

Trump National Golf Club of Los Angeles
Proposed Twelve Residential Units

Updated Traffic Impact Study

Prepared For

THE TRUMP ORGANIZATION

October 24, 2017

Prepared By



October 24, 2017

Ms. Jill A. Martin
Vice President & Assistant General Counsel – Litigation & Employment
The Trump Organization
c/o Trump National Golf Club of Los Angeles
One Trump National Drive
Rancho Palos Verdes, CA 90275

Re: Updated Traffic Impact Study for Proposed Twelve Residential Units

Dear Ms. Martin,

Pursuant to your request, Albert Grover & Associates (AGA) has conducted this study for the purposes of providing the City of Rancho Palos Verdes with an updated traffic impact study for the proposed 12 residential units (located on the north side of the Trump National Golf Course property in the City of Rancho Palos Verdes, see **Figure 1**) that have previously been approved, and for which you have a vested right to develop in accordance with the tentative tract map. As part of the project and in accordance with the vested right, a new T-intersection off of Palos Verdes South Parkway will be constructed. The name of the new street is Costa De La Islas. As depicted in the approved tentative tract map, this intersection will be the only access in and out of the project and only accessible for the 12 residential units. The layout of the intersection is shown in **Figure 2**. The purpose of this traffic impact analysis is to evaluate any traffic impacts due to the project and to evaluate the operation of the new intersection.



Figure 1. Project Location

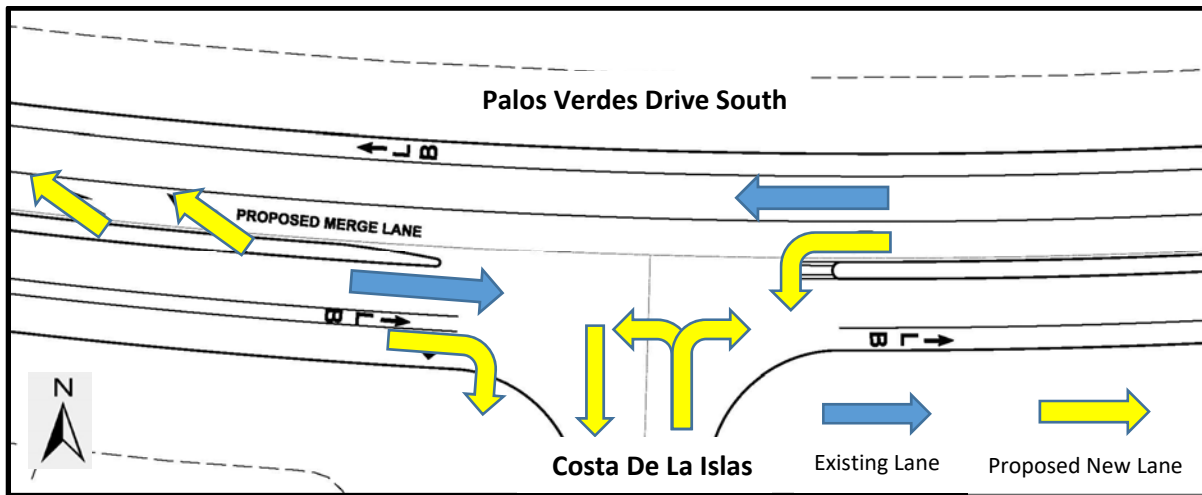


Figure 2. Proposed Intersection Layout

Based on the proposed intersection layout, there will be one new westbound left turn lane and one eastbound right turn lane, along with a merge lane (north-to-west movement) constructed by reducing the center median and one shared northbound left/right turn lane out of the project and one southbound lane entering the project.

There will be a separate project involving eleven single family residential units built on the property just southeast of this project. However, the access to those units will be from Trump National Drive and not Costa De La Islas.

Trip Generation

The project trips (trip generation) for the proposed residential development were determined based on trip rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual – 9th Edition. The trip generation analysis evaluated trips for the weekday AM/PM peak hours and Saturday peak hour. The project trip generation, summarized below in **Table 1**, shows that the proposed project will generate 9 AM peak hour trips, 12 PM peak hour trips, and 114 daily trips during a typical weekday. For a typical Saturday, the proposed project is expected to generate 11 peak hour trips and 119 daily trips. As expected for a project of this size, the number of project trips is not considered significant; therefore, the analysis will only be confined to the intersection of Palos Verdes Drive South/Costa De La Islas.

Table 1. Project Trip Generation								
Weekday								
ITE ¹ Code 210: Single Family Detached Housing	Quantity ²	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Rates	12 DU	9.520	0.188	0.563	0.75	0.630	0.370	1.00
Total Trips		114	2	7	9	8	4	12
Saturday								
ITE ¹ Code 210: Single Family Detached Housing	Quantity ²	Daily	Peak Hour					
			In	Out	Total			
Trip Rates	12 DU	9.910	0.502	0.428	0.93			
Total Trips		119	6	5	11			

Note: ¹ Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 9th Edition.

² DU - Dwelling Units

Trip Distribution

The trip distribution was based on existing east/west traffic patterns outlined in the 2017 General Plan Update report. The peak hour project trips are shown in **Figure 3**.

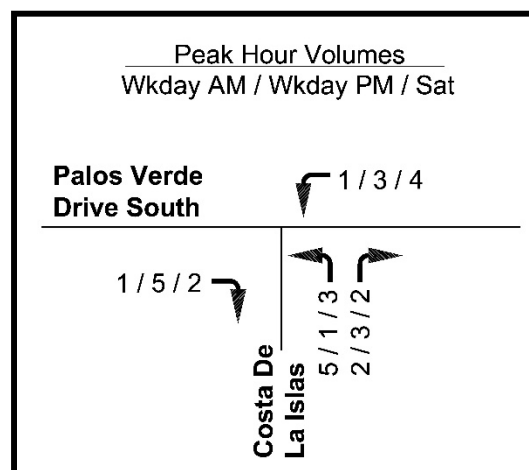


Figure 3. Peak Hour Project Trips

Level-of-Service (LOS) Methodology

Based on the peak hour traffic signal warrant guidelines (see **Attachment A**) from the 2014 California Manual on Traffic Control Devices (CA MUTCD), the number of peak hour project trips (9 AM trips, 12 PM trips and 11 Sat trips) is well below the threshold of 100 vehicles per hour to warrant a traffic signal. Therefore, the intersection level-of-service analyses evaluated the intersection as an unsignalized intersection with stop control for Costa De La Islas. The Highway Capacity Manual (HCM) unsignalized methodology for two-way stop controlled study intersections uses a LOS scale similar to a signalized intersection, but the values reflect the highest vehicle LOS and average per vehicle delay for the minor (side-street) approach. Similar to the 2017 General Plan Update report, the intersection LOS was analyzed using the Synchro software program (HCM) for a two-way stop controlled intersection. The LOS criteria for unsignalized intersections using control delay per vehicle is shown below:

LOS A →	≤ 10.0 seconds	LOS D →	> 25.0 and ≤ 35.0 seconds
LOS B →	> 10.0 and ≤ 15.0 seconds	LOS E →	> 35.0 and ≤ 50.0 seconds
LOS C →	> 15.0 and ≤ 25.0 seconds	LOS F →	> 50.0 seconds

For the roadway segment analyses, the LOS was evaluated based on the daily traffic volumes (v, volumes) and the maximum roadway capacity (c, capacity) for a 2-Lane divided arterial. Based on the 2017 General Plan Update report, the capacity for this area (2-lane divided arterial) is 17,900 vehicles per day (see **Attachment B**). The threshold volume-to-capacity (v/c) ratios to determine the Level-of-Service for the roadway segment analyses are shown below:

LOS A →	0 – 0.60	LOS D →	0.81 – 0.90
LOS B →	0.61 – 0.70	LOS E →	0.91 – 1.00
LOS C →	0.71 – 0.80	LOS F →	> 1.00

The LOS threshold for both the intersection and roadway segment analyses is LOS D. Generally, improvements are only necessary if an intersection and/or roadway segment operates at a LOS E or F due to the added project traffic.

Study Scenarios

Since there is no existing establishment on the project site and also no existing intersection, all scenarios for the intersection LOS analyzed only the “with Project” conditions. For the

intersection LOS, the weekday AM and PM peak hours and midday Saturday peak hour conditions were evaluated. For a conservative intersection LOS analysis, the merge lane was not included. For the roadway segment LOS, both “without Project” and “with Project” scenarios were evaluated. In accordance with the 2017 General Plan Update, the roadway segment was evaluated for weekday traffic conditions. This study analyzed the following scenarios:

Intersection LOS Analyses Scenarios

- Existing Traffic (Year 2017) with Project
- Opening Day (Year 2022) with Project
- General Plan Build Out (Year 2040) with Project

Roadway Segment LOS Analyses Scenarios (Weekday Only)

- Existing Traffic (Year 2017) without Project and with Project
- Opening Day (Year 2022) without Project and with Project
- General Plan Build Out (Year 2040) without Project and with Project

Traffic Volume Data

Traffic volume data from the 2017 General Plan Update was utilized for this project study. For the peak hour intersection analyses, the east/west through volumes at the study intersection were derived from the approach/departure peak hour volumes from the intersection of Palos Verdes Drive South/Forrestal Drive-Trump National Drive. For the roadway segment analysis, the 2017 General Plan Update evaluated the area on Palos Verdes Drive South between Narcissa Drive and Palos Verdes Drive East. The traffic volume data for this segment was used in analyzing the added daily project traffic. **Attachment C** shows the traffic volume data from the 2017 General Plan Update report as well as the peak hour volume calculations for all study scenarios.

Existing Traffic (Year 2017)

The traffic counts conducted for the 2017 General Plan Update were completed in 2016, therefore a one percent growth factor was applied to the traffic counts to determine the Year 2017 traffic volumes. **Figure 4** shows the Year 2017 peak hour traffic volumes for the project intersection.

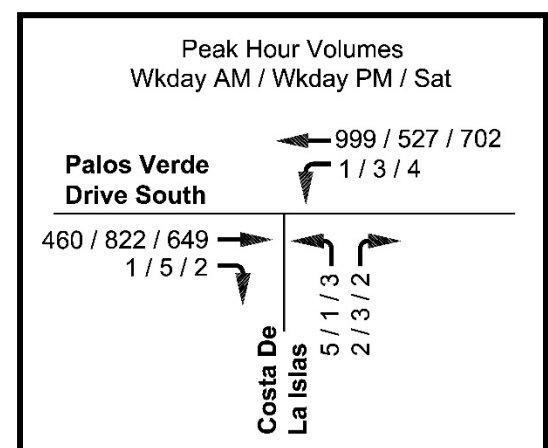


Figure 4. Year 2017
Peak Hour Volumes with Project

Based on the Synchro HCM LOS for an unsignalized intersection, the study intersection is expected to operate at LOS D or better for existing traffic conditions, Year 2017. The roadway segment LOS analysis was also evaluated. Based on that analysis, the LOS for the roadway segment is LOS D both with and without. The project is expected to increase the daily traffic only by 0.7% (114 veh/15,330 veh). **Table 2** provides a summary of the intersection and roadway segment LOS analyses.

**Table 2. Existing Traffic (Year 2017)
Level of Service (LOS) Summary**

Intersection Analysis With Project Scenario						
Location	Weekday				Saturday	
	AM Peak Hour		PM Peak Hour		Peak Hour	
	Delay ¹	LOS ³	Delay ¹	LOS ³	Delay ¹	LOS ³
Palos Verdes Drive South/ Costa De La Islas ⁴	27.7	D	18.8	C	23.2	C

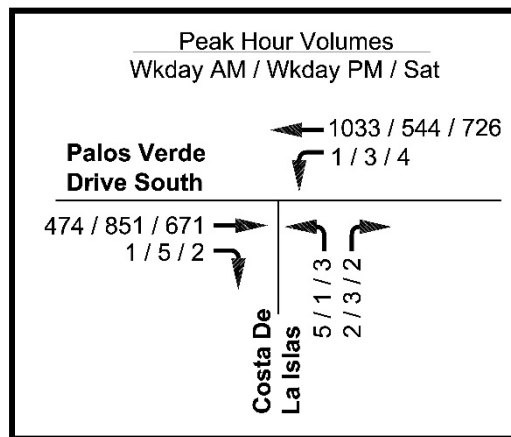
Roadway Segment Analysis - Palos Verdes Drive South (Two Lane Divided Arterial, LOS E Capacity = 17,900 veh/day)							
Between Narcissa Drive and Palos Verdes Drive East	Without Project			With Project			
	Daily Vol ⁵	V/C ²	LOS	Project Daily	Total Daily	V/C ²	LOS
Weekday	15,330	0.856	D	114	15,444	0.863	D

Note 1. Delay in seconds.
2. V/C: Volume-to-Capacity Ratio
3. LOS: Level of Service
4. Unsignalized Intersection; LOS reflects the highest vehicle delay for minor approach (side-street)
5. The daily roadway segment volume was obtained from the General Plan Update Report. The volume was increased by 1% to account for 2017 conditions.

