

TRANSPORTATION IMPACT ANALYSIS

SUNBOW II, PHASE 3

Chula Vista, California
May, 2021

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TRANSPORTATION IMPACT ANALYSIS

SUNBOW II, PHASE 3

City of Chula Vista, California

May, 2021

1.0 INTRODUCTION

Linscott, Law & Greenspan Engineers (LLG) has prepared this transportation impact analysis to assess the potential impacts associated with the Sunbow II, Phase 3 project (Project) in the City of Chula Vista. The proposed Project includes constructing 718 multi-family units on approximately 44.2 acres within the 135.7-acre area designated Planning Area 23 in the 1998 Sunbow SPA Site Utilization Plan. The Project site is located south of Olympic Parkway, between Brandywine Avenue and Heritage Road. This report addresses the potential transportation impacts and effects from the proposed project.

The following sections are included in this report:

- Project Description
- Vehicle Miles Traveled (VMT) Background
- Project VMT Significance Criteria and Methodology
- Project VMT Analysis
- Local Mobility Analysis Approach & Methodology
- Assessment of Existing Conditions
- Vehicular Mobility Criteria
- Project Trip Generation, Distribution and Assignment
- Assessment of Near-Term Conditions
- Assessment of Build-Out Conditions
- Access Assessment
- Vehicular Mobility Deficiencies and Recommended Improvements

2.0 PROJECT DESCRIPTION

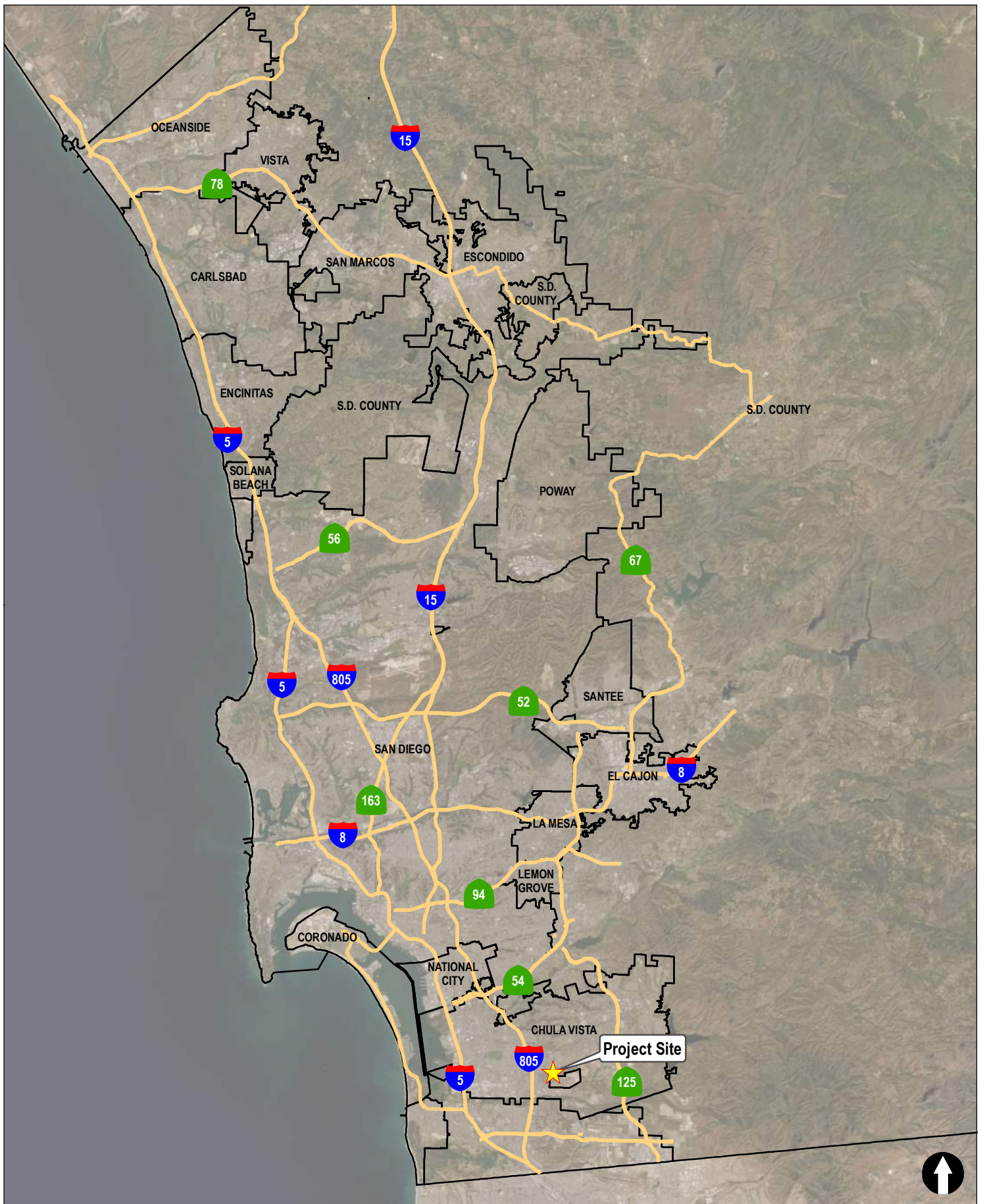
The scope of the Proposed Project encompasses approximately 135.7 acres and includes a 67.5-acre development area comprised of 718 multi-family units on 44.2 acres, a 0.9-acre Community Purpose Facility (CPF) site, 5.9 acres of public streets and 16.5 acres of manufactured slopes/basins. Approximately 4.3 acres of proposed Poggi Canyon Easement area, 0.3 acres of conserved wetland resource area, and 63.6 acres of adjacent MSCP Preserve area are also within the Project Area.

