LOS: C
Intersection Capacity Utilization 67.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 10: Western Avenue & Del Amo Boulevard



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 10: Western Avenue &amp; Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	102	102	113	133	151	1005	11	18	1771
v/c Ratio	0.55	0.55	0.41	0.62	1.36	0.44	0.01	0.06	0.55
Control Delay	57.9	57.6	13.1	53.7	234.7	11.0	0.0	9.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	57.6	13.1	53.7	234.7	11.0	0.0	9.9	10.7
Queue Length 50th (ft)	71	71	0	79	-139	164	0	4	199
Queue Length 95th (ft)	135	135	53	149	#224	275	0	17	318
Internal Link Dist (ft)		1096		1240		1107			998
Turn Bay Length (ft)	62		64		200		50	92	
Base Capacity (vph)	279	281	357	306	111	2301	1048	290	3203
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.36	0.32	0.43	1.36	0.44	0.01	0.06	0.55

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.























Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	15	108	20	69	38	145	965	11	17	1122	578
Future Volume (veh/h)	180	15	108	20	69	38	145	965	11	17	1122	578
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	199	0	112	21	72	40	151	1005	11	18	1169	602
Adj No. of Lanes	2	0	1	0	1	0	1	2	1	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	337	0	150	26	90	50	199	2406	1076	375	2305	1076
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	3548	0	1583	277	950	528	268	3539	1583	553	3390	1583
Grp Volume(v), veh/h	199	0	112	133	0	0	151	1005	11	18	1169	602
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1756	0	0	268	1770	1583	553	1695	1583
Q Serve(g_s), s	5.6	0.0	7.1	7.7	0.0	0.0	50.1	13.2	0.2	1.6	17.5	20.4
Cycle Q Clear(g_c), s	5.6	0.0	7.1	7.7	0.0	0.0	70.5	13.2	0.2	14.7	17.5	20.4
Prop In Lane	1.00		1.00	0.16		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	337	0	150	167	0	0	199	2406	1076	375	2305	1076
V/C Ratio(X)	0.59	0.00	0.74	0.80	0.00	0.00	0.76	0.42	0.01	0.05	0.51	0.56
Avail Cap(c_a), veh/h	616	0	275	305	0	0	199	2406	1076	375	2305	1076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	45.7	46.0	0.0	0.0	30.3	7.4	5.4	10.7	8.1	8.6
Incr Delay (d2), s/veh	1.6	0.0	7.1	8.4	0.0	0.0	23.4	0.5	0.0	0.2	0.8	2.1
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	3.4	4.1	0.0	0.0	5.6	6.5	0.1	0.3	8.4	9.3
LnGrp Delay(d),s/veh	46.6	0.0	52.8	54.4	0.0	0.0	53.7	8.0	5.4	11.0	8.9	10.7
LnGrp LOS	D		D	D			D	A	A	B	A	B
Approach Vol, veh/h		311			133			1167			1789	
Approach Delay, s/veh		48.9			54.4			13.8			9.5	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.0		14.3		75.0		14.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		70.5		18.0		70.5		18.0				
Max Q Clear Time (g_c+I1), s		72.5		9.1		22.4		9.7				
Green Ext Time (p_c), s		0.0		0.7		21.8		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.4									
HCM 2010 LOS			B									
<b>Notes</b>												

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 11: Project Access 1 & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.997			0.999			0.850				0.966
Flt Protected	0.950			0.950			0.950					0.964
Satd. Flow (prot)	1770	5070	0	1770	3536	0	1770	1583	0	0	1735	0
Flt Permitted	0.950			0.950			0.950					0.964
Satd. Flow (perm)	1770	5070	0	1770	3536	0	1770	1583	0	0	1735	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1861			645			451				561
Travel Time (s)		42.3			14.7			10.3				12.8

Intersection Summary

Area Type: Other

Volume  
11: Project Access 1 & 190th Street

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	8	1293	23	62	1135	7	3	0	20	3	0	1
Future Volume (vph)	8	1293	23	62	1135	7	3	0	20	3	0	1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	1333	24	64	1170	7	3	0	21	3	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1357	0	64	1177	0	3	21	0	0	4	0
Intersection Summary												

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↑↑↑			↔ ↑↑			↔ ↑			↔		
Traffic Vol, veh/h	8	1293	23	62	1135	7	3	0	20	3	0	1
Future Vol, veh/h	8	1293	23	62	1135	7	3	0	20	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1333	24	64	1170	7	3	0	21	3	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1177	0	0	1357	0	0	2074	2666	679	1851	2675	589
Stage 1	-	-	-	-	-	-	1361	1361	-	1302	1302	-
Stage 2	-	-	-	-	-	-	713	1305	-	549	1373	-
Critical Hdwy	4.14	-	-	5.34	-	-	6.99	6.54	7.14	6.99	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.74	5.54	-
Follow-up Hdwy	2.22	-	-	3.12	-	-	3.67	4.02	3.92	3.67	4.02	3.32
Pot Cap-1 Maneuver	589	-	-	262	-	-	42	22	338	60	22	452
Stage 1	-	-	-	-	-	-	113	215	-	166	229	-
Stage 2	-	-	-	-	-	-	378	228	-	458	212	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	589	-	-	262	-	-	34	16	338	45	16	452
Mov Cap-2 Maneuver	-	-	-	-	-	-	34	16	-	45	16	-
Stage 1	-	-	-	-	-	-	111	212	-	164	173	-
Stage 2	-	-	-	-	-	-	285	172	-	424	209	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.2			30			71.8		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	34	338	589	-	-	262	-	-	58
HCM Lane V/C Ratio	0.091	0.061	0.014	-	-	0.244	-	-	0.071
HCM Control Delay (s)	121.2	16.3	11.2	-	-	23.1	-	-	71.8
HCM Lane LOS	F	C	B	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-	0.9	-	-	0.2

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 12: Western Avenue & Project Access 2 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↕↕		↗	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.977			0.887			0.999			0.994	
Flt Protected		0.960			0.992		0.950			0.950		
Satd. Flow (prot)	0	1747	0	0	1639	0	1770	5080	0	1770	5055	0
Flt Permitted		0.960			0.992		0.950			0.950		
Satd. Flow (perm)	0	1747	0	0	1639	0	1770	5080	0	1770	5055	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		781			1291			969			584	
Travel Time (s)		17.8			29.3			22.0			13.3	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

12: Western Avenue & Project Access 2

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	18	0	4	1	0	5	18	1329	8	11	1720	70
Future Volume (vph)	18	0	4	1	0	5	18	1329	8	11	1720	70
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	19	0	4	1	0	5	19	1414	9	12	1830	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	6	0	19	1423	0	12	1904	0
Intersection Summary												



Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	18	0	4	1	0	5	18	1329	8	11	1720	70
Future Vol, veh/h	18	0	4	1	0	5	18	1329	8	11	1720	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	0	4	1	0	5	19	1414	9	12	1830	74

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2495	3352	952	2213	3385	712	1904	0	0	1423	0	0
Stage 1	1891	1891	-	1457	1457	-	-	-	-	-	-	-
Stage 2	604	1461	-	756	1928	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	31	8	223	47	7	322	140	-	-	243	-	-
Stage 1	46	117	-	95	193	-	-	-	-	-	-	-
Stage 2	412	192	-	333	112	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	26	7	223	40	6	322	140	-	-	243	-	-
Mov Cap-2 Maneuver	26	7	-	40	6	-	-	-	-	-	-	-
Stage 1	40	111	-	82	167	-	-	-	-	-	-	-
Stage 2	350	166	-	311	107	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	272.1		30.4		0.5		0.1	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	140	-	-	31	148	243	-
HCM Lane V/C Ratio	0.137	-	-	0.755	0.043	0.048	-
HCM Control Delay (s)	34.7	-	-	272.1	30.4	20.6	-
HCM Lane LOS	D	-	-	F	D	C	-
HCM 95th %tile Q(veh)	0.5	-	-	2.5	0.1	0.2	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	72		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865		0.942			
Flt Protected						0.967
Satd. Flow (prot)	1611	0	1755	0	0	1801
Flt Permitted						0.967
Satd. Flow (perm)	1611	0	1755	0	0	1801
Link Speed (mph)	30		30			30
Link Distance (ft)	795		967			440
Travel Time (s)	18.1		22.0			10.0

**Intersection Summary**

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

13: Gramercy Place/Van Ness Avenue & Project Access 3

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	10	20	15	50	22
Future Volume (vph)	0	10	20	15	50	22
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	13	25	19	63	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	44	0	0	91
<b>Intersection Summary</b>						