Opening Day (Year 2022)

For the Opening Day (Year 2022) with Project Scenario, a growth factor was of 3% was applied to the base 2017 General Plan Update volumes. This represents a 0.5% annual growth rate over six years (Year 2016 to Year 2022). The 2017 General Plan Update report utilized a 6.8% growth from Year 2016 to Year 2040. That represents approximately a 0.28% annual growth rate. Therefore, the 0.5% growth rate can be considered a conservative value for this area and within the range of the 2017 General Plan Update report. For

background projects within the study intersection, it was assumed that the other 11 residential units would be built around this time. **Attachment D** provides the trip generation for the proposed 11 residential units. **Figure 5** shows the Year 2022 peak hour traffic volumes for the study intersection.



**Figure 5. Year 2022
Peak Hour Volumes with Project**

Based on the Synchro HCM LOS, the study intersection is expected to operate at LOS D or better for Opening Day, Year 2022 conditions. The LOS for the roadway segment is expected to be LOS D both with and without the project. Similar to Year 2017 conditions, the project is also expected to increase the daily traffic only by 0.7% (114 veh/15,738 veh). **Table 3** provides a summary of the intersection and roadway segment LOS analyses.

**Table 3. Opening Day (Year 2022)
Level of Service (LOS) Summary**

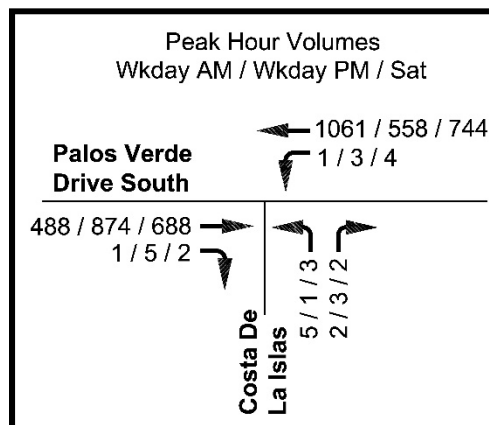
Intersection Analysis With Project Scenario						
Location	Weekday				Saturday	
	AM Peak Hour		PM Peak Hour		Peak Hour	
	Delay ¹	LOS ³	Delay ¹	LOS ³	Delay ¹	LOS ³
Palos Verdes Drive South/ Costa De La Islas ⁴	29.4	D	19.6	C	24.4	C

Roadway Segment Analysis - Palos Verdes Drive South (Two Lane Divided Arterial, LOS E Capacity = 17,900 veh/day)							
Between Narcissa Drive and Palos Verdes Drive East	Without Project			With Project			
	Daily Vol ⁵	V/C ²	LOS	Project Daily	Total Daily	V/C ²	LOS
Weekday	15,738	0.879	D	114	15,852	0.886	D

Note 1. Delay in seconds.
2. V/C: Volume-to-Capacity Ratio
3. LOS: Level of Service
4. Unsignalized Intersection; LOS reflects the highest vehicle delay for minor approach (side-street)
5. The daily roadway segment volume was obtained from the General Plan Update Report. The volume was increased by 3% to account for 2022 conditions. The volume also includes the daily volume from the 11 residential unit project (105 veh).

General Plan Build Out (Year 2040)

For the General Plan Build Out (Year 2040) scenario, traffic volumes from the 2017 General Plan Update report were utilized. **Figure 6** shows the Year 2040 peak hour traffic volumes for the study intersection.



**Figure 6. Year 2040
Peak Hour Volumes with Project**

Based on the Synchro HCM LOS, the study intersection is expected to operate at LOS D or better for General Plan Build Out (Year 2040) conditions. The LOS for the roadway segment is expected to be LOS E both with and without the project. Although the roadway segment is LOS E, there is minimal impact due to the project. The project will not significantly impact this roadway segment since it is expected to increase the daily traffic only by 0.7% (114 veh/16,302 veh) and increase the v/c ratio by only 0.006 (0.911 to 0.917). The 2017 General Plan Update report evaluated improvements for Palos Verde Drive South, within this study area for the Build Out Year 2040. The proposed improvement is to provide an additional through lane for both the east/west directions. With the additional lanes, the new roadway capacity increases from 17,900 vehicles per day to 36,100 vehicles per day and the LOS improves to LOS A. However, as stated in the 2017 General Plan Update report, this improvement may not be feasible since the bicycle lanes would need to be removed to accommodate the additional lanes. **Table 4** provides a summary of the intersection and roadway segment LOS analyses. The Synchro HCM LOS worksheets for all scenarios are provided in **Attachment E**.

**Table 4. General Plan Build Out (Year 2040)
Level of Service (LOS) Summary**

Intersection Analysis With Project Scenario						
Location	Weekday				Saturday	
	AM Peak Hour		PM Peak Hour		Peak Hour	
	Delay ¹	LOS ³	Delay ¹	LOS ³	Delay ¹	LOS ³
Palos Verdes Drive South/ Costa De La Islas ⁴	31.0	D	20.3	C	25.4	D

Roadway Segment Analysis - Palos Verdes Drive South (Two Lane Divided Arterial, LOS E Capacity = 17,900 veh/day)							
Between Narcissa Drive and Palos Verdes Drive East	Without Project			With Project			
	Daily Vol ⁵	V/C ²	LOS	Project Daily	Total Daily Vol	V/C ²	LOS
Weekday	16,302	0.911	E	114	16,416	0.917	E
With Proposed General Plan Improvements, Four Lane Arterial (Capacity = 36,100)	16,302	0.452	A	114	16,416	0.455	A

- Notes:** 1. Delay in seconds.
2. V/C: Volume-to-Capacity Ratio
3. LOS: Level of Service
4. Unsignalized Intersection; LOS reflects the highest vehicle delay for minor approach (side-street)
5. The daily roadway segment volume includes volume data from the General Plan Update Report. City Build out (16,197 veh) plus the daily volume of the 11 residential unit project (105 veh).

Palos Verdes Drive South/Costa De La Islas Intersection Evaluation

Queuing Analysis for the Westbound Left Turn Lane

Included in the LOS analyses was the queuing analysis (95th % queue) for the westbound left turn lane to determine if the proposed layout provides adequate storage. The Build Out Year 2040 report did not show a queue for the westbound left turn lane for any of the peak hours. Based on engineering judgement, even though the westbound left turn demand is expected to be low, it is expected at times that there will be vehicles queued in the left turn lane. The proposed layout shows the left turn storage at 150 feet in length, which should be able to accommodate six to seven passenger vehicles. The storage should be adequate due to the low number of project trips and that there should be adequate gaps of traffic in the opposing eastbound lane.

Project Intersection – Collisions and Sight Distance Analysis

The City requested that collisions at the proposed intersection be evaluated. Collision data (reported incidents) from the City was obtained from Year 2013 to the present day. Based on the information, there was one collision on Palos Verdes Drive South, between Schooner Drive and the proposed intersection. The incident occurred in August 2014 and involved a bicyclist (rear end) heading eastbound on Palos Verdes Drive South. Right angle collisions (broadside) at the adjacent intersections to the proposed intersection were also evaluated. Based on the data provided, the highest number of right angle collisions for a single year were two collisions at the intersection of Palos Verdes Drive South/Conqueror Drive. Those two incidents occurred in 2016. All right angle collisions for the adjacent intersections since 2013 are provided in **Table 5** and all collision data evaluated is provided in **Attachment F**. A sight distance analysis was conducted at the project intersection to determine if adequate sight distance is available for both ingress and egress movements at the proposed intersection.

A sight distance analysis was conducted for the left turns at the proposed intersection. The analysis evaluated the corner sight distance of the traffic exiting Costa De La Islas as well as sight distance for the westbound left turn movement from Palos Verde Drive South into Costa De La Islas. The sight distance for both movements is based on line of sight determination as a function of geometrics and vehicle speed. Although the speed limit on Palos Verdes Drive South is 40 mph, a speed of 45 mph was used in the analyses to provide a more conservative approach.

For the corner sight distance analysis, a motorist waiting to turn left from Costa De La Islas should be able to see oncoming vehicles along Palos Verdes Drive South to safely maneuver the

turn. Guidelines from the Caltrans Highway Design Manual were utilized for this analysis. Per the Caltrans Highway Design Manual, a corner sight distance of 495 feet is required for an approach speed of 45 mph. The corner sight distance was evaluated for a vehicle exiting left from Costa De La Islas and looking at both the eastbound and westbound approaches on Palos Verdes Drive South. This is a conservative analysis since the corner sight distance for the westbound approach is not required due to the proposed merge lane for the northbound left turn onto Palos Verdes Drive South. **Figures 7A and 7B** show the corner sight distance evaluation. Based on those figures, there is adequate corner sight distance for a vehicle exiting Costa De La Islas as long as no large obstructions (signs, monuments and/or landscaping) are placed within the line of sight.

Table 5. Broadside Collisions (2013 - 2017)

Location	Date	Directions	Description
Year 2013			
Palos Verdes Drive South at Conqueror Drive	6/9/2013	SB Left Turn and WB Thru	Failed to yield at stop sign
Year 2014			
Palos Verdes Drive South at Conqueror Drive	7/13/2014	SB Left Turn and WB Thru	Failed to yield at stop sign
Palos Verdes Drive South at Trump National	9/19/2014	NB Left Turn and EB Thru	Failure to yield to oncoming traffic
Year 2015			
Palos Verdes Drive South at Schooner Drive	1/22/2015	WB Thru and SB Thru	Failed to yield at stop sign
Year 2016			
Palos Verdes Drive South at Forrestal Drive	1/20/2016	NB Left Turn and EB Thru	Failure to yield to oncoming traffic
Palos Verdes Drive South at Conqueror Drive	5/16/2016	SB Left Turn and WB Thru	Failure to yield to oncoming traffic
Palos Verdes Drive South at Conqueror Drive	10/26/2016	SB Left Turn and WB Thru	Failure to yield to oncoming traffic
Year 2017			
None reported as of September 2017			

Collision data was provided by the City of Rancho Palos Verdes. A list of all collisions are provided in **Attachment F**.

For the westbound left turn, a vehicle turning from Palos Verdes Drive South should be able to see oncoming eastbound vehicles and safely make the turn. The sight distance analysis for this movement was based on the American Association of State Highway and Transportation Officials (AASHTO) "A Policy on Geometric Design of Highways and Streets". Based on the AASHTO calculation for sight distance (Case F-Left Turns from the Major Road), the intersection sight distance (based on gap timing) for a passenger car traveling at 45 mph is 365 feet. **Figure 8** shows the sight distance evaluation for the proposed westbound left turn. Based on the figure, there is adequate sight distance for the westbound left turn as long as no large obstructions (signs, monuments and/or landscaping) are placed in the median island that interferes with the sight distance.

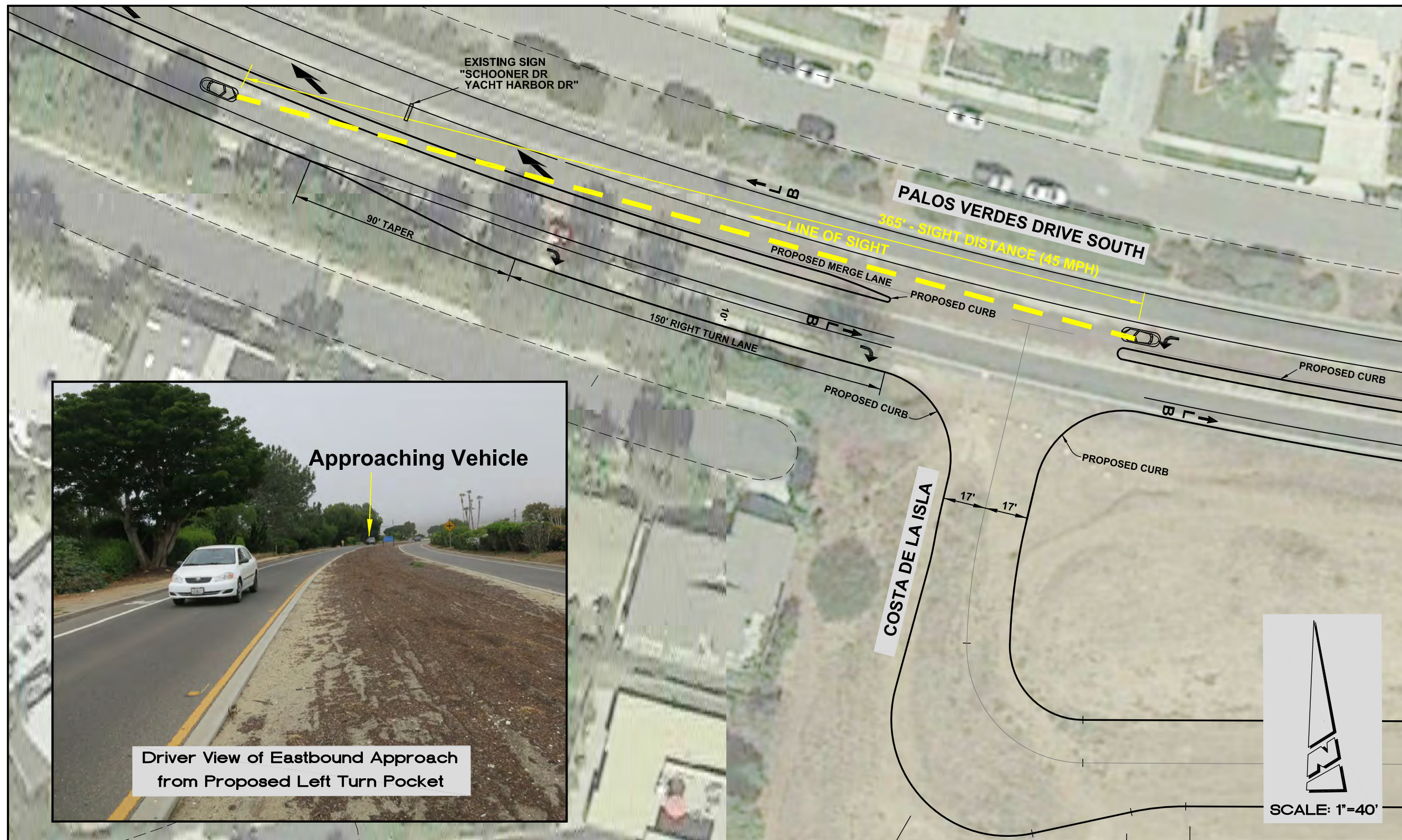
For the study intersection, there will be new street name signs required and other signs in the median may need to be relocated. It is advisable that all signs should be placed outside of the line of sight for both the corner sight distance and westbound left turn sight distance analyses.