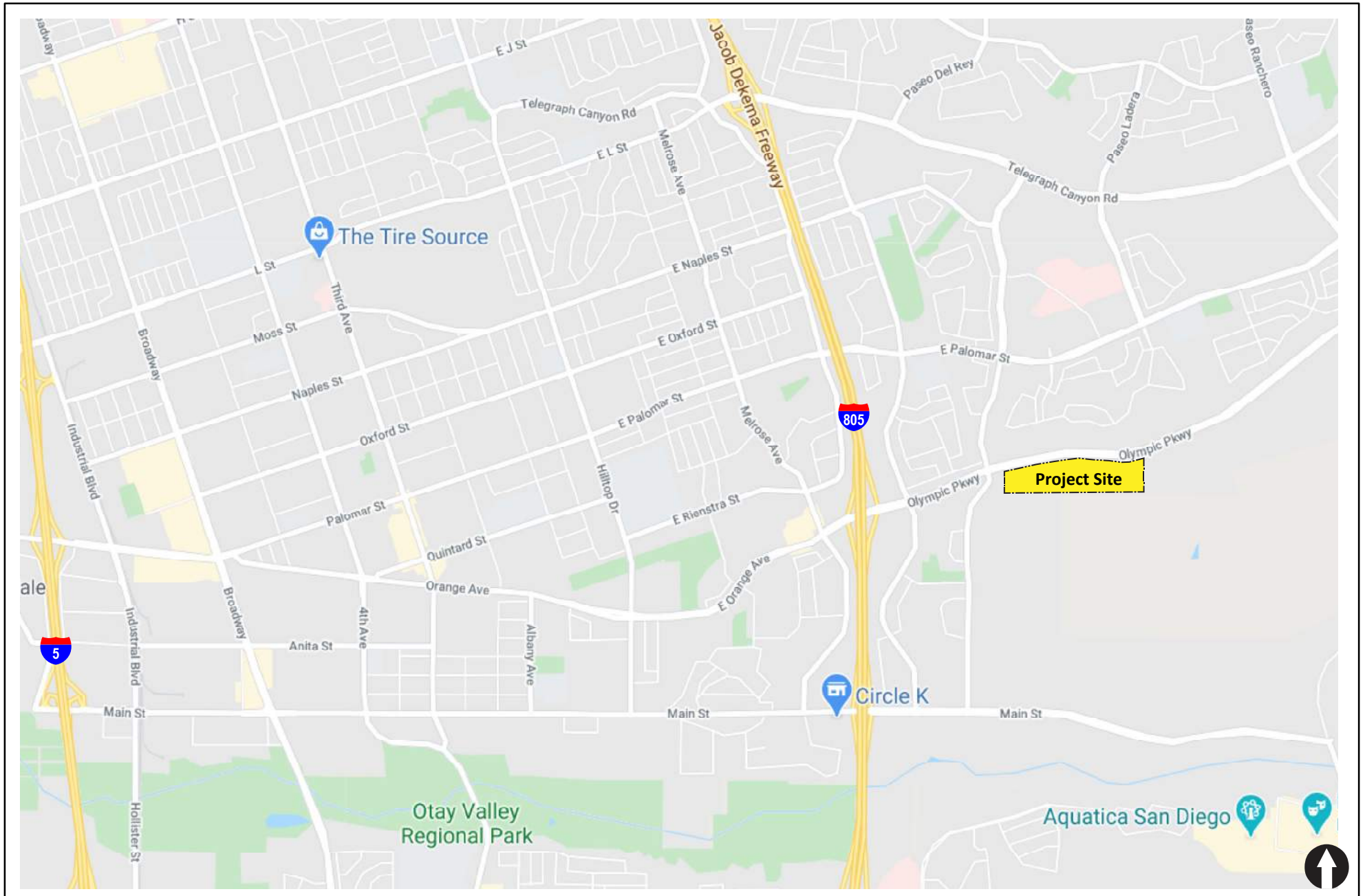
The Proposed Project's residential land use includes four unique multi-family attached residential product types with 15 unique floor plans, ranging in square footage from approximately 1,100 to 2,050 square feet in two- and three-story units. Each home includes a two-car garage and two to four bedrooms.