**Intersection**

Int Delay, s/veh 3.9

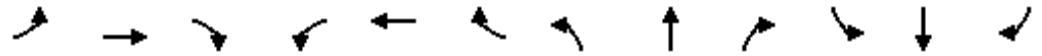
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	20	15	50	22
Future Vol, veh/h	0	10	20	15	50	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	25	19	63	28

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	189	35	0
Stage 1	35	-	-
Stage 2	154	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	800	1038	-
Stage 1	987	-	-
Stage 2	874	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	767	1038	-
Mov Cap-2 Maneuver	767	-	-
Stage 1	987	-	-
Stage 2	838	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	5.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1038	1564
HCM Lane V/C Ratio	-	-	0.012	0.04
HCM Control Delay (s)	-	-	8.5	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 14: 195th Street & Project Access 4 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	98		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt					0.992							0.877
Flt Protected	0.950											0.995
Satd. Flow (prot)	1770	1863	0	1863	1848	0	0	1863	0	0	1625	0
Flt Permitted	0.950											0.995
Satd. Flow (perm)	1770	1863	0	1863	1848	0	0	1863	0	0	1625	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		500			713			827				834
Travel Time (s)		11.4			16.2			18.8				19.0

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

14: 195th Street & Project Access 4

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	29	27	0	0	106	6	0	0	0	1	0	7
Future Volume (vph)	29	27	0	0	106	6	0	0	0	1	0	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	41	39	0	0	151	9	0	0	0	1	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	39	0	0	160	0	0	0	0	0	11	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	29	27	0	0	106	6	0	0	0	1	0	7
Future Vol, veh/h	29	27	0	0	106	6	0	0	0	1	0	7
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	39	0	0	151	9	0	0	0	1	0	10
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.9	8.4	0	7.1
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	12%
Vol Thru, %	100%	0%	100%	100%	95%	0%
Vol Right, %	0%	0%	0%	0%	5%	88%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	29	27	0	112	8
LT Vol	0	29	0	0	0	1
Through Vol	0	0	27	0	106	0
RT Vol	0	0	0	0	6	7
Lane Flow Rate	0	41	39	0	160	11
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.059	0.05	0	0.202	0.013
Departure Headway (Hd)	4.528	5.132	4.631	4.592	4.555	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	697	771	0	789	897
Service Time	2.529	2.871	2.37	2.32	2.282	2.013
HCM Lane V/C Ratio	0	0.059	0.051	0	0.203	0.012
HCM Control Delay	7.5	8.2	7.6	7.3	8.4	7.1
HCM Lane LOS	N	A	A	N	A	A
HCM 95th-tile Q	0	0.2	0.2	0	0.8	0

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 15: 195th Street & Project Access 5 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	102		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.992							0.892
Flt Protected	0.950											0.990
Satd. Flow (prot)	1770	1863	0	0	3511	0	0	1863	0	0	1645	0
Flt Permitted	0.950											0.990
Satd. Flow (perm)	1770	1863	0	0	3511	0	0	1863	0	0	1645	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		713			502			847			825	
Travel Time (s)		16.2			11.4			19.3			18.8	

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

15: 195th Street & Project Access 5

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	15	16	0	0	111	6	0	0	0	1	0	3
Future Volume (vph)	15	16	0	0	111	6	0	0	0	1	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	20	21	0	0	148	8	0	0	0	1	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	21	0	0	156	0	0	0	0	0	5	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵			↕↕			↕			↕	
Traffic Vol, veh/h	15	16	0	0	111	6	0	0	0	1	0	3
Future Vol, veh/h	15	16	0	0	111	6	0	0	0	1	0	3
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	21	0	0	148	8	0	0	0	1	0	4
Number of Lanes	1	1	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.7	7.8	0	7
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	25%
Vol Thru, %	100%	0%	100%	100%	86%	0%
Vol Right, %	0%	0%	0%	0%	14%	75%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	15	16	74	43	4
LT Vol	0	15	0	0	0	1
Through Vol	0	0	16	74	37	0
RT Vol	0	0	0	0	6	3
Lane Flow Rate	0	20	21	99	57	5
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.028	0.027	0.125	0.071	0.006
Departure Headway (Hd)	4.395	5.121	4.62	4.564	4.466	3.987
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	699	774	788	805	903
Service Time	2.395	2.856	2.355	2.275	2.178	1.987
HCM Lane V/C Ratio	0	0.029	0.027	0.126	0.071	0.006
HCM Control Delay	7.4	8	7.5	7.9	7.5	7
HCM Lane LOS	N	A	A	A	A	A
HCM 95th-tile Q	0	0.1	0.1	0.4	0.2	0

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TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
OPENING YEAR WITH PROJECT CONDITIONS  
PM PEAK HOUR

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## Scenario Report

Scenario: OY+P\_PM  
Command: OY+P\_PM  
Volume: WP\_PM  
Geometry: EXISTING  
Impact Fee: Default Impact Fee  
Trip Generation: P+C\_PM  
Trip Distribution: DEFAULT  
Paths: Default Path  
Routes: Default Route  
Configuration: OPENING YEAR

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Trip Generation Report

Forecast for PROJECT PM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	PROJECT	1.00	PROJECT	75.00	285.00	75	285	360	100.0
	Zone 1 Subtotal					75	285	360	100.0
TOTAL						75	285	360	100.0

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Turning Movement Report  
 PROJECT PM + CUMULATIVES PM

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#1 VAN NESS AVE / 190TH ST													
Base	71	518	185	62	357	161	180	1504	92	59	684	62	3932
Added	9	6	0	4	4	0	0	8	4	0	34	23	92
Total	80	524	185	66	361	161	180	1512	96	59	718	85	4024
#2 VAN NESS AVE / 195TH ST													
Base	0	719	4	6	536	0	0	0	0	11	0	25	1302
Added	0	0	8	7	0	0	0	0	0	29	0	14	58
Total	0	719	12	13	536	0	0	0	0	40	0	39	1360
#3 VAN NESS AVE / DEL AMO BLVD													
Base	59	468	65	60	359	107	243	563	93	53	383	38	2489
Added	0	4	0	0	14	14	4	0	0	0	0	0	36
Total	59	472	65	60	373	121	247	563	93	53	383	38	2525
#4 GRAMERCY PL / 190TH ST													
Base	9	1	36	1	0	0	0	1726	1	4	765	27	2570
Added	43	0	0	0	0	0	0	6	5	8	14	0	76
Total	52	1	36	1	0	0	0	1732	6	12	779	27	2646
#5 GRMAERCY PL / 195TH ST													
Base	15	12	12	10	0	5	13	16	1	4	20	4	113
Added	0	0	0	0	0	0	4	11	0	0	43	0	58
Total	15	12	12	10	0	5	17	27	1	4	63	4	171
#6 I-405 SOUTHBOUND RAMPS / 190TH ST													
Base	0	0	0	422	0	14	606	1173	0	0	783	131	3129
Added	0	0	0	0	0	11	51	31	0	0	12	28	133
Total	0	0	0	422	0	25	657	1204	0	0	795	159	3262
#7 WESTERN AVE / I-405 NORTHBOUND RAMPS													
Base	0	1158	493	43	830	0	0	0	0	592	0	246	3363
Added	0	29	43	0	8	0	0	0	0	21	0	0	101
Total	0	1187	536	43	838	0	0	0	0	613	0	246	3464
#8 WESTERN AVE / 190TH ST													
Base	127	1156	235	112	1002	305	253	1020	335	134	491	220	5391
Added	28	43	3	0	17	11	29	3	0	1	1	0	136
Total	155	1199	238	112	1019	316	282	1023	335	135	492	220	5527
#9 WESTERN AVE / 195TH ST													
Base	6	1431	3	12	1544	17	48	0	13	12	0	26	3114
Added	3	5	0	0	17	0	0	0	11	0	0	0	36
Total	9	1436	3	12	1561	17	48	0	24	12	0	26	3150