*Driver perspective evaluated 10' from curb line extension (24' from traveled way)

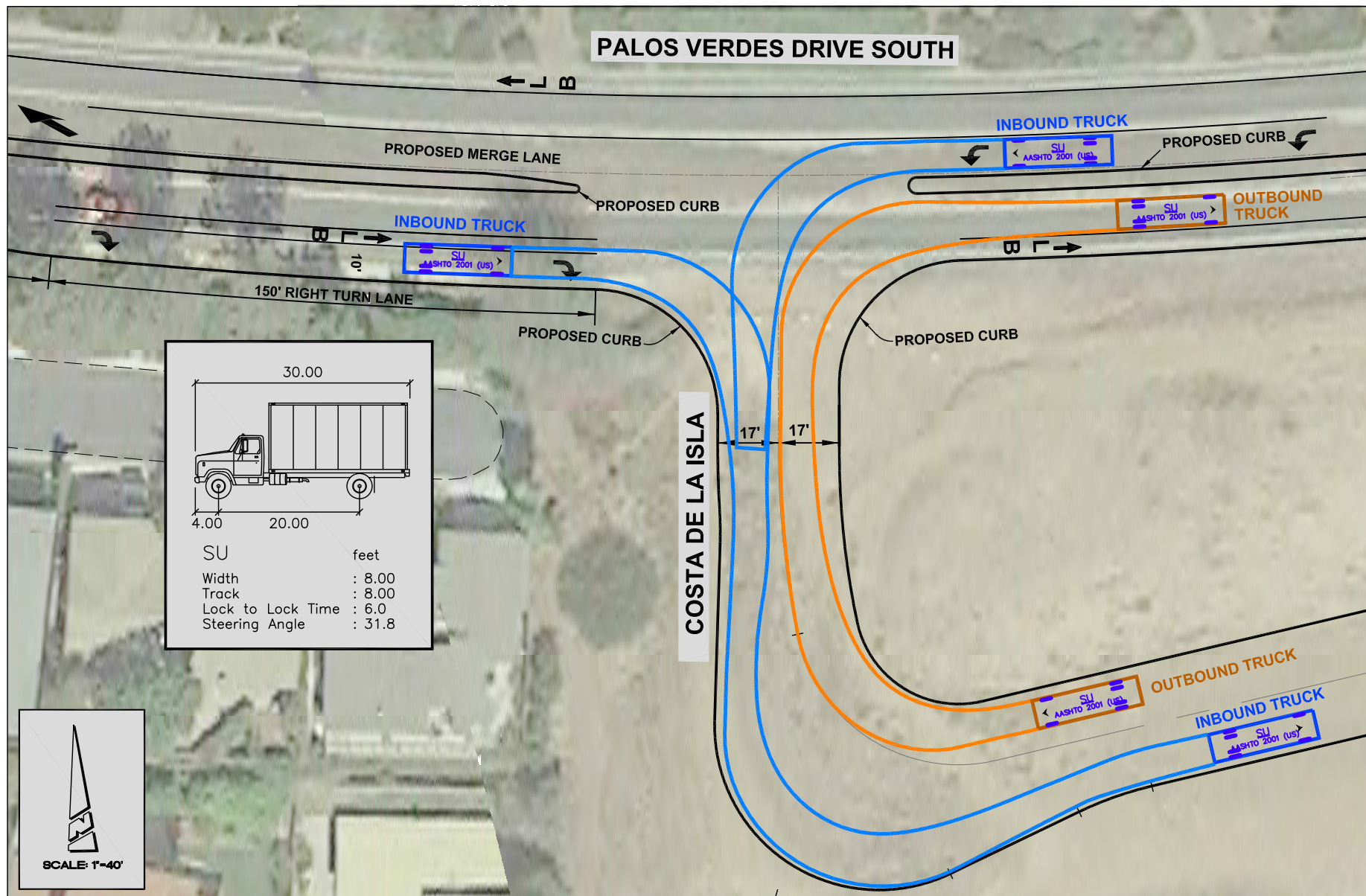


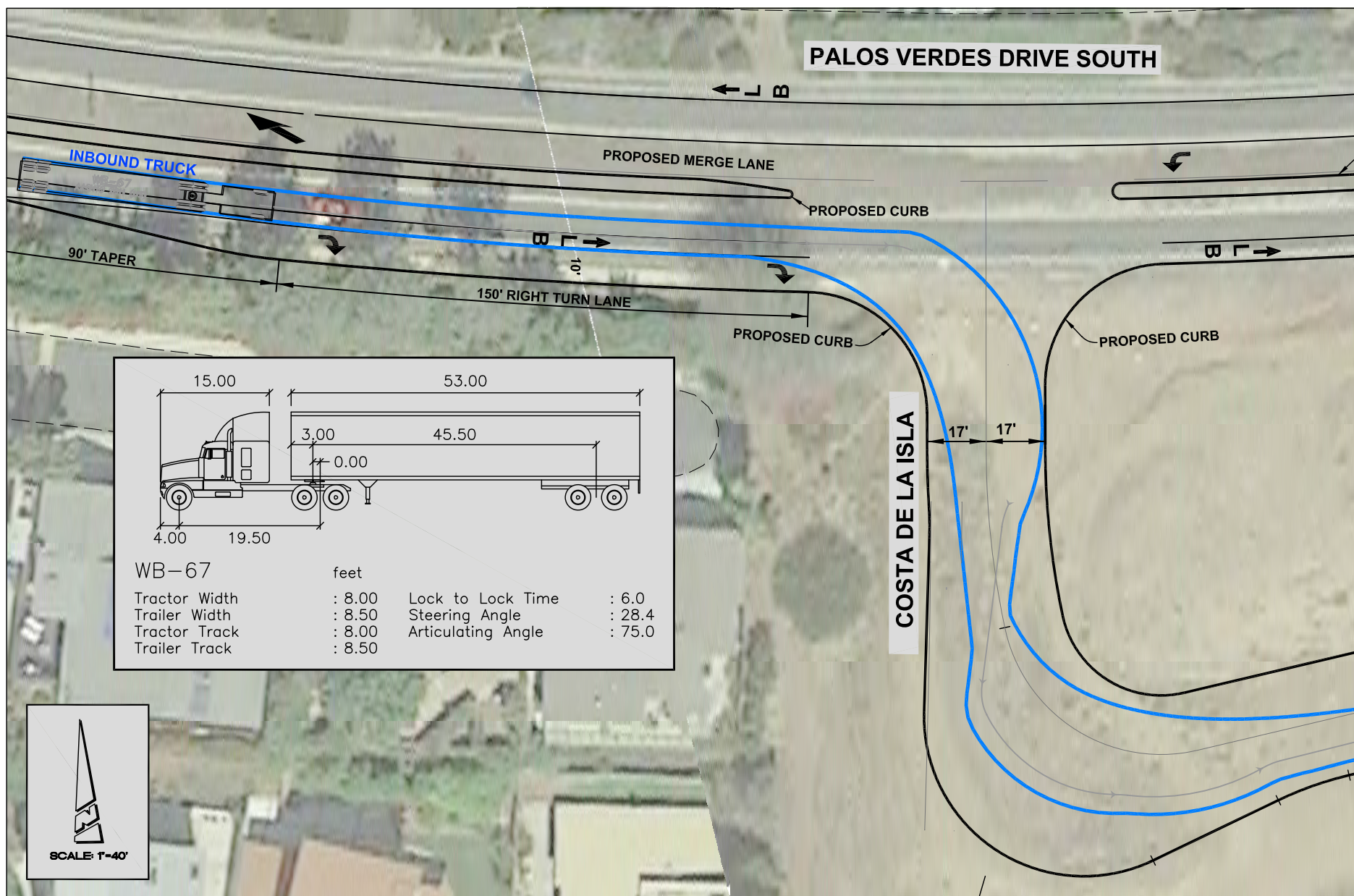
*Driver perspective evaluated 10' from curb line extension (24' from traveled way)

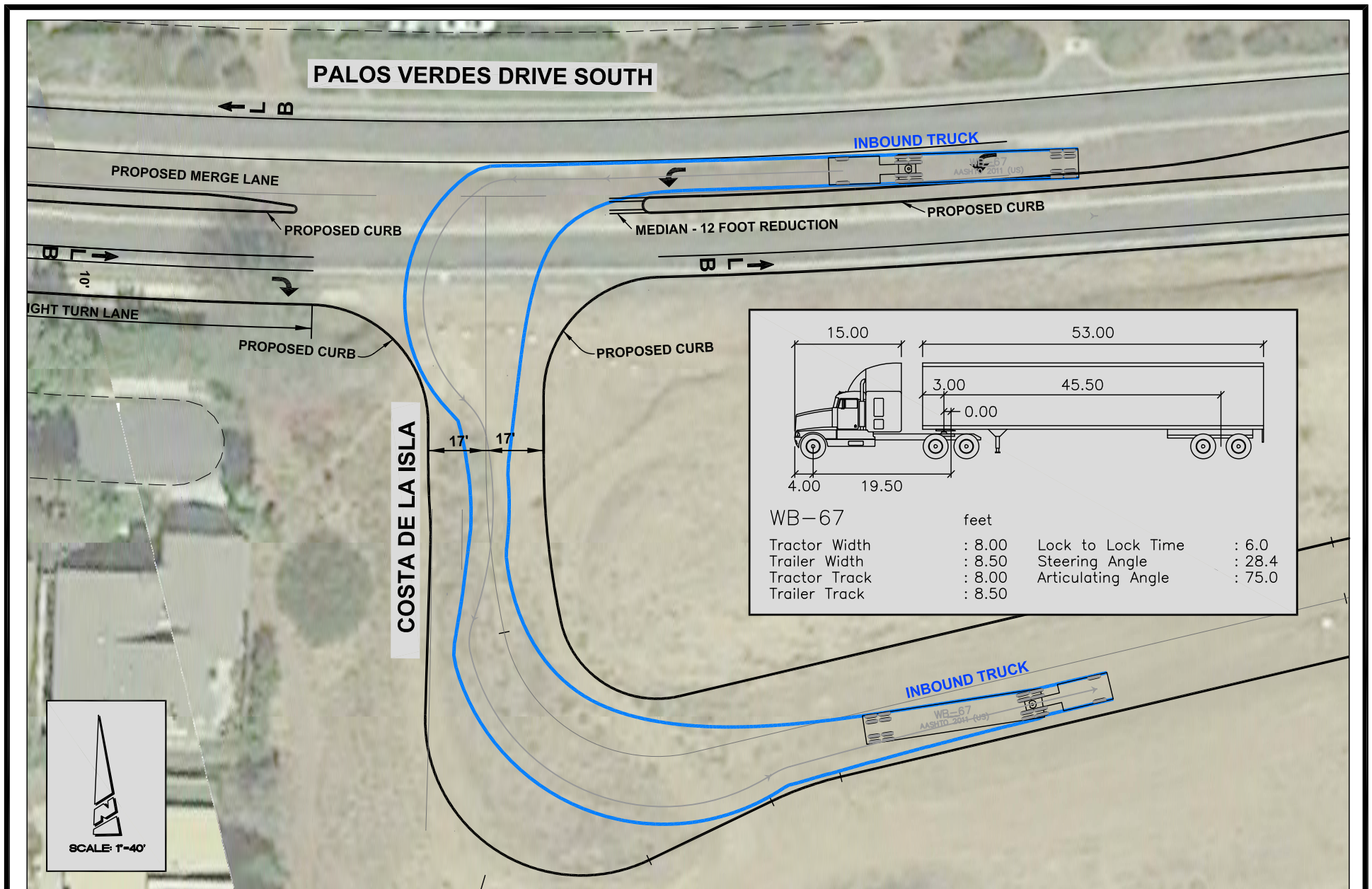


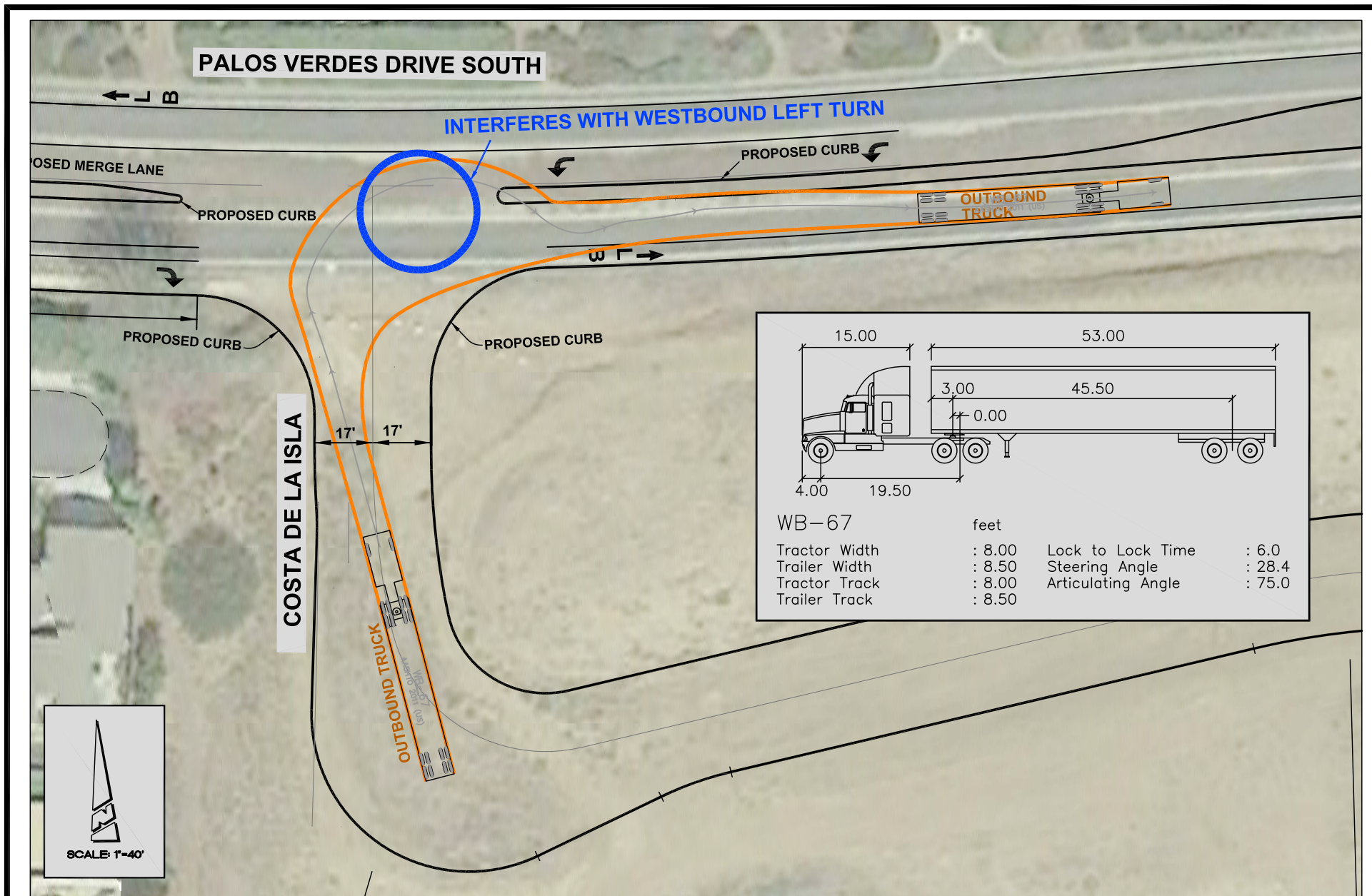
Truck Turning Template Evaluation

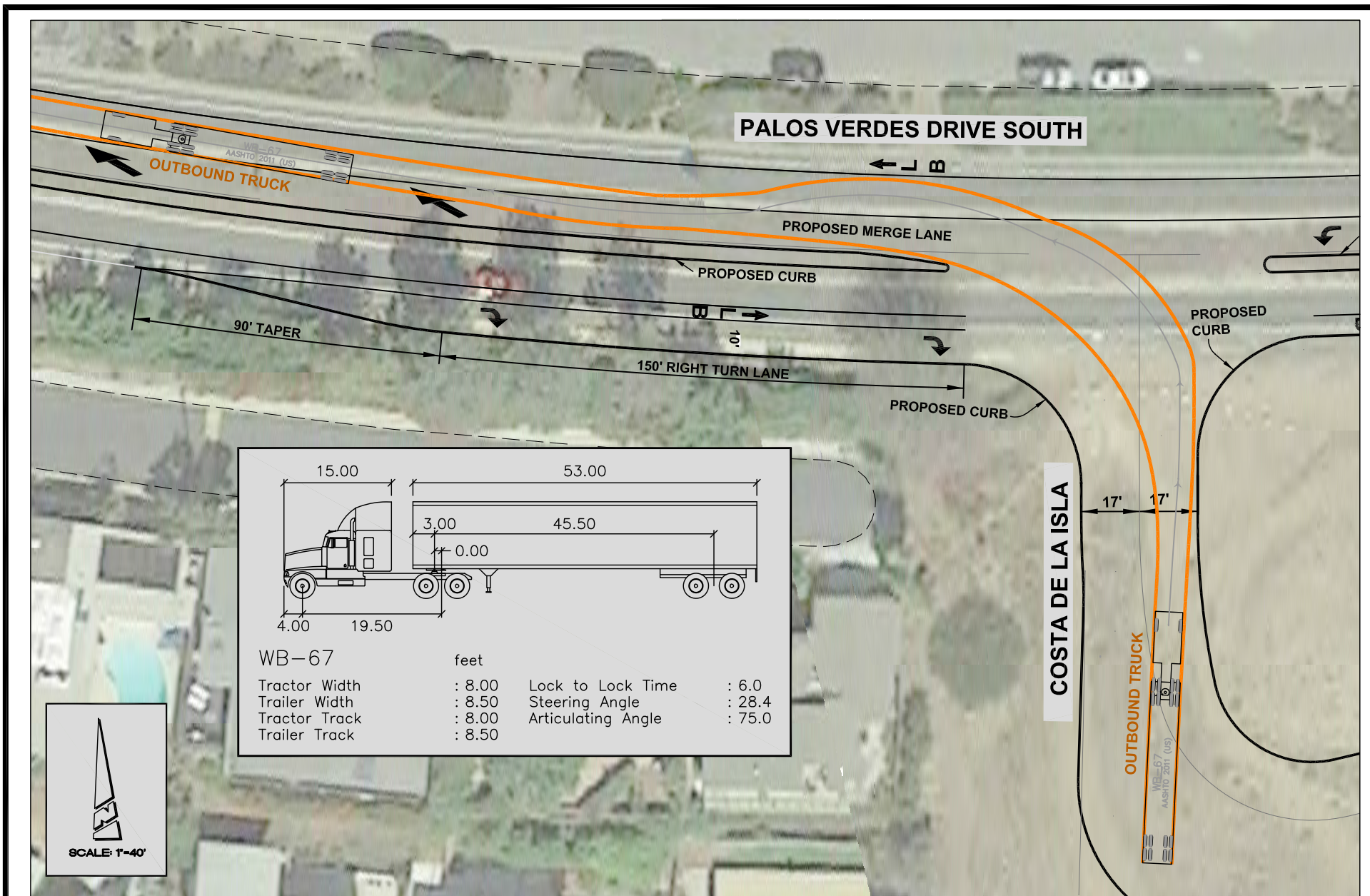
A truck turning template for a small size truck (30 foot truck similar to a trash truck or typical FedEx/UPS delivery truck) was evaluated for the ingress and egress movements. The ingress movement assumed a tight turn into Costa De La Islas and the egress movement assumed a wide right turn out of the street (see **Figure 9**). Based on the figure, the proposed layout should be able to accommodate a 30 foot truck inbound and outbound without affecting the other vehicular movements. A larger moving truck (WB-67, 73 foot) was also evaluated (see **Figures 10A-10D**). It is expected that these trucks will be used less frequent, mainly for residents moving in and out and/or delivery of large items. Based on the turning templates, in order for a large truck of this size to enter from the westbound left turn lane, the proposed median should be reduced by 12 feet. For large trucks exiting the intersection, the trucks will have difficulty in exiting right out. Therefore, it is recommended to either have large trucks exit only left (north to west) onto Palos Verdes Drive South, or widen the proposed intersection and install a right turn lane. If such a larger sized truck is utilized, a City permit will be required. The access to the project, along with the new street layout/design, is still subject to the review by the police and fire departments. The street improvement plan for the project is provided in **Attachment G**.











Conclusions

Based on an engineering analysis of the traffic volume data, Synchro HCM LOS analyses and the proposed intersection layout plan, the following conclusions can be drawn:

- The project intersection is expected to operate at an acceptable level-of-service (LOS) for existing traffic conditions, Year 2022 and in Year 2040.
- The segment roadway is expected to operate at an acceptable LOS for existing traffic conditions and in Year 2022. The segment roadway is expected to operate at LOS E in Year 2040 both with and without the project. The project is expected to only increase the daily trips on Palos Verdes Drive South by less than one percent (0.7%). According to the 2017 General Plan Update report, a four lane arterial is required in Year 2040 and will improve the segment roadway from a LOS E to LOS A. However, as stated in the 2017 General Plan Update report, the improvement to a four lane arterial may not be feasible as it will require the removal of the bicycle lanes.
- The queuing analysis for the westbound left turn lane revealed that the proposed intersection layout plan provides adequate vehicle storage.
- Based on collision data (reported incidents) from the City, there has been one accident near the proposed intersection in the past four years. There is adequate sight distance for vehicles exiting Costa De La Islas and for westbound vehicles turning left into the proposed street. It is recommended that no large obstructions (signs, monuments and/or landscaping) be placed within the line of sight of the turning movements.
- The proposed intersection layout and configuration allows enough room for a trash truck/small delivery truck to enter and exit without affecting other movements. For larger sized trucks (WB-67) entering and exiting the intersection, those trucks will have difficulty in turning right out (exiting) of the proposed intersection. Therefore, the larger sized trucks should be required to exit left only or the project should provide a northbound right turn lane. If a larger sized truck is utilized, a permit from the City will be required. The access to the project, along with the new street layout/design, is still subject to the review by the police and fire departments.

Ms. Jill A. Martin
October 24, 2017
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If you have any questions regarding this report, please do not hesitate to contact us at (714) 992-2990.

Respectfully submitted,

ALBERT GROVER & ASSOCIATES

A handwritten signature in black ink, appearing to read 'Greg Wong', with a stylized flourish at the end.

Greg Wong, P.E.