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#10 WESTERN AVE / DEL AMO BLVD													
Base	93	977	15	36	1266	352	494	80	231	21	22	35	3623
Added	0	8	0	0	29	0	0	0	0	0	0	0	37
Total	93	985	15	36	1295	352	494	80	231	21	22	35	3660
#11 PROJECT ACCESS 1 / 190TH ST													
Base	0	0	0	23	0	15	6	1766	0	0	785	0	2596
Added	14	0	83	0	0	0	0	0	6	16	8	0	127
Total	14	0	83	23	0	15	6	1766	6	16	793	0	2723
#12 WESTERN AVE / PROJECT ACCESS 2													
Base	0	1499	0	8	1554	0	0	0	0	3	0	10	3074
Added	5	0	0	0	0	18	74	0	17	0	0	0	114
Total	5	1499	0	8	1554	18	74	0	17	3	0	10	3188
#13 GRAMERCY PL / PROJECT ACCESS 3													
Base	0	39	0	0	16	0	0	0	0	0	0	0	56
Added	0	0	4	13	0	0	0	0	0	0	0	43	60
Total	0	39	4	13	16	0	0	0	0	0	0	43	116
#14 PROJECT ACCESS 4 / 195TH ST													
Base	0	0	0	0	0	0	0	46	0	0	30	0	77
Added	0	0	0	6	0	29	8	4	0	0	14	2	63
Total	0	0	0	6	0	29	8	50	0	0	44	2	140
#15 PROJECT ACCESS 5 / 195TH ST													
Base	0	0	0	0	0	0	0	54	0	0	56	0	109
Added	0	0	0	6	0	14	4	6	0	0	2	2	34
Total	0	0	0	6	0	14	4	60	0	0	58	2	143

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #1 VAN NESS AVE / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.656  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 45 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	2	0	1	1	1	0	3	0	1	1

Volume Module:

Base Vol:	70	513	183	61	353	159	178	1489	91	58	677	61
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	71	518	185	62	357	161	180	1504	92	59	684	62
Added Vol:	9	6	0	4	4	0	0	8	4	0	34	23
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	524	185	66	361	161	180	1512	96	59	718	85
User 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
PHF 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
PHF Volume:	80	524	185	66	361	161	180	1512	96	59	718	85
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	524	185	66	361	161	180	1512	96	59	718	85
PCE 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
MLF 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
FinalVolume:	80	524	185	66	361	161	180	1512	96	59	718	85
OvlAdjVol:	0											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3200	3200	1600	1600	3200	1600	1600	4800	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.02	0.16	0.12	0.04	0.11	0.10	0.11	0.31	0.06	0.04	0.22	0.05
OvlAdjV/S:							0.00					
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #2 VAN NESS AVE / 195TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.357  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 27 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	0	0	0	0	1

Volume Module:

Base Vol:	0	712	4	6	531	0	0	0	0	11	0	25
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	719	4	6	536	0	0	0	0	11	0	25
Added Vol:	0	0	8	7	0	0	0	0	0	29	0	14
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	719	12	13	536	0	0	0	0	40	0	39
User 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
PHF 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
PHF Volume:	0	719	12	13	536	0	0	0	0	40	0	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	719	12	13	536	0	0	0	0	40	0	39
PCE 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
MLF 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
FinalVolume:	0	719	12	13	536	0	0	0	0	40	0	39
OvlAdjVol:	0											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	0	3200	1600	1600	3200	0	0	0	0	3200	0	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.22	0.01	0.01	0.17	0.00	0.00	0.00	0.00	0.01	0.00	0.02
OvlAdjV/S:	0.00											
Crit Moves:	****			****						****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #3 VAN NESS AVE / DEL AMO BLVD

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.689  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 49 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	2	0	1	1	0	2

Volume Module:

Base Vol:	58	463	64	59	355	106	241	557	92	52	379	38
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	59	468	65	60	359	107	243	563	93	53	383	38
Added Vol:	0	4	0	0	14	14	4	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	59	472	65	60	373	121	247	563	93	53	383	38
User 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
PHF 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
PHF Volume:	59	472	65	60	373	121	247	563	93	53	383	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	59	472	65	60	373	121	247	563	93	53	383	38
PCE 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
MLF 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
FinalVolume:	59	472	65	60	373	121	247	563	93	53	383	38

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.76	0.24	1.00	1.51	0.49	2.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	2814	386	1600	2415	785	3200	1600	1600	1600	3200	1600

Capacity Analysis Module:

Vol/Sat:	0.04	0.17	0.17	0.04	0.15	0.15	0.08	0.35	0.06	0.03	0.12	0.02
Crit Moves:	***			***			***			***		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #4 GRAMERCY PL / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.502  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 33 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	0	1	0	2	1	0	1

Volume Module:

Base Vol:	9	1	36	1	0	0	0	1709	1	4	757	27
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	9	1	36	1	0	0	0	1726	1	4	765	27
Added Vol:	43	0	0	0	0	0	0	6	5	8	14	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	1	36	1	0	0	0	1732	6	12	779	27
User 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
PHF 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
PHF Volume:	52	1	36	1	0	0	0	1732	6	12	779	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	1	36	1	0	0	0	1732	6	12	779	27
PCE 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
MLF 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
FinalVolume:	52	1	36	1	0	0	0	1732	6	12	779	27

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.03	0.97	1.00	1.00	0.00	1.00	2.99	0.01	1.00	1.93	0.07
Final Sat.:	1600	43	1557	1600	1600	0	1600	4783	17	1600	3092	108

Capacity Analysis Module:

Vol/Sat:	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.36	0.36	0.01	0.25	0.25
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #6 I-405 SOUTHBOUND RAMPS / 190TH ST

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.611  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 41 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	1	2	0	3	0	0	3

Volume Module:

Base Vol:	0	0	0	418	0	14	600	1161	0	0	775	130
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	0	0	422	0	14	606	1173	0	0	783	131
Added Vol:	0	0	0	0	0	11	51	31	0	0	12	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	422	0	25	657	1204	0	0	795	159
User 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
PHF 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
PHF Volume:	0	0	0	422	0	25	657	1204	0	0	795	159
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	422	0	25	657	1204	0	0	795	159
PCE 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
MLF 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
FinalVolume:	0	0	0	422	0	25	657	1204	0	0	795	159

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.89	0.00	0.11	2.00	3.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	3020	0	180	3200	4800	0	0	4800	1600

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.14	0.00	0.14	0.21	0.25	0.00	0.00	0.17	0.10
Crit Moves:				****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #7 WESTERN AVE / I-405 NORTHBOUND RAMP

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.767  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 60 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	T	R		L	T	R		L	T	R		L	T	R					
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Ovl				Include				Include				Include							
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0					
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0					
Lanes:	0	0	2	0	1	1	0	3	0	0	0	0	0	0	0	1	0	1	0	0

Volume Module:

Base Vol:	0	1147	488	43	822	0	0	0	0	586	0	244
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	1158	493	43	830	0	0	0	0	592	0	246
Added Vol:	0	29	43	0	8	0	0	0	0	21	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1187	536	43	838	0	0	0	0	613	0	246
User 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
PHF 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
PHF Volume:	0	1187	536	43	838	0	0	0	0	613	0	246
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1187	536	43	838	0	0	0	0	613	0	246
PCE 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
MLF 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
FinalVolume:	0	1187	536	43	838	0	0	0	0	613	0	246
OvlAdjVol:	106											

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	3.00	0.00	0.00	0.00	0.00	1.43	0.00	0.57
Final Sat.:	0	3200	1600	1600	4800	0	0	0	0	2282	0	918

Capacity Analysis Module:

Vol/Sat:	0.00	0.37	0.33	0.03	0.17	0.00	0.00	0.00	0.00	0.27	0.00	0.27
OvlAdjV/S:	0.07											
Crit Moves:	****				****				****			

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #8 WESTERN AVE / 190TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.640  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 44 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Ovl			Ovl			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	3	0	1	1	2	0	3	0	1	0

Volume Module:

Base Vol:	126	1145	233	111	992	302	250	1010	332	133	486	218
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	127	1156	235	112	1002	305	253	1020	335	134	491	220
Added Vol:	28	43	3	0	17	11	29	3	0	1	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	155	1199	238	112	1019	316	282	1023	335	135	492	220
User 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
PHF 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
PHF Volume:	155	1199	238	112	1019	316	282	1023	335	135	492	220
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	155	1199	238	112	1019	316	282	1023	335	135	492	220
PCE 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
MLF 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
FinalVolume:	155	1199	238	112	1019	316	282	1023	335	135	492	220
OvlAdjVol:			171			175			258			

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.07	0.93
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	3316	1484

Capacity Analysis Module:

Vol/Sat:	0.05	0.25	0.15	0.04	0.21	0.20	0.09	0.21	0.21	0.04	0.15	0.15
OvlAdjV/S:			0.11			0.11			0.16			
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #9 WESTERN AVE / 195TH ST

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.485  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 33 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0	3	0	1	1	0	3	0	1	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	6	1417	3	12	1529	17	48	0	13	12	0	26
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	6	1431	3	12	1544	17	48	0	13	12	0	26
Added Vol:	3	5	0	0	17	0	0	0	11	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	1436	3	12	1561	17	48	0	24	12	0	26
User 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
PHF 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
PHF Volume:	9	1436	3	12	1561	17	48	0	24	12	0	26
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	9	1436	3	12	1561	17	48	0	24	12	0	26
PCE 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
MLF 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
FinalVolume:	9	1436	3	12	1561	17	48	0	24	12	0	26

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.00	1.00	0.32	0.00	0.68
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	0	1600	505	0	1095

Capacity Analysis Module:

Vol/Sat:	0.01	0.30	0.00	0.01	0.33	0.01	0.03	0.00	0.02	0.01	0.00	0.02
Crit Moves:	****			****			****			****		

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 TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY (2757-2021-02)  
 OPENING YEAR WITH PROJECT CONDITIONS  
 PM PEAK HOUR  
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Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

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Intersection #10 WESTERN AVE / DEL AMO BLVD

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Cycle (sec): 100 Critical Vol./Cap.(X): 0.730  
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxxx  
 Optimal Cycle: 54 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	0	1	1	0	0	1	0

Volume Module:

Base Vol:	92	967	15	36	1253	349	489	79	229	21	22	35
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	93	977	15	36	1266	352	494	80	231	21	22	35
Added Vol:	0	8	0	0	29	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	985	15	36	1295	352	494	80	231	21	22	35
User 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
PHF 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
PHF Volume:	93	985	15	36	1295	352	494	80	231	21	22	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	985	15	36	1295	352	494	80	231	21	22	35
PCE 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
MLF 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
FinalVolume:	93	985	15	36	1295	352	494	80	231	21	22	35

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.36	0.64	1.72	0.28	1.00	0.27	0.28	0.45
Final Sat.:	1600	3200	1600	1600	3773	1027	2755	445	1600	431	451	718

Capacity Analysis Module:

Vol/Sat:	0.06	0.31	0.01	0.02	0.34	0.34	0.18	0.18	0.14	0.05	0.05	0.05
Crit Moves:	****			****			****			****		

\*\*\*\*\*

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 5: Gramercy Place & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt		0.998			0.992			0.958			0.955	
Flt Protected		0.981			0.997			0.982			0.968	
Satd. Flow (prot)	0	1824	0	0	1842	0	0	1752	0	0	1722	0
Flt Permitted		0.981			0.997			0.982			0.968	
Satd. Flow (perm)	0	1824	0	0	1842	0	0	1752	0	0	1722	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1405			500			880			967	
Travel Time (s)		31.9			11.4			20.0			22.0	

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

5: Gramercy Place & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	17	27	1	4	63	4	15	12	12	10	0	5
Future Volume (vph)	17	27	1	4	63	4	15	12	12	10	0	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	21	33	1	5	77	5	18	15	15	12	0	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	0	0	87	0	0	48	0	0	18	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	27	1	4	63	4	15	12	12	10	0	5
Future Vol, veh/h	17	27	1	4	63	4	15	12	12	10	0	5
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	33	1	5	77	5	18	15	15	12	0	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.6	7.4	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	38%	6%	67%
Vol Thru, %	31%	60%	89%	0%
Vol Right, %	31%	2%	6%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	39	45	71	15
LT Vol	15	17	4	10
Through Vol	12	27	63	0
RT Vol	12	1	4	5
Lane Flow Rate	48	55	87	18
Geometry Grp	1	1	1	1
Degree of Util (X)	0.054	0.064	0.098	0.021
Departure Headway (Hd)	4.085	4.176	4.067	4.149
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	867	852	876	852
Service Time	2.158	2.228	2.113	2.229
HCM Lane V/C Ratio	0.055	0.065	0.099	0.021
HCM Control Delay	7.4	7.5	7.6	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.3	0.1

Lanes and Geometrics  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	258			166	0	0
Storage Lanes	2			1	2	0
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	0.95
Ped Bike Factor						
Frt				0.850	0.991	
Flt Protected	0.950				0.955	
Satd. Flow (prot)	3433	5085	5085	1583	3420	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	3433	5085	5085	1583	3420	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				162	9	
Link Speed (mph)		30	30		30	
Link Distance (ft)		645	638		544	
Travel Time (s)		14.7	14.5		12.4	

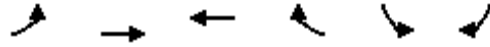
Intersection Summary

Area Type: Other

Volume  
6: 190th Street & I-405 Ramp

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10/06/2021



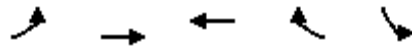
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	657	1204	795	159	422	25
Future Volume (vph)	657	1204	795	159	422	25
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	670	1229	811	162	431	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	670	1229	811	162	457	0
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

6: 190th Street & I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations	↔↔	↑↑↑	↑↑↑	↔	↔↔
Traffic Volume (vph)	657	1204	795	159	422
Future Volume (vph)	657	1204	795	159	422
Turn Type	Prot	NA	NA	Perm	Prot
Protected Phases	7	4	8		6
Permitted Phases				8	
Detector Phase	7	4	8	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	20.0	42.5	22.5	22.5	22.5
Total Split (%)	30.8%	65.4%	34.6%	34.6%	34.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	None	None	None	Max
Act Effect Green (s)	14.9	35.8	16.4	16.4	18.1
Actuated g/C Ratio	0.24	0.57	0.26	0.26	0.29
v/c Ratio	0.83	0.42	0.61	0.30	0.46
Control Delay	33.6	8.1	22.7	5.4	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	8.1	22.7	5.4	20.5
LOS	C	A	C	A	C
Approach Delay		17.1	19.8		20.5
Approach LOS		B	B		C

Intersection Summary

Cycle Length: 65  
 Actuated Cycle Length: 62.9  
 Natural Cycle: 65  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 18.4  
 Intersection Capacity Utilization 58.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 6: 190th Street & I-405 Ramp

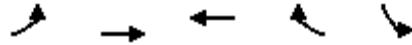


## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 6: 190th Street &amp; I-405 Ramp

10/06/2021



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	670	1229	811	162	457
v/c Ratio	0.83	0.42	0.61	0.30	0.46
Control Delay	33.6	8.1	22.7	5.4	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	8.1	22.7	5.4	20.5
Queue Length 50th (ft)	129	86	100	0	75
Queue Length 95th (ft)	#209	112	137	38	115
Internal Link Dist (ft)		565	558		464
Turn Bay Length (ft)	258			166	
Base Capacity (vph)	848	3081	1460	569	988
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.79	0.40	0.56	0.28	0.46

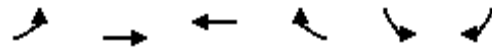
## Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCIAL CENTER PHASE 3 TRAFFIC STUDY  
 6: 190th Street & I-405 Ramp

10/06/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖ ↗	↑ ↑ ↑	↑ ↑ ↑	↖	↖ ↗			
Traffic Volume (veh/h)	657	1204	795	159	422	25		
Future Volume (veh/h)	657	1204	795	159	422	25		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	670	1229	811	162	455	0		
Adj No. of Lanes	2	3	3	1	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	0		
Cap, veh/h	798	2773	1209	377	1075	490		
Arrive On Green	0.23	0.55	0.24	0.24	0.30	0.00		
Sat Flow, veh/h	3442	5253	5253	1583	3548	1615		
Grp Volume(v), veh/h	670	1229	811	162	455	0		
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1774	1615		
Q Serve(g_s), s	11.0	8.6	8.6	5.2	6.1	0.0		
Cycle Q Clear(g_c), s	11.0	8.6	8.6	5.2	6.1	0.0		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	798	2773	1209	377	1075	490		
V/C Ratio(X)	0.84	0.44	0.67	0.43	0.42	0.00		
Avail Cap(c_a), veh/h	898	3254	1541	480	1075	490		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	21.8	8.1	20.5	19.2	16.5	0.0		
Incr Delay (d2), s/veh	6.5	0.1	0.8	0.8	1.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.9	4.0	4.1	2.3	3.2	0.0		
LnGrp Delay(d),s/veh	28.3	8.2	21.3	20.0	17.8	0.0		
LnGrp LOS	C	A	C	B	B			
Approach Vol, veh/h		1899	973		455			
Approach Delay, s/veh		15.3	21.1		17.8			
Approach LOS		B	C		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.9		22.5	18.3	18.6
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				38.0		18.0	15.5	18.0
Max Q Clear Time (g_c+I1), s				10.6		8.1	13.0	10.6
Green Ext Time (p_c), s				10.5		1.2	0.7	3.5
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			17.3					
HCM 2010 LOS			B					
<b>Notes</b>								