Senior Transportation Engineer

Attachments

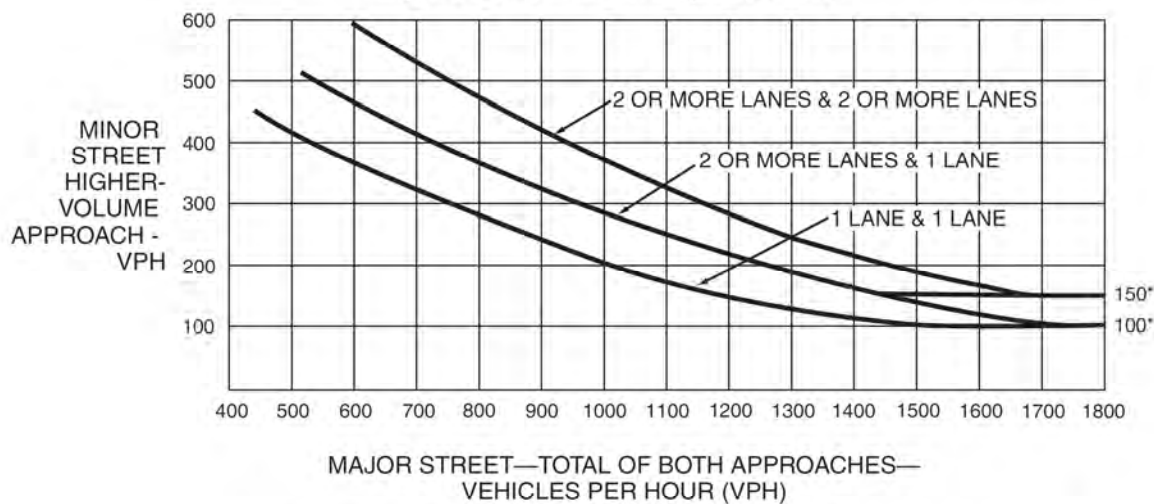
LIST OF ATTACHMENTS

- Attachment A** California Manual on Traffic Control Devices (CA MUTCD) 2014, Traffic Signal Warrant
- Attachment B** General Plan Update Report – Roadway Segment Capacities
- Attachment C** General Plan Update Report - Traffic Volumes
- Synchro HCM Worksheets
 - Volume Calculations for Project Driveway
 - Roadway Segment Volumes
- Attachment D** Project Trip Generation for the 11 Residential Units
- Attachment E** Level of Service Worksheets
- Existing Traffic Conditions (Year 2017)
 - Opening Day (Year 2022)
 - Build Out (Year 2040)
- Attachment F** Collision Data on Palos Verdes Drive South
- Schooner Drive – Forrestal Drive, Years 2013-2017
- Attachment G** Palos Verdes Drive South - Roadway Improvement Plan

Attachment A Includes:

- California Manual on Traffic Control Devices (CA MUTCD) 2014
 - Traffic Signal Warrant - Peak Hour Warrant

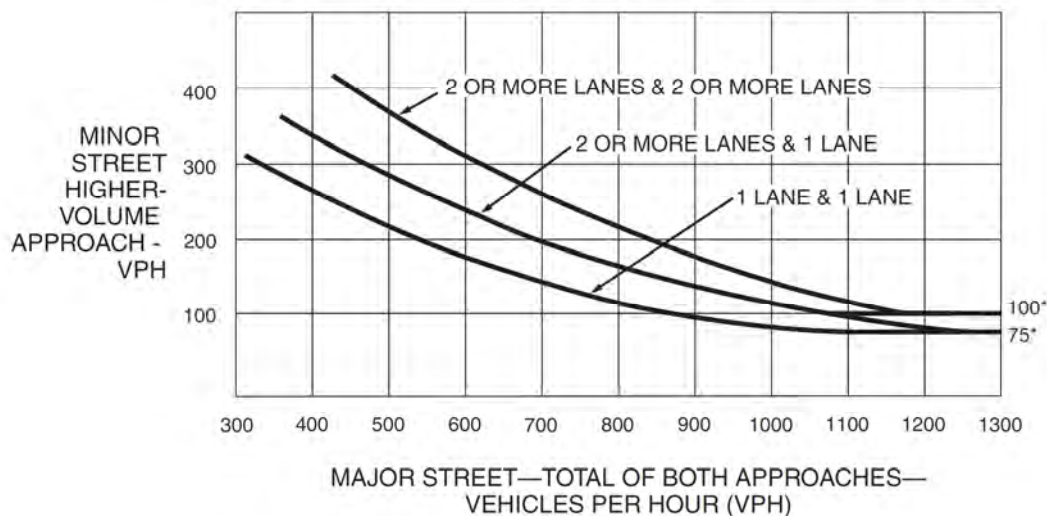
Figure 4C-3. Warrant 3, Peak Hour



*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.

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

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*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.

Attachment B Includes:

- General Plan Update Report
 - Section 2.2, Table B: Roadway Segment Capacities

D	This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	> 25 and ≤ 35	> 35 and ≤ 55	0.81-0.90
E	This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	> 35 and ≤ 50	> 55 and ≤ 80	0.91-1.00
F	This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	> 50	> 80	> 1.0

Source: *Highway Capacity Manual, 2016/2010 LA County CMP*

2.2 Roadway Segment Levels of Service

The analysis of traffic operations on roadway segments was conducted by comparing the daily traffic volumes to the maximum roadway capacity of each facility type. The maximum roadway capacity is a measure of a street's ability to meet the vehicular demand that is placed on it. Table B identifies the maximum daily capacity values for each roadway type. These daily capacities were developed consistent with HCM *Chapter 16, Urban Street Facilities*, which provides a methodology for developing generalized daily service volumes based on daily volumes and applying k-factors (proportion of daily volume that occurs during the peak hour) and d-factors (proportion of traffic moving in peak direction of travel). The v/c ratios listed in Table A represent the level of service criteria for roadway segments.

Table B: Roadway Segment Capacities

Classification	Maximum Two-Way Daily Traffic Volume (LOS E)
4-Lane Divided Arterial	36,100
2-Lane Divided Arterial	17,900
2-Lane Undivided Arterial	17,000
4-Lane Undivided Collector	34,300
2-Lane Divided Collector	17,900

2.3 Levels of Service Thresholds

The CMP standard level of service for intersections is LOS E. However, local jurisdictions are allowed to use a stricter LOS standard. The City uses LOS D as the minimum level of service standard for roadway segment and



Attachment C Includes:

- General Plan Update Report Traffic Volumes
 - Synchro HCM Worksheets for Palos Verdes Drive South/Forrestal Dr-Trump National Dr
 - Volume Calculations for Project Driveway
 - Year 2017, 2022 & 2040
 - Roadway Segment Volumes for Palos Verdes Drive, between Narcissa Dr and Palos Verdes Drive East

➤ General Plan Update Report Traffic Volumes

- Synchro HCM Worksheets for Palos Verdes Drive South/Forrestal Dr-Trump National Dr
- Volume Calculations for Project Driveway
 - Year 2017, 2022 & 2040

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	441	4	24	936	40	6	0	14	45	1	24
Future Vol, veh/h	11	441	4	24	936	40	6	0	14	45	1	24
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	150	-	150	200	-	200	60	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	12	464	4	25	985	42	6	0	15	47	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1027	0	0	468	0	0	1557	1565	464	1533	1527	985
Stage 1	-	-	-	-	-	-	488	488	-	1035	1035	-
Stage 2	-	-	-	-	-	-	1069	1077	-	498	492	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	684	-	-	1104	-	-	93	113	602	96	119	304
Stage 1	-	-	-	-	-	-	565	553	-	282	312	-
Stage 2	-	-	-	-	-	-	270	298	-	558	551	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	684	-	-	1104	-	-	82	108	602	91	114	304
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	108	-	91	114	-
Stage 1	-	-	-	-	-	-	555	543	-	277	305	-
Stage 2	-	-	-	-	-	-	241	291	-	535	541	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	23.5	59
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	82	602	684	-	-	1104	-	-	91	285
HCM Lane V/C Ratio	0.077	0.024	0.017	-	-	0.023	-	-	0.521	0.092
HCM Control Delay (s)	52.5	11.1	10.4	-	-	8.3	-	-	81.3	18.9
HCM Lane LOS	F	B	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.2	0.1	0.1	-	-	0.1	-	-	2.3	0.3

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	774	4	21	454	41	14	2	34	44	0	27
Future Vol, veh/h	36	774	4	21	454	41	14	2	34	44	0	27
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	150	-	150	200	-	200	60	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	38	815	4	22	478	43	15	2	36	46	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	521	0	0	819	0	0	1449	1456	815	1434	1417	478
Stage 1	-	-	-	-	-	-	891	891	-	522	522	-
Stage 2	-	-	-	-	-	-	558	565	-	912	895	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1056	-	-	818	-	-	110	131	381	113	138	591
Stage 1	-	-	-	-	-	-	340	363	-	542	534	-
Stage 2	-	-	-	-	-	-	518	511	-	331	362	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1056	-	-	818	-	-	100	123	381	96	129	591
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	123	-	96	129	-
Stage 1	-	-	-	-	-	-	328	350	-	522	520	-
Stage 2	-	-	-	-	-	-	480	497	-	287	349	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	25.4	49.8
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	100	341	1056	-	-	818	-	-	96	591
HCM Lane V/C Ratio	0.147	0.111	0.036	-	-	0.027	-	-	0.482	0.048
HCM Control Delay (s)	47.1	16.9	8.5	-	-	9.5	-	-	73.4	11.4
HCM Lane LOS	E	C	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	0.5	0.4	0.1	-	-	0.1	-	-	2.1	0.2

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	560	36	43	517	73	26	0	49	41	1	76
Future Vol, veh/h	47	560	36	43	517	73	26	0	49	41	1	76
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	150	-	150	200	-	200	60	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	49	589	38	45	544	77	27	0	52	43	1	80

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	621	0	0	627	0	0	1400	1398	589	1366	1359	544
Stage 1	-	-	-	-	-	-	687	687	-	634	634	-
Stage 2	-	-	-	-	-	-	713	711	-	732	725	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	969	-	-	965	-	-	119	142	512	126	150	543
Stage 1	-	-	-	-	-	-	440	450	-	471	476	-
Stage 2	-	-	-	-	-	-	426	439	-	416	433	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	969	-	-	965	-	-	94	128	512	105	136	543
Mov Cap-2 Maneuver	-	-	-	-	-	-	94	128	-	105	136	-
Stage 1	-	-	-	-	-	-	418	427	-	447	454	-
Stage 2	-	-	-	-	-	-	345	418	-	355	411	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	28.6	29.9
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	94	512	969	-	-	965	-	-	105	523
HCM Lane V/C Ratio	0.291	0.101	0.051	-	-	0.047	-	-	0.411	0.155
HCM Control Delay (s)	58.3	12.8	8.9	-	-	8.9	-	-	61.4	13.1
HCM Lane LOS	F	B	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	1.1	0.3	0.2	-	-	0.1	-	-	1.7	0.5

Intersection

Int Delay, s/veh 4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	470	4	25	999	42	6	0	15	48	1	26
Future Vol, veh/h	12	470	4	25	999	42	6	0	15	48	1	26
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	150	-	150	200	-	200	60	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	495	4	26	1052	44	6	0	16	51	1	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1096	0	0	499	0	0	1661	1669	495	1635	1629	1052
Stage 1	-	-	-	-	-	-	521	521	-	1104	1104	-
Stage 2	-	-	-	-	-	-	1140	1148	-	531	525	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	644	-	-	1075	-	-	78	97	579	82	103	278
Stage 1	-	-	-	-	-	-	542	535	-	258	289	-
Stage 2	-	-	-	-	-	-	247	276	-	536	533	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	644	-	-	1075	-	-	67	93	579	77	98	278
Mov Cap-2 Maneuver	-	-	-	-	-	-	67	93	-	77	98	-
Stage 1	-	-	-	-	-	-	531	524	-	253	282	-
Stage 2	-	-	-	-	-	-	216	269	-	511	522	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	26.5	81
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	67	579	644	-	-	1075	-	-	77	260
HCM Lane V/C Ratio	0.094	0.027	0.02	-	-	0.024	-	-	0.656	0.109
HCM Control Delay (s)	64.2	11.4	10.7	-	-	8.4	-	-	115.1	20.5
HCM Lane LOS	F	B	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.3	0.1	0.1	-	-	0.1	-	-	3	0.4

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	827	4	22	484	44	15	2	36	47	0	29
Future Vol, veh/h	38	827	4	22	484	44	15	2	36	47	0	29
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	150	-	150	200	-	200	60	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	40	871	4	23	509	46	16	2	38	49	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	555	0	0	875	0	0	1545	1552	871	1528	1510	509
Stage 1	-	-	-	-	-	-	951	951	-	555	555	-
Stage 2	-	-	-	-	-	-	594	601	-	973	955	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1026	-	-	780	-	-	94	115	353	97	122	568
Stage 1	-	-	-	-	-	-	315	341	-	520	516	-
Stage 2	-	-	-	-	-	-	495	493	-	306	339	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1026	-	-	780	-	-	84	107	353	81	114	568
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	107	-	81	114	-
Stage 1	-	-	-	-	-	-	303	328	-	500	501	-
Stage 2	-	-	-	-	-	-	455	479	-	261	326	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	29.3	68.1
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	84	315	1026	-	-	780	-	-	81	568
HCM Lane V/C Ratio	0.188	0.127	0.039	-	-	0.03	-	-	0.611	0.054
HCM Control Delay (s)	57.5	18.1	8.7	-	-	9.8	-	-	102.9	11.7
HCM Lane LOS	F	C	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	0.6	0.4	0.1	-	-	0.1	-	-	2.8	0.2

Intersection

Int Delay, s/veh 5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	597	38	46	551	78	28	0	52	44	1	81
Future Vol, veh/h	50	597	38	46	551	78	28	0	52	44	1	81
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	150	-	150	200	-	200	60	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	53	628	40	48	580	82	29	0	55	46	1	85

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	662	0	0	668	0	0	1494	1492	628	1458	1450	580
Stage 1	-	-	-	-	-	-	734	734	-	676	676	-
Stage 2	-	-	-	-	-	-	760	758	-	782	774	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	936	-	-	931	-	-	102	125	487	109	132	518
Stage 1	-	-	-	-	-	-	415	429	-	446	456	-
Stage 2	-	-	-	-	-	-	401	418	-	390	411	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	936	-	-	931	-	-	78	112	487	89	118	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	78	112	-	89	118	-
Stage 1	-	-	-	-	-	-	391	405	-	421	432	-
Stage 2	-	-	-	-	-	-	317	396	-	327	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	35.5	37.9
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	78	487	936	-	-	931	-	-	89	497
HCM Lane V/C Ratio	0.378	0.112	0.056	-	-	0.052	-	-	0.52	0.174
HCM Control Delay (s)	76.8	13.3	9.1	-	-	9.1	-	-	82.9	13.8
HCM Lane LOS	F	B	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	1.5	0.4	0.2	-	-	0.2	-	-	2.3	0.6

Year 2017 Traffic Volumes
Palos Verdes Drive South at Forrestral Dr-Trump National Dr

Peak Hour	EBL	EBT	EBR	WBL	WBT	Without Project WBR	NBL	NBT	NBR	SBL	SBT	SBR
Year 2017 - 1% Growth from 2016												
AM	11	445	4	24	945	40	6	0	14	45	1	24
AM Total	11	445	4	24	945	40	6	0	14	45	1	24
PM	36	782	4	21	459	41	14	2	34	44	0	27
PM Total	36	782	4	21	459	41	14	2	34	44	0	27
SAT	47	566	36	43	522	74	26	0	49	41	1	77
SAT Total	47	566	36	43	522	74	26	0	49	41	1	77

Palos Verdes Drive South at Conqueror Dr, Assume SBR = SBR at Forestal Dr

Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM Other Proj												24
AM Total	0	0	0	0	0	0	0	0	0	0	0	24
PM Other Proj												27
PM Total	0	0	0	0	0	0	0	0	0	0	0	27
SAT Other Proj												77
SAT Total	0	0	0	0	0	0	0	0	0	0	0	77

Palos Verdes Drive South at Costa De La Islas

Peak Hour	EBL	EBT	EBR	WBL	WBT	With Project WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM w/ Proj		460	1	1	999		5		2			
AM Total		460	1	1	999		5		2			
PM w/ Proj		822	5	3	527		1		3			
PM Total		822	5	3	527		1		3			
SAT w/ Proj		649	2	4	702		3		2			
SAT Total		649	2	4	702		3		2			

Year 2022 Traffic Volumes
Palos Verdes Drive South at Forrester Dr-Trump National Dr

Peak Hour	With the 11 Proposed Units & Without Project											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	Year 2022 - 3% Growth from 2016											
AM	11	458	4	25	973	41	6	0	14	46	1	25
Other Proj	0	0	1	1	0	0	4	0	2	0	0	0
AM Total	11	458	5	26	973	41	10	0	16	46	1	25
PM	37	805	4	22	473	42	14	2	35	45	0	28
Other Proj	0	0	5	2	0	0	1	0	3	0	0	0
PM Total	37	805	9	24	473	42	15	2	38	45	0	28
SAT	48	583	37	44	538	76	27	0	50	42	1	79
Other Proj	0	0	3	3	0	0	3	0	2	0	0	0
SAT Total	48	583	40	47	538	76	30	0	52	42	1	79

Palos Verdes Drive South at Conqueror Dr, Assume SBR = SBR at Forestal Dr

Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM	0	0	0	0	0	0	0	0	0	0	0	25
Other Proj												
AM Total	0	0	0	0	0	0	0	0	0	0	0	25
PM	0	0	0	0	0	0	0	0	0	0	0	28
Other Proj												
PM Total	0	0	0	0	0	0	0	0	0	0	0	28
SAT	0	0	0	0	0	0	0	0	0	0	0	79
Other Proj												
SAT Total	0	0	0	0	0	0	0	0	0	0	0	79

Palos Verdes Drive South at Costa De La Islas

Peak Hour	EBL	EBT	EBR	WBL	With the 11 Proposed Units & Project				NBR	SBL	SBT	SBR
					WBT	WBR	NBL	NBT				
AM		474			1033							
w/ Proj			1	1			5		2			
AM Total		474	1	1	1033		5		2			
PM		851			544							
w/ Proj			5	3			1		3			
PM Total		851	5	3	544		1		3			
SAT		671			726							
w/ Proj			2	4			3		2			
SAT Total		671	2	4	726		3		2			

Year 2040 Traffic Volumes, City Build Out
Palos Verdes Drive South at Forrester Dr-Trump National Dr

Peak Hour	EBL	EBT	EBR	WBL	WBT	Without Project		NBT	NBR	SBL	SBT	SBR
AM	13	470	4	25	999	42	6	0	15	48	1	26
Other Proj	0	0	1	1	0	0	4	0	2	0	0	0
AM Total	13	470	5	26	999	42	10	0	17	48	1	26
PM	38	827	4	22	484	44	15	2	36	47	0	29
Other Proj	0	0	5	2	0	0	1	0	3	0	0	0
PM Total	38	827	9	24	484	44	16	2	39	47	0	29
SAT	50	597	38	46	551	78	28	0	52	44	1	81
Other Proj	0	0	3	3	0	0	3	0	2	0	0	0
SAT Total	50	597	41	49	551	78	31	0	54	44	1	81

Palos Verdes Drive South at Conqueror Dr, Assume SBR = SBR at Forestal Dr

Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM												26
Other Proj												
AM Total	0	0	0	0	0	0	0	0	0	0	0	26
PM												29
Other Proj												
PM Total	0	0	0	0	0	0	0	0	0	0	0	29
SAT												81
Other Proj												
SAT Total	0	0	0	0	0	0	0	0	0	0	0	81

Palos Verdes Drive South at Costa De La Islas

Peak Hour	EBL	EBT	EBR	WBL	WBT	With Project		NBT	NBR	SBL	SBT	SBR
AM		488			1061							
w/ Proj			1	1			5		2			
AM Total		488	1	1	1061		5		2			
PM		874			558							
w/ Proj			5	3			1		3			
PM Total		874	5	3	558		1		3			
SAT		688			744							
w/ Proj			2	4			3		2			
SAT Total		688	2	4	744		3		2			

➤ General Plan Update Report Traffic Volumes

- Roadway Segment Volumes for Palos Verdes Drive,
between Narcissa Dr and Palos Verdes Drive East

Table C - Existing Weekday Roadway Segment Daily Traffic Volumes

Roadway Segment	Functional Classification	Existing Conditions
		Daily Volume
Hawthorne Boulevard		
1 . Between the North City Limit and Blackhorse Road	4-Lane Divided Arterial	29,164
2 . Between Blackhorse Road and Silver Spur Road	4-Lane Divided Arterial	27,634
3 . Between Grayslake Road - Highridge Road and Indian Peak Road	4-Lane Divided Arterial	36,880
4 . Between Grayslake Road - Highridge Road and Granvia Atlamira - Ridgeway Drive	4-Lane Divided Arterial	26,244
5 . Between Granvia Atlamira - Ridgeway Drive and Eddinghill Drive - Seamount Drive	4-Lane Divided Arterial	20,065
6 . Between Eddinghill Drive - Seamount Drive and Crest Road	4-Lane Divided Arterial	16,300
7 . Between Crest Road and Vallon Drive	4-Lane Divided Arterial	17,199
8 . Between Vallon Drive and Palos Verdes Drive West	4-Lane Divided Arterial	16,524
Palos Verdes Drive West		
9 . Between the North City Limit and Hawthorne Boulevard	4-Lane Divided Arterial	13,442
10 . Between Hawthorne Boulevard and Palos Verdes Drive South	4-Lane Divided Arterial	15,365
Palos Verdes Drive South		
11 . Between Palos Verdes Drive West and Crestmont Lane - Terranea Way	4-Lane Divided Arterial	16,056
12 . Between Crestmont Lane - Terranea Way and Narcissa Drive	4-Lane Divided Arterial	13,945
13 . Between Narcissa Drive and Palos Verdes Drive East	2-Lane Divided Arterial	15,178
14 . Between Palos Verdes Drive East and the East City Limit	2-Lane Divided Arterial	14,798
Palos Verdes Drive East		
15 . Between the North City Limit and Miraleste Drive	2-Lane Undivided Arterial	10,605
16 . Between Miraleste Drive and Crest Road	2-Lane Undivided Arterial	8,221
17 . Between Crest Road and Ganado Drive	2-Lane Divided Arterial	3,756
18 . Between Ganado Drive and Palos Verdes Drive South	2-Lane Undivided Arterial	2,991
Crenshaw Boulevard		
19 . Between the North City Limit and Indian Peak Road	4-Lane Divided Arterial	33,049
20 . Between Indian Peak Road and Crest Road	4-Lane Divided Arterial	18,028
21 . South of Crest Road	2-Lane Undivided Arterial	1,724
Crest Road		
22 . Between Hawthorne Boulevard and Highridge Road	4-Lane Divided Arterial	10,699
23 . Between Highridge Road and Crenshaw Boulevard	4-Lane Divided Arterial	11,916
24 . Ganado Drive and Northern City Limits	2-Lane Undivided Collector	623
25 . Palos Verdes Drive East and Ganado Drive	4-Lane Undivided Collector	3,023
Crestridge Road		
26 . Between Highridge Road and Crenshaw Boulevard	2-Lane Undivided Arterial	7,311
Highridge Road		
27 . Between Hawthorne Boulevard and the City Limit with Rolling Hills Estates	2-Lane Undivided Arterial	9,054
Indian Peak Road		
28 . Between Crenshaw Boulevard and the City Limit with Rolling Hills Estates	2-Lane Divided Collector	6,628
Miraleste Drive		
29 . Between Palos Verdes Drive East and Via Colinita	2-Lane Divided Arterial	13,531
30 . Between Via Colinita and City's Limit at 9th Street	2-Lane Divided Arterial	6,648
Montemalaga Road		
31 . Between Silver Spur Road and Rolling Hills Estates City Limits	2-Lane Divided Collector	8,269
Silver Spur Road		
32 . Between the North City Limit and just north of Hawthorne Boulevard	3-Lane Divided Arterial	12,838
33 . Between Hawthorne Boulevard and Dry Bank Road	4-Lane Divided Arterial	17,291
Western Avenue		
34 . Between the North City Limit and Delasonde Drive	4-Lane Divided Arterial	36,416
35 . Between Delasonde Drive and Trudie Drive	4-Lane Divided Arterial	37,299
36 . Between Trudie Drive and South City Limit	4-Lane Divided Arterial	39,242

Notes:

LOS = Level of Service

* Exceeds Level of Service

Table H - General Plan Build Out Weekday Roadway Segment Levels of Service

Roadway Segment	Functional Classification	Year 2040 Conditions			
		Daily Volume	V/C	V/C	LOS
Hawthorne Boulevard					
1 . Between the North City Limit and Blackhorse Road	4-Lane Divided Arterial	31,123	36,100	0.86	D
2 . Between Blackhorse Road and Silver Spur Road	4-Lane Divided Arterial	29,491	36,100	0.82	D
3 . Between Grayslake Road - Highridge Road and Indian Peak Road	4-Lane Divided Arterial	39,358	36,100	1.09	F *
4 . Between Grayslake Road - Highridge Road and Granvia Atlamira - Ridgeway Drive	4-Lane Divided Arterial	28,008	36,100	0.78	C
5 . Between Granvia Atlamira - Ridgeway Drive and Eddinghill Drive - Seamount Drive	4-Lane Divided Arterial	21,413	36,100	0.59	A
6 . Between Eddinghill Drive - Seamount Drive and Crest Road	4-Lane Divided Arterial	17,394	36,100	0.48	A
7 . Between Crest Road and Vallon Drive	4-Lane Divided Arterial	18,354	36,100	0.51	A
8 . Between Vallon Drive and Palos Verdes Drive West	4-Lane Divided Arterial	17,634	36,100	0.49	A
Palos Verdes Drive West					
9 . Between the North City Limit and Hawthorne Boulevard	4-Lane Divided Arterial	14,345	36,100	0.40	A
10 . Between Hawthorne Boulevard and Palos Verdes Drive South	4-Lane Divided Arterial	16,397	36,100	0.45	A
Palos Verdes Drive South					
11 . Between Palos Verdes Drive West and Crestmont Lane - Terranea Way	4-Lane Divided Arterial	17,134	36,100	0.47	A
12 . Between Crestmont Lane - Terranea Way and Narcissa Drive	4-Lane Divided Arterial	14,882	36,100	0.41	A
13 . Between Narcissa Drive and Palos Verdes Drive East	2-Lane Divided Arterial	16,197	17,900	0.90	E *
14 . Between Palos Verdes Drive East and the East City Limit	2-Lane Divided Arterial	15,792	17,900	0.88	D
Palos Verdes Drive East					
15 . Between the North City Limit and Miraleste Drive	2-Lane Undivided Arterial	11,318	17,000	0.67	B
16 . Between Miraleste Drive and Crest Road	2-Lane Undivided Arterial	8,773	17,000	0.52	A
17 . Between Crest Road and Ganado Drive	2-Lane Divided Arterial	4,009	17,900	0.22	A
18 . Between Ganado Drive and Palos Verdes Drive South	2-Lane Undivided Arterial	3,191	17,000	0.19	A
Crenshaw Boulevard					
19 . Between the North City Limit and Indian Peak Road	4-Lane Divided Arterial	35,269	36,100	0.98	E *
20 . Between Indian Peak Road and Crest Road	4-Lane Divided Arterial	21,049	36,100	0.58	A
21 . South of Crest Road	2-Lane Undivided Arterial	1,840	17,000	0.11	A
Crest Road					
22 . Between Hawthorne Boulevard and Highridge Road	4-Lane Divided Arterial	11,418	36,100	0.32	A
23 . Between Highridge Road and Crenshaw Boulevard	4-Lane Divided Arterial	12,716	36,100	0.35	A
24 . Ganado Drive and Northern City Limits	2-Lane Undivided Collector	798	17,000	0.05	A
25 . Palos Verdes Drive East and Ganado Drive	4-Lane Undivided Collector	3,225	34,300	0.09	A
Crestridge Road					
26 . Between Highridge Road and Crenshaw Boulevard	2-Lane Undivided Arterial	7,802	17,000	0.46	A
Highridge Road					
27 . Between Hawthorne Boulevard and the City Limit with Rolling Hills Estates	2-Lane Undivided Arterial	9,662	17,000	0.57	A
Indian Peak Road					
28 . Between Crenshaw Boulevard and the City Limit with Rolling Hills Estates	2-Lane Divided Collector	7,074	17,900	0.40	A
Miraleste Drive					
29 . Between Palos Verdes Drive East and Via Colinita	2-Lane Divided Arterial	14,440	17,900	0.81	D
30 . Between Via Colinita and City's Limit at 9th Street	2-Lane Divided Arterial	7,094	17,900	0.40	A
Montemalaga Road					
31 . Between Silver Spur Road and Rolling Hills Estates City Limits	2-Lane Divided Collector	8,825	17,900	0.49	A
Silver Spur Road					
32 . Between the North City Limit and just north of Hawthorne Boulevard	3-Lane Divided Arterial	13,700	27,000	0.51	A
33 . Between Hawthorne Boulevard and Dry Bank Road	4-Lane Divided Arterial	19,115	36,100	0.53	A
Western Avenue					
34 . Between the North City Limit and Delasonde Drive	4-Lane Divided Arterial	38,863	36,100	1.08	F *
35 . Between Delasonde Drive and Trudie Drive	4-Lane Divided Arterial	39,805	36,100	1.10	F *
36 . Between Trudie Drive and South City Limit	4-Lane Divided Arterial	41,879	36,100	1.16	F *