Lanes and Geometrics      TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street      10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	170	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.91
Ped Bike Factor						
Frt	0.957			0.850		
Flt Protected	0.966				0.950	
Satd. Flow (prot)	3341	0	3539	1583	1770	5085
Flt Permitted	0.966				0.950	
Satd. Flow (perm)	3341	0	3539	1583	1770	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	90			467		
Link Speed (mph)	30		30			30
Link Distance (ft)	1298		979			805
Travel Time (s)	29.5		22.3			18.3

**Intersection Summary**

Area Type:      Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	613	246	1187	536	43	838
Future Volume (vph)	613	246	1187	536	43	838
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	674	270	1304	589	47	921
Shared Lane Traffic (%)						
Lane Group Flow (vph)	944	0	1304	589	47	921
Intersection Summary						

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

7: Western Avenue/I-405 Ramp & 190th Street

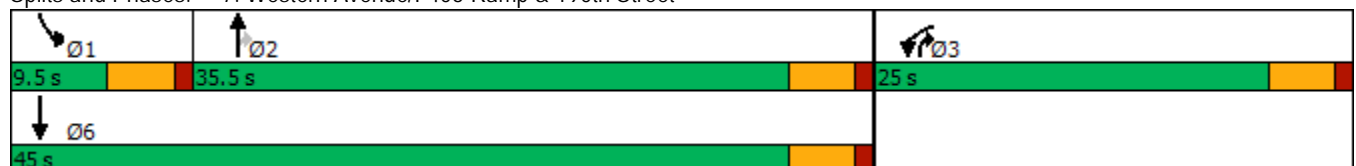
10/06/2021

	↙	↑	↘	↙	↓
Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↑↑	↘	↙	↑↑↑
Traffic Volume (vph)	613	1187	536	43	838
Future Volume (vph)	613	1187	536	43	838
Turn Type	Prot	NA	pm+ov	Prot	NA
Protected Phases	3	2	3	1	6
Permitted Phases			2		
Detector Phase	3	2	3	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5
Total Split (s)	25.0	35.5	25.0	9.5	45.0
Total Split (%)	35.7%	50.7%	35.7%	13.6%	64.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag		Lag		Lead	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	Max	None	None	Max
Act Effct Green (s)	20.5	34.8	61.6	5.0	40.5
Actuated g/C Ratio	0.29	0.50	0.88	0.07	0.58
v/c Ratio	0.91	0.74	0.41	0.37	0.31
Control Delay	35.9	18.6	1.3	39.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	18.6	1.3	39.9	7.9
LOS	D	B	A	D	A
Approach Delay	35.9	13.2			9.5
Approach LOS	D	B			A

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 70	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 17.9	Intersection LOS: B
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Western Avenue/I-405 Ramp & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 7: Western Avenue/I-405 Ramp &amp; 190th Street

10/06/2021


















Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	944	1304	589	47	921
v/c Ratio	0.91	0.74	0.41	0.37	0.31
Control Delay	35.9	18.6	1.3	39.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	18.6	1.3	39.9	7.9
Queue Length 50th (ft)	182	249	7	20	67
Queue Length 95th (ft)	#295	336	22	50	89
Internal Link Dist (ft)	1218	899			725
Turn Bay Length (ft)			150	170	
Base Capacity (vph)	1042	1760	1435	126	2944
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.91	0.74	0.41	0.37	0.31

## Intersection Summary

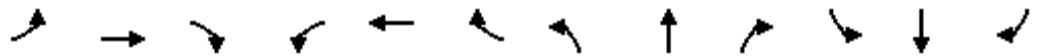
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Analysis TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 7: Western Avenue/I-405 Ramp & 190th Street

10/06/2021

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 		 			  		
Traffic Volume (veh/h)	613	246	1187	536	43	838		
Future Volume (veh/h)	613	246	1187	536	43	838		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863		
Adj Flow Rate, veh/h	472	486	1304	589	47	921		
Adj No. of Lanes	1	1	2	1	1	3		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	520	473	1669	1210	76	2942		
Arrive On Green	0.29	0.29	0.47	0.47	0.04	0.58		
Sat Flow, veh/h	1774	1615	3632	1583	1774	5253		
Grp Volume(v), veh/h	472	486	1304	589	47	921		
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1583	1774	1695		
Q Serve(g_s), s	17.9	20.5	21.6	9.8	1.8	6.5		
Cycle Q Clear(g_c), s	17.9	20.5	21.6	9.8	1.8	6.5		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	520	473	1669	1210	76	2942		
V/C Ratio(X)	0.91	1.03	0.78	0.49	0.62	0.31		
Avail Cap(c_a), veh/h	520	473	1669	1210	127	2942		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	23.8	24.7	15.5	3.1	32.9	7.6		
Incr Delay (d2), s/veh	19.9	48.6	3.7	1.4	8.0	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	11.7	15.5	11.4	4.6	1.1	3.1		
LnGrp Delay(d),s/veh	43.7	73.4	19.2	4.5	40.9	7.9		
LnGrp LOS	D	F	B	A	D	A		
Approach Vol, veh/h	958		1893			968		
Approach Delay, s/veh	58.8		14.6			9.5		
Approach LOS	E		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.5	37.5				45.0		25.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.0	31.0				40.5		20.5
Max Q Clear Time (g_c+I1), s	3.8	23.6				8.5		22.5
Green Ext Time (p_c), s	0.0	5.7				7.6		0.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			24.4					
HCM 2010 LOS			C					
<b>Notes</b>								

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↑	↖	↖↗	↑↑↑		↖↗	↑↑↑	↖	↖↗	↑↑↑	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	148		190	232		0	150		316	280		250
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	4851	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	4851	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101		172				101			101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		638			1305			584			979	
Travel Time (s)		14.5			29.7			13.3			22.3	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	282	1023	335	135	492	220	155	1199	238	112	1019	316
Future Volume (vph)	282	1023	335	135	492	220	155	1199	238	112	1019	316
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	288	1044	342	138	502	224	158	1223	243	114	1040	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	288	1044	342	138	726	0	158	1223	243	114	1040	322
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

8: Western Avenue & 190th Street

10/06/2021

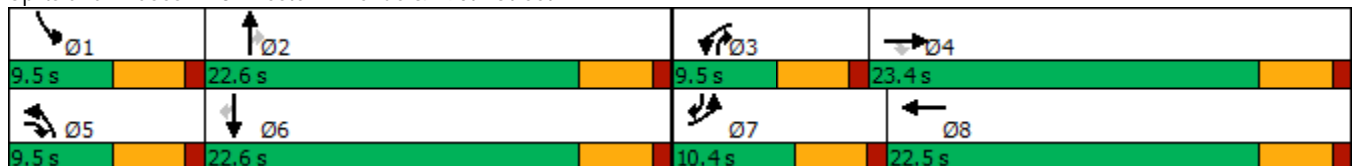


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	282	1023	335	135	492	155	1199	238	112	1019	316
Future Volume (vph)	282	1023	335	135	492	155	1199	238	112	1019	316
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	3	1	6	7
Permitted Phases			4					2			6
Detector Phase	7	4	5	3	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	10.4	23.4	9.5	9.5	22.5	9.5	22.6	9.5	9.5	22.6	10.4
Total Split (%)	16.0%	36.0%	14.6%	14.6%	34.6%	14.6%	34.8%	14.6%	14.6%	34.8%	16.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	None
Act Effect Green (s)	5.9	18.3	27.8	5.0	17.4	5.0	20.1	29.6	5.0	18.1	28.5
Actuated g/C Ratio	0.09	0.28	0.43	0.08	0.27	0.08	0.31	0.46	0.08	0.28	0.44
v/c Ratio	0.92	0.72	0.46	0.52	0.51	0.59	0.77	0.31	0.43	0.73	0.43
Control Delay	66.3	24.2	11.3	36.2	16.3	39.2	25.6	8.5	33.9	24.6	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.3	24.2	11.3	36.2	16.3	39.2	25.6	8.5	33.9	24.6	10.4
LOS	E	C	B	D	B	D	C	A	C	C	B
Approach Delay		28.8			19.5		24.3			22.2	
Approach LOS		C			B		C			C	

Intersection Summary

Cycle Length: 65  
 Actuated Cycle Length: 64.4  
 Natural Cycle: 65  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 24.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 66.3%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 8: Western Avenue & 190th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 8: Western Avenue &amp; 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	288	1044	342	138	726	158	1223	243	114	1040	322
v/c Ratio	0.92	0.72	0.46	0.52	0.51	0.59	0.77	0.31	0.43	0.73	0.43
Control Delay	66.3	24.2	11.3	36.2	16.3	39.2	25.6	8.5	33.9	24.6	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.3	24.2	11.3	36.2	16.3	39.2	25.6	8.5	33.9	24.6	10.4
Queue Length 50th (ft)	59	134	61	27	65	31	167	34	22	136	54
Queue Length 95th (ft)	#126	177	122	53	97	#64	#241	79	45	180	113
Internal Link Dist (ft)		558			1225		504			899	
Turn Bay Length (ft)	148		190	232		150		316	280		250
Base Capacity (vph)	314	1493	739	267	1480	267	1586	782	267	1430	757
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.70	0.46	0.52	0.49	0.59	0.77	0.31	0.43	0.73	0.43

## Intersection Summary
























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

Queue shown is maximum after two cycles.



HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 8: Western Avenue & 190th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	282	1023	335	135	492	220	155	1199	238	112	1019	316
Future Volume (veh/h)	282	1023	335	135	492	220	155	1199	238	112	1019	316
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	288	1044	342	138	502	224	158	1223	243	114	1040	322
Adj No. of Lanes	2	3	1	2	3	0	2	3	1	2	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	325	1397	554	250	882	380	258	1503	583	237	1473	608
Arrive On Green	0.09	0.27	0.27	0.07	0.25	0.25	0.07	0.30	0.30	0.07	0.29	0.29
Sat Flow, veh/h	3442	5085	1583	3442	3487	1501	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	288	1044	342	138	488	238	158	1223	243	114	1040	322
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1598	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	5.2	11.7	11.2	2.4	7.8	8.2	2.8	13.9	7.2	2.0	11.4	9.8
Cycle Q Clear(g_c), s	5.2	11.7	11.2	2.4	7.8	8.2	2.8	13.9	7.2	2.0	11.4	9.8
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	1397	554	250	858	404	258	1503	583	237	1473	608
V/C Ratio(X)	0.89	0.75	0.62	0.55	0.57	0.59	0.61	0.81	0.42	0.48	0.71	0.53
Avail Cap(c_a), veh/h	325	1538	597	275	976	460	275	1503	583	275	1473	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	20.7	16.9	28.0	20.4	20.5	28.0	20.4	14.7	28.0	19.8	14.9
Incr Delay (d2), s/veh	24.1	1.9	1.7	1.9	0.6	1.5	3.6	4.9	2.2	1.5	2.9	3.3
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	3.5	5.7	5.1	1.2	3.7	3.7	1.4	7.1	3.4	1.0	5.7	4.8
LnGrp Delay(d),s/veh	52.1	22.5	18.6	29.9	21.0	22.0	31.6	25.4	16.9	29.5	22.7	18.2
LnGrp LOS	D	C	B	C	C	C	C	C	B	C	C	B
Approach Vol, veh/h		1674			864			1624			1476	
Approach Delay, s/veh		26.8			22.7			24.7			22.2	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	23.0	9.0	21.7	9.2	22.6	10.4	20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.1	5.0	18.9	5.0	18.1	5.9	18.0				
Max Q Clear Time (g_c+I1), s	4.0	15.9	4.4	13.7	4.8	13.4	7.2	10.2				
Green Ext Time (p_c), s	0.0	1.7	0.0	3.5	0.0	3.1	0.0	2.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			24.4									
HCM 2010 LOS			C									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↑↑↑	↗	↖	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		50	0		0	114		306	200		190
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.907				0.850			0.850
Flt Protected		0.950			0.985		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1664	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.851			0.879		0.950			0.950		
Satd. Flow (perm)	0	1585	1583	0	1485	0	1770	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109				109			109
Link Speed (mph)		30			30			30				30
Link Distance (ft)		502			1333			1078				969
Travel Time (s)		11.4			30.3			24.5				22.0

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	48	0	24	12	0	26	9	1436	3	12	1561	17
Future Volume (vph)	48	0	24	12	0	26	9	1436	3	12	1561	17
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	0	25	12	0	27	9	1480	3	12	1609	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	25	0	39	0	9	1480	3	12	1609	18
Intersection Summary												

Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

9: Western Avenue & 195th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔	↖	↑↑↑	↗	↖	↑↑↑	↗
Traffic Volume (vph)	48	0	24	12	0	9	1436	3	12	1561	17
Future Volume (vph)	48	0	24	12	0	9	1436	3	12	1561	17
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8				2			6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	28.0	28.0	9.5	28.0	28.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	15.8%	46.7%	46.7%	15.8%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		7.1	7.1		7.0	5.0	32.9	32.9	5.0	32.9	32.9
Actuated g/C Ratio		0.16	0.16		0.16	0.11	0.74	0.74	0.11	0.74	0.74
v/c Ratio		0.19	0.07		0.12	0.05	0.39	0.00	0.06	0.43	0.02
Control Delay		18.3	0.4		0.8	19.7	5.4	0.0	19.8	5.6	0.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		18.3	0.4		0.8	19.7	5.4	0.0	19.8	5.6	0.0
LOS		B	A		A	B	A	A	B	A	A
Approach Delay		12.3			0.8		5.5			5.7	
Approach LOS		B			A		A			A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 44.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 5.7

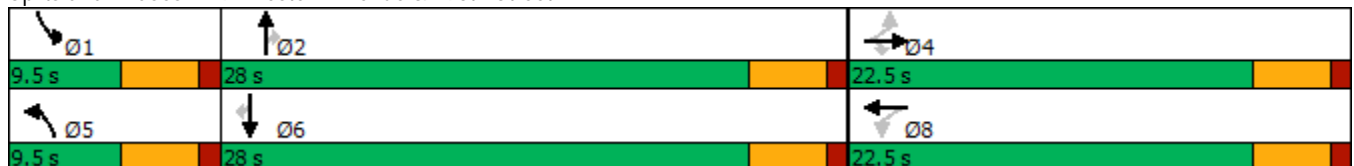
Intersection LOS: A

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: Western Avenue & 195th Street



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 9: Western Avenue &amp; 195th Street

10/06/2021
























Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	49	25	39	9	1480	3	12	1609	18
v/c Ratio	0.19	0.07	0.12	0.05	0.39	0.00	0.06	0.43	0.02
Control Delay	18.3	0.4	0.8	19.7	5.4	0.0	19.8	5.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	0.4	0.8	19.7	5.4	0.0	19.8	5.6	0.0
Queue Length 50th (ft)	11	0	0	2	53	0	3	60	0
Queue Length 95th (ft)	36	0	1	13	158	0	16	177	0
Internal Link Dist (ft)	422		1253		998			889	
Turn Bay Length (ft)		50		114		306	200		190
Base Capacity (vph)	643	708	668	199	3753	1197	199	3753	1197
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.04	0.06	0.05	0.39	0.00	0.06	0.43	0.02

## Intersection Summary

HCM 2010 Signalized Intersection Analysis TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 9: Western Avenue & 195th Street

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	0	24	12	0	26	9	1436	3	12	1561	17
Future Volume (veh/h)	48	0	24	12	0	26	9	1436	3	12	1561	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	49	0	25	12	0	27	9	1480	3	12	1609	18
Adj No. of Lanes	0	1	1	0	1	0	1	3	1	1	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	0	139	143	10	88	21	2895	901	28	2914	907
Arrive On Green	0.09	0.00	0.09	0.09	0.00	0.09	0.01	0.57	0.57	0.02	0.57	0.57
Sat Flow, veh/h	1503	0	1583	329	118	1005	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	49	0	25	39	0	0	9	1480	3	12	1609	18
Grp Sat Flow(s),veh/h/ln	1503	0	1583	1451	0	0	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	0.6	0.1	0.0	0.0	0.2	7.3	0.0	0.3	8.2	0.2
Cycle Q Clear(g_c), s	1.1	0.0	0.6	1.2	0.0	0.0	0.2	7.3	0.0	0.3	8.2	0.2
Prop In Lane	1.00		1.00	0.31		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	307	0	139	242	0	0	21	2895	901	28	2914	907
V/C Ratio(X)	0.16	0.00	0.18	0.16	0.00	0.00	0.43	0.51	0.00	0.43	0.55	0.02
Avail Cap(c_a), veh/h	786	0	691	769	0	0	215	2895	901	215	2914	907
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	17.4	17.6	0.0	0.0	20.3	5.4	3.8	20.1	5.5	3.8
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.3	0.0	0.0	13.1	0.6	0.0	10.4	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.3	0.4	0.0	0.0	0.2	3.5	0.0	0.2	3.9	0.1
LnGrp Delay(d),s/veh	17.9	0.0	18.1	17.9	0.0	0.0	33.4	6.0	3.8	30.5	6.3	3.8
LnGrp LOS	B		B	B			C	A	A	C	A	A
Approach Vol, veh/h		74			39			1492			1639	
Approach Delay, s/veh		17.9			17.9			6.2			6.4	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	28.0		8.1	5.0	28.2		8.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	23.5		18.0	5.0	23.5		18.0				
Max Q Clear Time (g_c+I1), s	2.3	9.3		3.1	2.2	10.2		3.2				
Green Ext Time (p_c), s	0.0	8.8		0.2	0.0	9.1		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			A									