Notes:

LOS = Level of Service, V/C = Volume to Capacity

V/C = Volume to Capacity Ratio

* Exceeds Level of Service

Attachment D Includes:

- Project Trip Generation for the 11 Residential Units

Project Trip Generation for the Other 11 Homes

Weekday								
ITE ¹ Code 210: Single Family Detached Housing	Quantity ²	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Rates	11 DU	9.520	0.188	0.563	0.75	0.630	0.370	1.00
Total Trips		105	2	6	8	7	4	11
Saturday								
ITE ¹ Code 210: Single Family Detached Housing	Quantity ²	Daily	MD Peak Hour					
			In	Out	Total			
Trip Rates	11 DU	9.910	0.502	0.428	0.93			
Total Trips		109	6	5	10			

Attachment E Includes:

- Sychro HCM LOS Worksheets
 - o Existing Traffic Conditions (Year 2017)
 - o Opening Day (Year 2022)
 - o Build Out (Year 2040)

➤ Sychro HCM LOS Worksheets

- o Existing Traffic Conditions (Year 2017)

HCM 2010 TWSC
1: Costa De La Islas & Palos Verde Drive South

Existing (Year 2017) Plus Project
Timing Plan: AM PK Hr

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	460	1	1	999	5	2
Future Vol, veh/h	460	1	1	999	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	484	1	1	1052	5	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	484	0	1538	484
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	1054	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1089	-	129	587
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	338	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1089	-	129	587
Mov Cap-2 Maneuver	-	-	-	-	129	-
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	27.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	-	-	1089	-
HCM Lane V/C Ratio	0.044	-	-	0.001	-
HCM Control Delay (s)	27.7	-	-	8.3	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC
1: Costa De La Islas & Palos Verde Drive South

Existing (Year 2017) Plus Project
Timing Plan: PM PK Hr

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	822	5	3	527	1	3
Future Vol, veh/h	822	5	3	527	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	865	5	3	555	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	865	0	1426	865
Stage 1	-	-	-	-	865	-
Stage 2	-	-	-	-	561	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	787	-	151	356
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	787	-	150	356
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	573	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	265	-	-	787	-
HCM Lane V/C Ratio	0.016	-	-	0.004	-
HCM Control Delay (s)	18.8	-	-	9.6	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 2010 TWSC
1: Costa De La Islas & Palos Verde Drive South

Existing (Year 2017) Plus Project
Timing Plan: SAT Pk Hr

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	649	2	4	702	3	2
Future Vol, veh/h	649	2	4	702	3	2
Conflicting Peds, #/hr	0	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	683	2	4	739	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	683	0	1430	686
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	747	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	919	-	150	451
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	472	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	917	-	149	450
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	470	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	203	-	-	917	-
HCM Lane V/C Ratio	0.026	-	-	0.005	-
HCM Control Delay (s)	23.2	-	-	8.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

- Sychro HCM LOS Worksheets
 - o Opening Day (Year 2022)

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	474	1	1	1033	5	2
Future Vol, veh/h	474	1	1	1033	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	499	1	1	1087	5	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	499
Stage 1	-	-	499
Stage 2	-	-	1089
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	1075	120
Stage 1	-	-	614
Stage 2	-	-	326
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1075	120
Mov Cap-2 Maneuver	-	-	120
Stage 1	-	-	614
Stage 2	-	-	326

Approach	EB	WB	NB
HCM Control Delay, s	0	0	29.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	155	-	-	1075	-
HCM Lane V/C Ratio	0.048	-	-	0.001	-
HCM Control Delay (s)	29.4	-	-	8.4	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC
1: Costa De La Islas & Palos Verde Drive South

Opening Day, Year 2022 Plus Project
Timing Plan: PM Pk Hr

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	851	5	3	544	1	3
Future Vol, veh/h	851	5	3	544	1	3
Conflicting Peds, #/hr	0	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	896	5	3	573	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	896	0	1475	899
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	579	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	766	-	141	340
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	564	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	764	-	140	339
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	562	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	250	-	-	764	-
HCM Lane V/C Ratio	0.017	-	-	0.004	-
HCM Control Delay (s)	19.6	-	-	9.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	671	2	4	726	3	2
Future Vol, veh/h	671	2	4	726	3	2
Conflicting Peds, #/hr	0	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	706	2	4	764	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	706	0	1479	709
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	773	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	902	-	140	438
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	900	-	139	437
Mov Cap-2 Maneuver	-	-	-	-	139	-
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	900	-
HCM Lane V/C Ratio	0.028	-	-	0.005	-
HCM Control Delay (s)	24.4	-	-	9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

➤ Sychro HCM LOS Worksheets

- o Build Out (Year 2040)

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	488	1	1	1061	5	2
Future Vol, veh/h	488	1	1	1061	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	514	1	1	1117	5	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1633
Stage 1	-	-	514
Stage 2	-	-	1119
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	1062	113
Stage 1	-	-	605
Stage 2	-	-	315
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1062	113
Mov Cap-2 Maneuver	-	-	113
Stage 1	-	-	605
Stage 2	-	-	315

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	146	-	-	1062	-
HCM Lane V/C Ratio	0.05	-	-	0.001	-
HCM Control Delay (s)	31	-	-	8.4	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	874	5	3	558	1	3
Future Vol, veh/h	874	5	3	558	1	3
Conflicting Peds, #/hr	0	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	920	5	3	587	1	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1514
Stage 1	-	-	920
Stage 2	-	-	594
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	750	133
Stage 1	-	-	392
Stage 2	-	-	555
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	748	132
Mov Cap-2 Maneuver	-	-	132
Stage 1	-	-	392
Stage 2	-	-	553

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	20.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	240	-	-	748	-
HCM Lane V/C Ratio	0.018	-	-	0.004	-
HCM Control Delay (s)	20.3	-	-	9.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	688	2	4	744	3	2
Future Vol, veh/h	688	2	4	744	3	2
Conflicting Peds, #/hr	0	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	724	2	4	783	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	726	0	1517	728
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	792	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	886	-	133	427
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	884	-	132	426
Mov Cap-2 Maneuver	-	-	-	-	132	-
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	448	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	182	-	-	884	-
HCM Lane V/C Ratio	0.029	-	-	0.005	-
HCM Control Delay (s)	25.4	-	-	9.1	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

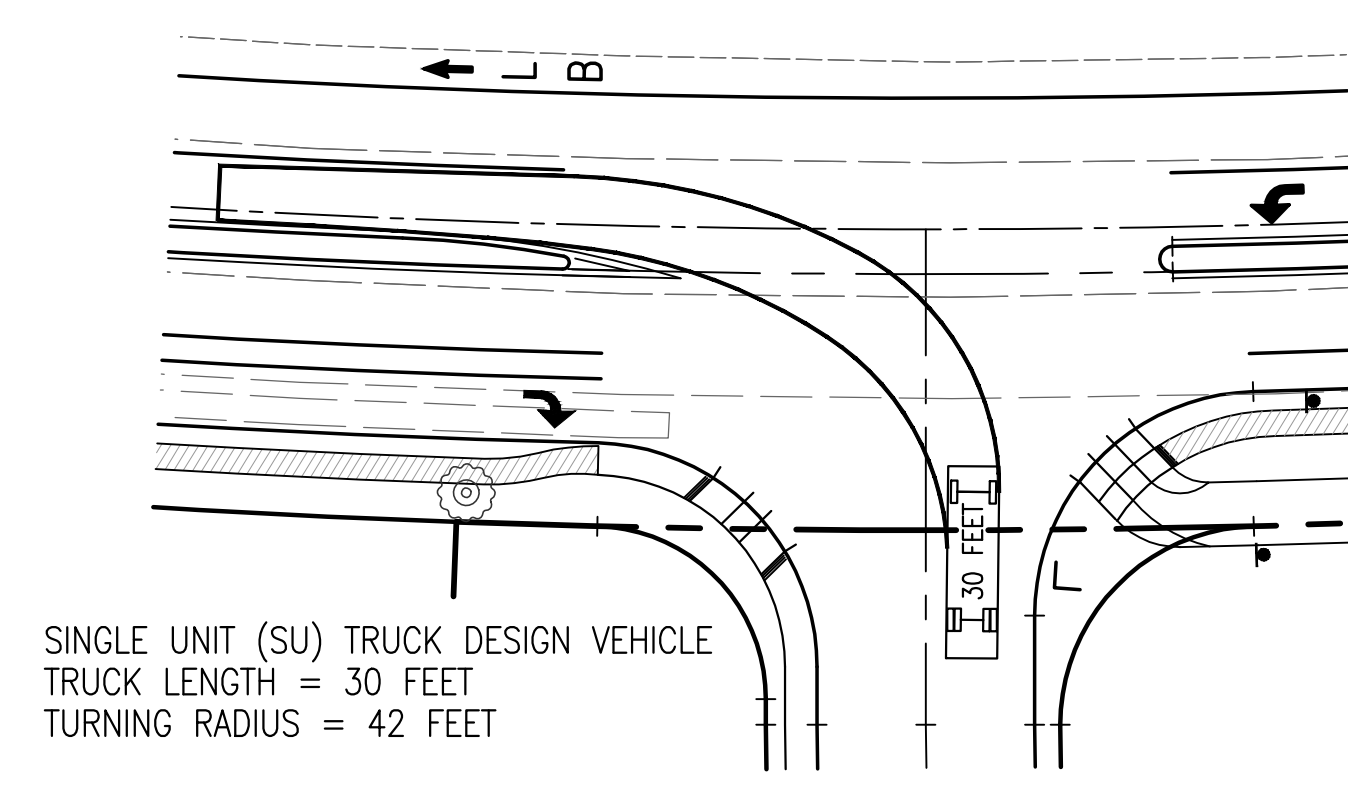
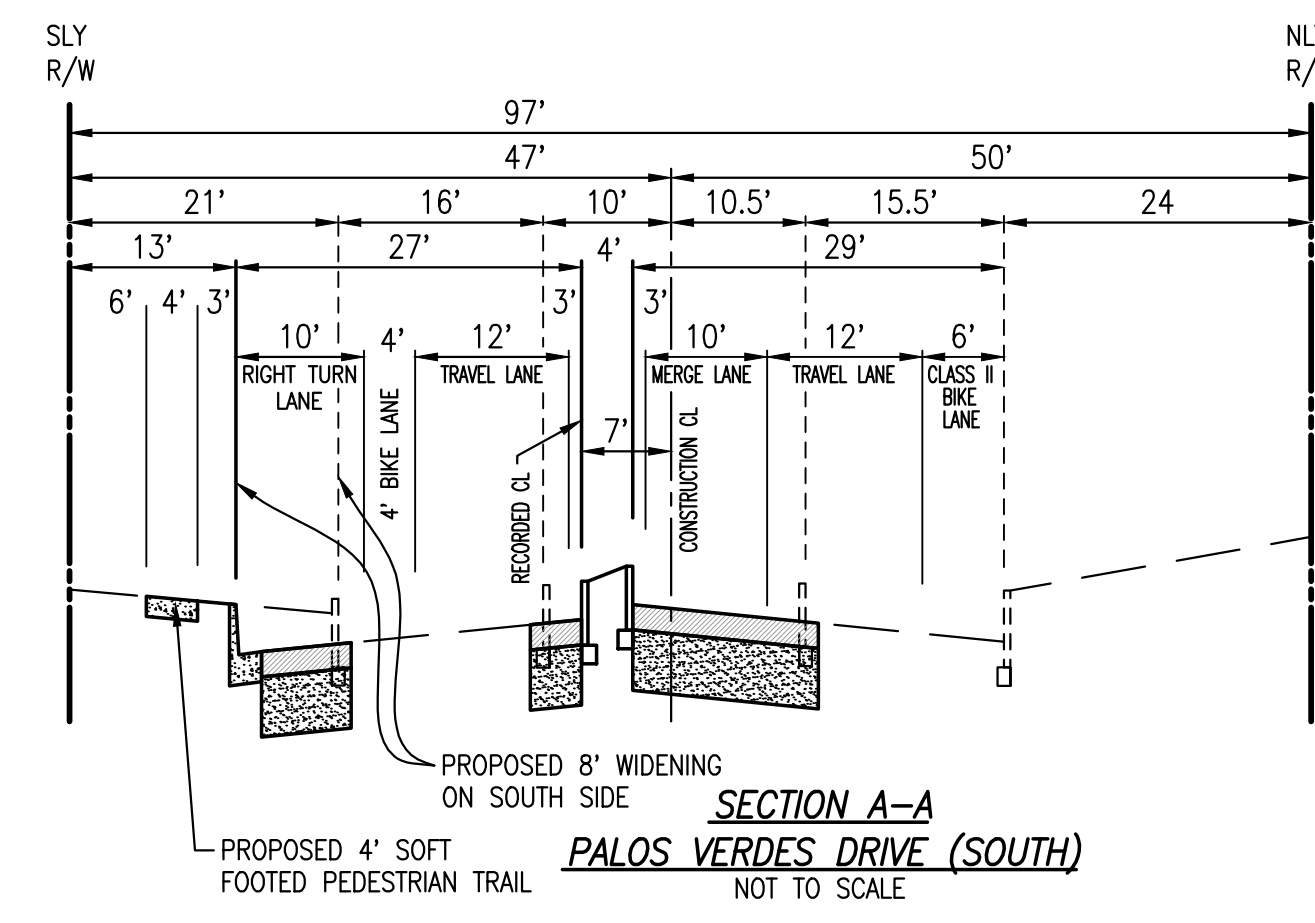
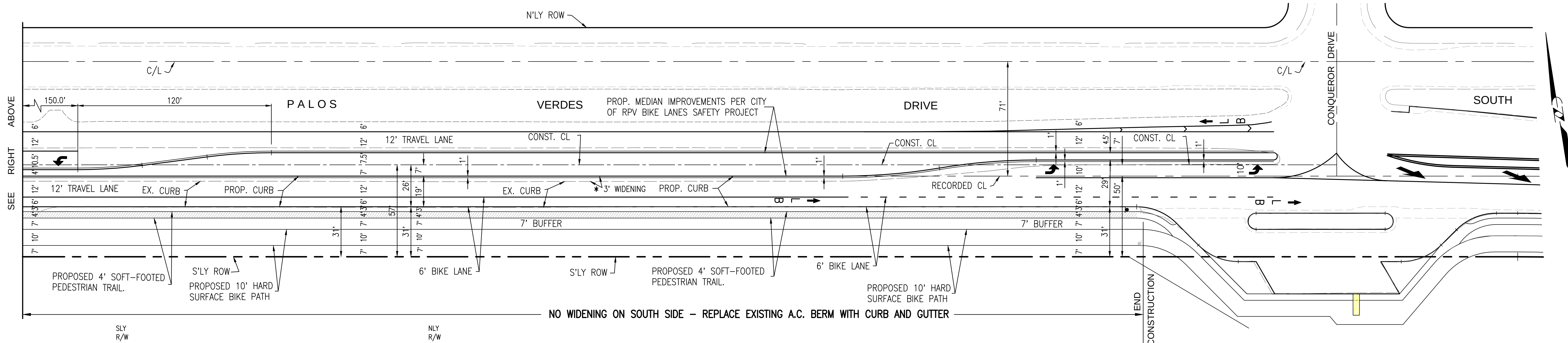
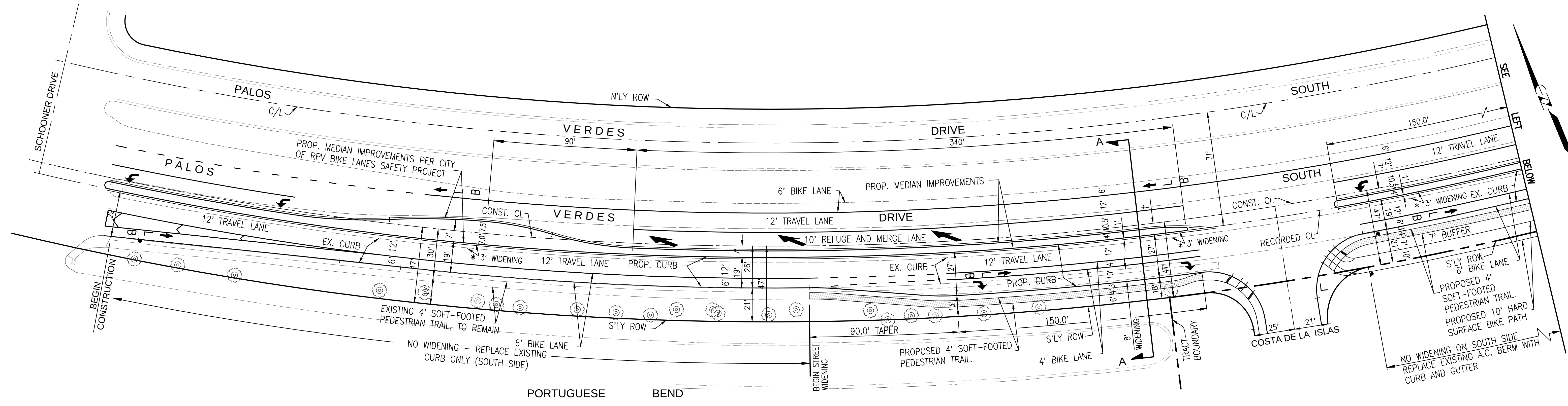
Attachment F Includes:

- o Collision Data on Palos Verdes Drive South
 - Schooner Drive – Forrestal Drive, Years 2013-2017

Location	Date	Time	Main Street	Location	Severity	DOT's	Description	Weather	Lighting	Pavemen	Collision	H & R	DUI	21-	65+	Private?
36	2/4/17	10:08 AM	PV Dr South	544' w/o Schooner Dr	Injury 1	WB Thru (Bicycle vs Ca	Unsafe movement from the bike lane	Clear	Daylight	Dry	Sideswipe	No	No	Yes	No	Car
36	5/6/17	:30	PV Dr South	600' w/o Conqueror Dr	PDO	EB Thru	Unsafe turning movement	Clear	Dark	Dry	Hit Objec	Yes	?	?	?	City bushes, street sign
36	6/29/17	9:22 PM	PV Dr South	75' w/o Conqueror Dr	PDO	EB Thru	Following Too Close	Clear	Dark	Dry	Rear End	No	No	No	No	Car
36	8/15/17	10:55 PM	PV Dr South	182' w/o Yacht Harbor D	PDO	EB Thru	Following Too Close	Clear	Dark	Dry	Rear End	No	No	No	No	Car
36	3/16/16	7:50 PM	PV Dr South	2956' w/o Schooner Dr	PDO	WB Thru vs EB Thru	Failed to drive on right side of roadwa	Clear	Dark	Dry	Sideswipe	No	No	No	Yes	Car
36	5/16/16	6:14 PM	PV Dr South	at Conqueror Dr	Injury - 1	SB Left turn vs WB Thru	Failure to yield to oncoming traffic	Clear	Daylight	Dry	Broadside	No	No	No	No	Motorcycle
36	5/25/16	1:00 PM	PV Dr South	85' e/o Yacht Harbor Dr	PDO	EB Thru	Following Too Close	Clear	Daylight	Dry	Rear End	No	No	Yes	No	Car
36	8/21/16	11:34 PM	PV Dr South	339' w/o Yacht Harbor D	Injury - 1	EB Thru	Asleep/Unsafe turning movement	Clear	Dark	Dry	Hit Objec	No	No	No	No	Curb, Private Fence
36	10/26/16	7:00 AM	PV Dr South	at Conqueror Dr	Injury - 1	SB Left turn vs WB Thru	Failure to yield to oncoming traffic	Clear	Daylight	Dry	Broadside	No	No	No	No	Car
36	11/21/16	1:20 PM	PV Dr South	.6mi w/o Schooner Dr	Injury - 1	WB Thru	Following Too Close	Clear	Daylight	Dry	Rear End	No	No	No	No	Car
37	11/6/16	10:30 AM	PV Dr South	873' e/o Forrestal Dr	Injury - 1	EB Thru	Unsafe turning movement	Clear	Daylight	Dry	Rear End	No	No	Yes	No	Bicycle
82	1/20/16	5:39 PM	PV Dr South	at Forrestal Dr	Injury - 4	NB Left turn vs EB Thru	Failure to yield to oncoming traffic	Cloudy	Dark	Dry	Broadside	No	No	No	Yes	Car
36	1/22/15	6:45 PM	PV Dr South	at Schooner Dr	PDO	WB Thru vs SB Thru	Failed to yield at stop sign	Cloudy	Dusk	Dry	Broadside	No	No	Yes	No	Car
36	3/29/15	7:35 AM	PV Dr South	at Conqueror Dr	Injury - 1	WB Left turn vs NB Thru	Failed to yield at stop sign	Cloudy	Daylight	Dry	Non-Cont	No	No	No	Yes	Bicycle
36	12/7/15	1:30 PM	PV Dr South	200' w/o Schooner Dr	Injury - 1	EB thru vs Bicycle	Unsafe turning movement	Clear	Daylight	Dry	Sideswipe	No	No	No	No	Bicycle
36	3/13/14	8:58 AM	PV Dr South	600' w/o Schooner Dr	Injury - 1	EB Thru	Unsafe turning movement	Clear	Daylight	Dry	Sideswipe	No	No	No	Yes	Bicycle
36	7/13/14	1:00 AM	PV Dr South	at Conqueror Dr	Injury - 4	WB Thru vs SB Left turn	Failed to yield at stop sign	Clear	Dark	Dry	Broadside	No	No	No	No	Car
36	8/10/14	11:10 AM	PV Dr South	430' e/o Schooner Dr	Injury - 2	SB Thru	Unsafe turning movement	Clear	Daylight	Dry	Rear End	No	No	No	No	Bicycle
36	9/12/14	5:12 AM	PV Dr South	744' w/o Schooner Dr	PDO	WB Thru	Unsafe turning movement	Fog/Cloudy	Dusk	Dry	Hit Objec	Yes	?	No	No	City Advanced SNS center med
82	9/19/14	8:14 PM	PV Dr South	at Trump National Dr	PDO	NB Left turn vs EB Thru	Failure to yield to oncoming traffic	Clear	Daylight	Dry	Broadside	No	No	No	Yes	Car
36	4/4/13	5:00 PM	PV Dr South	87' e/o Schooner Dr	PDO	SB Thru	Unsafe vehicle/Unsafe speed	Clear	Daylight	Dry	Hit Objec	No	No	No	No	City traffic sign
36	6/9/13	2:29 PM	PV Dr South	at Conqueror Dr	Injury - 2	SB Left turn vs WB Thru	Failure to yield at a stop sign	Cloudy	Daylight	Dry	Broadside	No	No	No	Yes	Car
37	4/16/13	6:45 AM	PV Dr South	700' e/o Forrestal Dr	PDO	WB Thru	Unsafe turning movement	Clear	Daylight	Dry	Hit Objec	No	No	Yes	No	City Medain Vegetation

Attachment G Includes:

- Palos Verdes Drive South
 - Roadway Improvement Plan



* PROP. MEDIAN IMPROVEMENTS
PER CITY OF RPV BIKE LANES
SAFETY PROJECT

SCALE: 1"=30'
30' 15' 0' 30' 60'

CITY OF RANCHO PALOS VERDES			SHEET <u>1</u> OF <u>2</u> SHTS
TRACT 50666			
PVDS INTERSECTION EXHIBIT			
PALOS VERDES DRIVE SOUTH & COSTA DE LA ISLAS			
SCALE: 1"=30'	PROJECT NO.: 208-008	DATE: SEPTEMBER 22, 2017	