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	62		64	0		0	200		50	92		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.940				0.850		0.968	
Flt Protected	0.950	0.965			0.987		0.950			0.950		
Satd. Flow (prot)	1681	1708	1583	0	1728	0	1770	3539	1583	1770	4923	0
Flt Permitted	0.950	0.965			0.987		0.098			0.202		
Satd. Flow (perm)	1681	1708	1583	0	1728	0	183	3539	1583	376	4923	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		36				73		99	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1176			1320			1187			1078	
Travel Time (s)		26.7			30.0			27.0			24.5	

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	494	80	231	21	22	35	93	985	15	36	1295	352
Future Volume (vph)	494	80	231	21	22	35	93	985	15	36	1295	352
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	515	83	241	22	23	36	97	1026	16	38	1349	367
Shared Lane Traffic (%)	42%											
Lane Group Flow (vph)	299	299	241	0	81	0	97	1026	16	38	1716	0
Intersection Summary												



Timings

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

10: Western Avenue & Del Amo Boulevard

10/06/2021

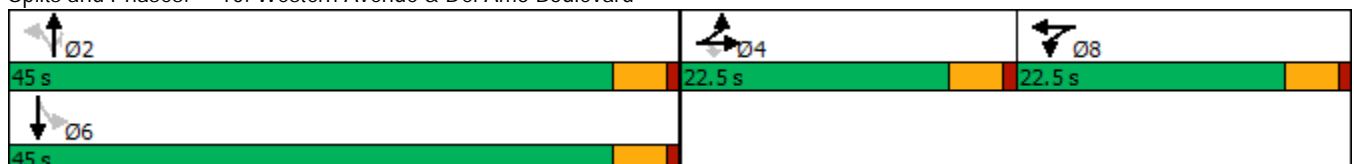


Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	494	80	231	22	93	985	15	36	1295
Future Volume (vph)	494	80	231	22	93	985	15	36	1295
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4	4		8		2			6
Permitted Phases			4		2		2	6	
Detector Phase	4	4	4	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	45.0	45.0	45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effect Green (s)	17.1	17.1	17.1	7.7	40.9	40.9	40.9	40.9	40.9
Actuated g/C Ratio	0.22	0.22	0.22	0.10	0.53	0.53	0.53	0.53	0.53
v/c Ratio	0.80	0.79	0.52	0.39	1.00	0.55	0.02	0.19	0.64
Control Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.7	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.7	14.5
LOS	D	D	B	C	F	B	A	B	B
Approach Delay		38.2		27.1		23.5			14.5
Approach LOS		D		C		C			B

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 76.9  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.00  
 Intersection Signal Delay: 22.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 71.7%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 10: Western Avenue & Del Amo Boulevard



## Queues

## TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

## 10: Western Avenue &amp; Del Amo Boulevard

10/06/2021



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	299	299	241	81	97	1026	16	38	1716
v/c Ratio	0.80	0.79	0.52	0.39	1.00	0.55	0.02	0.19	0.64
Control Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.7	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	46.2	16.5	27.1	122.7	14.4	0.1	14.7	14.5
Queue Length 50th (ft)	147	147	40	21	~53	174	0	10	205
Queue Length 95th (ft)	#294	#291	112	62	#109	253	0	32	282
Internal Link Dist (ft)		1096		1240		1107			998
Turn Bay Length (ft)	62		64		200		50	92	
Base Capacity (vph)	397	403	483	436	97	1882	876	200	2665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.74	0.50	0.19	1.00	0.55	0.02	0.19	0.64

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.























Queue shown is maximum after two cycles.

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

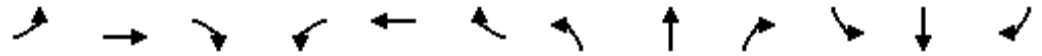
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection TORRANCE & COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 10: Western Avenue & Del Amo Boulevard

10/06/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	494	80	231	21	22	35	93	985	15	36	1295	352
Future Volume (veh/h)	494	80	231	21	22	35	93	985	15	36	1295	352
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	574	0	241	22	23	36	97	1026	16	38	1349	367
Adj No. of Lanes	2	0	1	0	1	0	1	2	1	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	715	0	319	29	30	47	189	1954	874	297	2198	596
Arrive On Green	0.20	0.00	0.20	0.06	0.06	0.06	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	3548	0	1583	463	484	758	283	3539	1583	539	3982	1080
Grp Volume(v), veh/h	574	0	241	81	0	0	97	1026	16	38	1148	568
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1706	0	0	283	1770	1583	539	1695	1672
Q Serve(g_s), s	11.3	0.0	10.5	3.4	0.0	0.0	23.6	13.4	0.3	3.5	16.8	16.9
Cycle Q Clear(g_c), s	11.3	0.0	10.5	3.4	0.0	0.0	40.5	13.4	0.3	16.9	16.8	16.9
Prop In Lane	1.00		1.00	0.27		0.44	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	715	0	319	107	0	0	189	1954	874	297	1871	923
V/C Ratio(X)	0.80	0.00	0.76	0.76	0.00	0.00	0.51	0.53	0.02	0.13	0.61	0.62
Avail Cap(c_a), veh/h	871	0	388	419	0	0	189	1954	874	297	1871	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	27.6	33.8	0.0	0.0	25.6	10.4	7.4	15.7	11.1	11.1
Incr Delay (d2), s/veh	4.6	0.0	6.7	10.5	0.0	0.0	9.6	1.0	0.0	0.9	1.5	3.1
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	6.0	0.0	5.1	1.9	0.0	0.0	2.4	6.7	0.2	0.6	8.2	8.5
LnGrp Delay(d),s/veh	32.5	0.0	34.3	44.3	0.0	0.0	35.2	11.4	7.5	16.6	12.6	14.2
LnGrp LOS	C		C	D			D	B	A	B	B	B
Approach Vol, veh/h		815			81			1139			1754	
Approach Delay, s/veh		33.0			44.3			13.4			13.2	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		19.3		45.0		9.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		40.5		18.0		40.5		18.0				
Max Q Clear Time (g_c+I1), s		42.5		13.3		18.9		5.4				
Green Ext Time (p_c), s		0.0		1.5		13.6		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.2									
HCM 2010 LOS			B									
<b>Notes</b>												

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 11: Project Access 1 & 190th Street 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.850				0.946
Flt Protected	0.950			0.950			0.950					0.971
Satd. Flow (prot)	1770	5085	0	1770	3539	0	1770	1583	0	0	1711	0
Flt Permitted	0.950			0.950			0.950					0.971
Satd. Flow (perm)	1770	5085	0	1770	3539	0	1770	1583	0	0	1711	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1861			645			451				561
Travel Time (s)		42.3			14.7			10.3				12.8

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

11: Project Access 1 & 190th Street

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	6	1766	6	16	793	0	14	0	83	23	0	15
Future Volume (vph)	6	1766	6	16	793	0	14	0	83	23	0	15
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	1879	6	17	844	0	15	0	88	24	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1885	0	17	844	0	15	88	0	0	40	0
Intersection Summary												

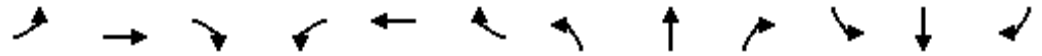
Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↑↑↑			↔ ↑↑			↔ ↑			↔		
Traffic Vol, veh/h	6	1766	6	16	793	0	14	0	83	23	0	15
Future Vol, veh/h	6	1766	6	16	793	0	14	0	83	23	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1879	6	17	844	0	15	0	88	24	0	16

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	844	0	0	1885	0	0	2350	2772	943	1642	2775	422
Stage 1	-	-	-	-	-	-	1894	1894	-	878	878	-
Stage 2	-	-	-	-	-	-	456	878	-	764	1897	-
Critical Hdwy	4.14	-	-	5.34	-	-	6.99	6.54	7.14	6.99	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.74	5.54	-
Follow-up Hdwy	2.22	-	-	3.12	-	-	3.67	4.02	3.92	3.67	4.02	3.32
Pot Cap-1 Maneuver	788	-	-	143	-	-	27	19	226	83	19	580
Stage 1	-	-	-	-	-	-	47	117	-	301	364	-
Stage 2	-	-	-	-	-	-	536	364	-	338	116	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	788	-	-	143	-	-	24	17	226	46	17	580
Mov Cap-2 Maneuver	-	-	-	-	-	-	24	17	-	46	17	-
Stage 1	-	-	-	-	-	-	47	116	-	299	321	-
Stage 2	-	-	-	-	-	-	459	321	-	204	115	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		0.7		68.4		105.9	
HCM LOS					F		F	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	24	226	788	-	-	143	-	-	72
HCM Lane V/C Ratio	0.621	0.391	0.008	-	-	0.119	-	-	0.561
HCM Control Delay (s)	291.4	30.8	9.6	-	-	33.5	-	-	105.9
HCM Lane LOS	F	D	A	-	-	D	-	-	F
HCM 95th %tile Q(veh)	1.9	1.7	0	-	-	0.4	-	-	2.4

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 12: Western Avenue & Project Access 2 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↑↑↑		↙	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.975			0.894							0.998
Flt Protected		0.961			0.989		0.950			0.950		
Satd. Flow (prot)	0	1745	0	0	1647	0	1770	5085	0	1770	5075	0
Flt Permitted		0.961			0.989		0.950			0.950		
Satd. Flow (perm)	0	1745	0	0	1647	0	1770	5085	0	1770	5075	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		781			1291			969			584	
Travel Time (s)		17.8			29.3			22.0			13.3	

Intersection Summary

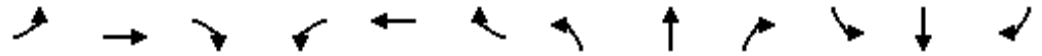
Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

12: Western Avenue & Project Access 2

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	74	0	17	3	0	10	5	1499	0	8	1554	18
Future Volume (vph)	74	0	17	3	0	10	5	1499	0	8	1554	18
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	79	0	18	3	0	11	5	1595	0	9	1653	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	97	0	0	14	0	5	1595	0	9	1672	0
Intersection Summary												



Intersection												
Int Delay, s/veh	23.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	74	0	17	3	0	10	5	1499	0	8	1554	18
Future Vol, veh/h	74	0	17	3	0	10	5	1499	0	8	1554	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	0	18	3	0	11	5	1595	0	9	1653	19

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2329	3286	836	2284	3295	798	1672	0	0	1595	0	0
Stage 1	1681	1681	-	1605	1605	-	-	-	-	-	-	-
Stage 2	648	1605	-	679	1690	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 39	9	267	42	8	282	183	-	-	200	-	-
Stage 1	~ 66	149	-	74	163	-	-	-	-	-	-	-
Stage 2	387	163	-	371	148	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 35	8	267	37	7	282	183	-	-	200	-	-
Mov Cap-2 Maneuver	~ 35	8	-	37	7	-	-	-	-	-	-	-
Stage 1	~ 64	142	-	72	159	-	-	-	-	-	-	-
Stage 2	362	159	-	330	141	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s\$	802.8	41.6	0.1	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	183	-	-	42	112	200	-	-
HCM Lane V/C Ratio	0.029	-	-	2.305	0.123	0.043	-	-
HCM Control Delay (s)	25.3	-	-	\$ 802.8	41.6	23.8	-	-
HCM Lane LOS	D	-	-	F	E	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	10.4	0.4	0.1	-	-

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



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	72		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865		0.988			
Flt Protected						0.978
Satd. Flow (prot)	1611	0	1840	0	0	1822
Flt Permitted						0.978
Satd. Flow (perm)	1611	0	1840	0	0	1822
Link Speed (mph)	30		30			30
Link Distance (ft)	795		967			440
Travel Time (s)	18.1		22.0			10.0

**Intersection Summary**

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

13: Gramercy Place/Van Ness Avenue & Project Access 3

10/06/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	43	39	4	13	16
Future Volume (vph)	0	43	39	4	13	16
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	57	52	5	17	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	57	0	0	38
<b>Intersection Summary</b>						

**Intersection**

Int Delay, s/veh 4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	43	39	4	13	16
Future Vol, veh/h	0	43	39	4	13	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	57	52	5	17	21

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	110	55	0
Stage 1	55	-	-
Stage 2	55	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	887	1012	-
Stage 1	968	-	-
Stage 2	968	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	877	1012	-
Mov Cap-2 Maneuver	877	-	-
Stage 1	968	-	-
Stage 2	957	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	3.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1012	1547
HCM Lane V/C Ratio	-	-	0.057	0.011
HCM Control Delay (s)	-	-	8.8	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 14: 195th Street & Project Access 4 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	98		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	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 Factor												
Frt					0.993							0.887
Flt Protected	0.950											0.992
Satd. Flow (prot)	1770	1863	0	1863	1850	0	0	1863	0	0	1639	0
Flt Permitted	0.950											0.992
Satd. Flow (perm)	1770	1863	0	1863	1850	0	0	1863	0	0	1639	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		500			713			827				834
Travel Time (s)		11.4			16.2			18.8				19.0

Intersection Summary

Area Type: Other

Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

14: 195th Street & Project Access 4

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	8	50	0	0	44	2	0	0	0	6	0	29
Future Volume (vph)	8	50	0	0	44	2	0	0	0	6	0	29
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	11	68	0	0	60	3	0	0	0	8	0	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	68	0	0	63	0	0	0	0	0	48	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	8	50	0	0	44	2	0	0	0	6	0	29
Future Vol, veh/h	8	50	0	0	44	2	0	0	0	6	0	29
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	68	0	0	60	3	0	0	0	8	0	40
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	7.8	7.8	0	7
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	17%
Vol Thru, %	100%	0%	100%	100%	96%	0%
Vol Right, %	0%	0%	0%	0%	4%	83%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	8	50	0	46	35
LT Vol	0	8	0	0	0	6
Through Vol	0	0	50	0	44	0
RT Vol	0	0	0	0	2	29
Lane Flow Rate	0	11	68	0	63	48
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.016	0.088	0	0.081	0.051
Departure Headway (Hd)	4.329	5.152	4.651	4.66	4.629	3.819
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	695	770	0	773	944
Service Time	2.331	2.883	2.382	2.395	2.365	1.819
HCM Lane V/C Ratio	0	0.016	0.088	0	0.082	0.051
HCM Control Delay	7.3	8	7.8	7.4	7.8	7
HCM Lane LOS	N	A	A	N	A	A
HCM 95th-tile Q	0	0	0.3	0	0.3	0.2

Lanes and Geometrics TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY  
 15: 195th Street & Project Access 5 10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	102		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.996							0.905
Flt Protected	0.950											0.986
Satd. Flow (prot)	1770	1863	0	0	3525	0	0	1863	0	0	1662	0
Flt Permitted	0.950											0.986
Satd. Flow (perm)	1770	1863	0	0	3525	0	0	1863	0	0	1662	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		713			502			847			825	
Travel Time (s)		16.2			11.4			19.3			18.8	

Intersection Summary

Area Type: Other



Volume

TORRANCE COMMERCE CENTER PHASE 3 TRAFFIC STUDY

15: 195th Street & Project Access 5

10/06/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	60	0	0	58	2	0	0	0	6	0	14
Future Volume (vph)	4	60	0	0	58	2	0	0	0	6	0	14
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	102	0	0	98	3	0	0	0	10	0	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	102	0	0	101	0	0	0	0	0	34	0
Intersection Summary												

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵			↕↕			↕			↕	
Traffic Vol, veh/h	4	60	0	0	58	2	0	0	0	6	0	14
Future Vol, veh/h	4	60	0	0	58	2	0	0	0	6	0	14
Peak Hour Factor	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	102	0	0	98	3	0	0	0	10	0	24
Number of Lanes	1	1	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	8.1	7.7	0	7.2
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	0%	0%	30%
Vol Thru, %	100%	0%	100%	100%	91%	0%
Vol Right, %	0%	0%	0%	0%	9%	70%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	4	60	39	21	20
LT Vol	0	4	0	0	0	6
Through Vol	0	0	60	39	19	0
RT Vol	0	0	0	0	2	14
Lane Flow Rate	0	7	102	66	36	34
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0	0.01	0.131	0.085	0.046	0.038
Departure Headway (Hd)	4.469	5.145	4.644	4.647	4.581	4.071
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	694	770	769	779	885
Service Time	2.47	2.885	2.385	2.388	2.323	2.071
HCM Lane V/C Ratio	0	0.01	0.132	0.086	0.046	0.038
HCM Control Delay	7.5	7.9	8.1	7.8	7.5	7.2
HCM Lane LOS	N	A	A	A	A	A
HCM 95th-tile Q	0	0	0.4	0.3	0.1	0.1