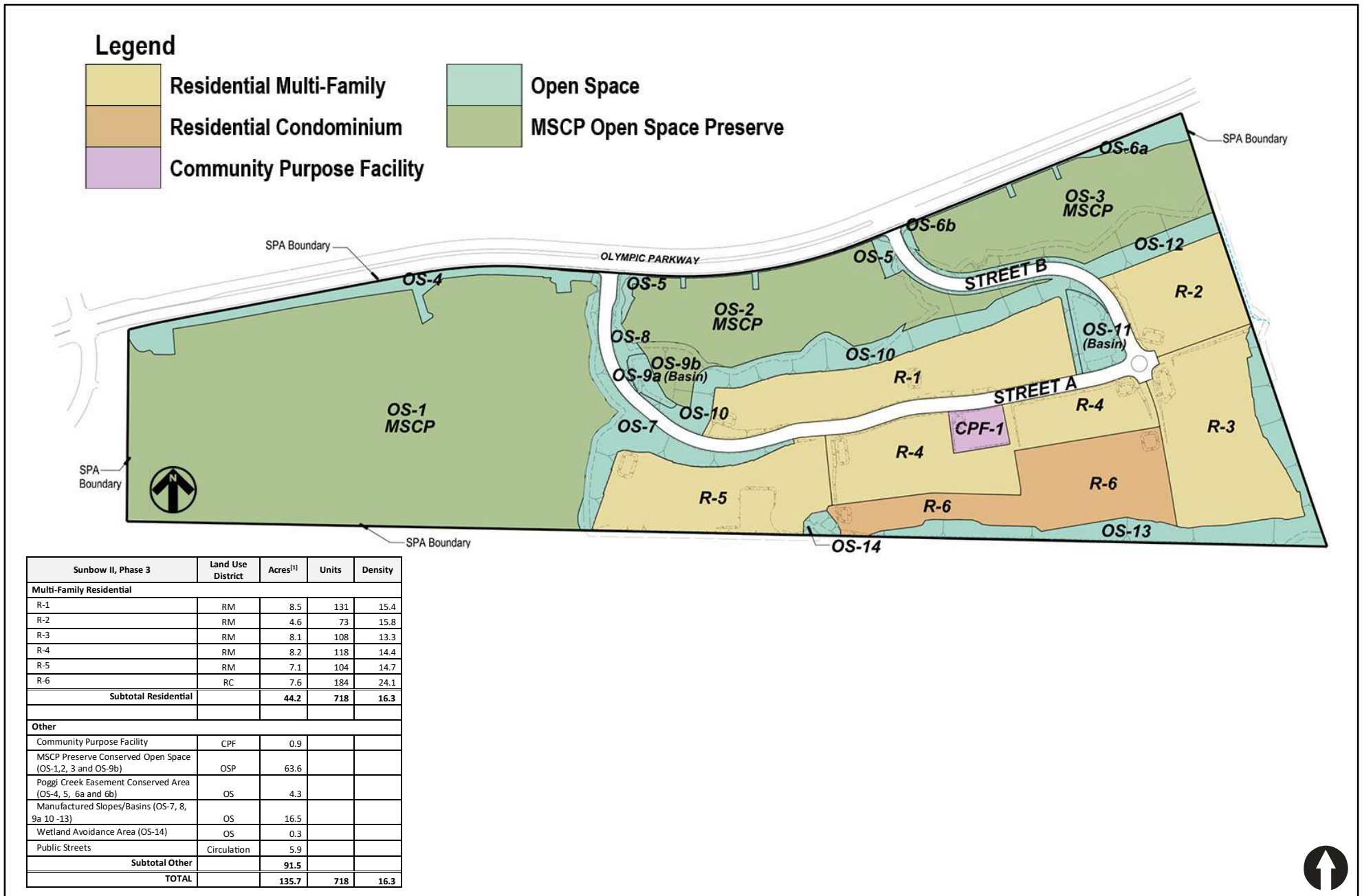
The Proposed Project includes a Chula Vista General Plan Amendment, Sunbow General Development Plan Amendment, Sunbow Sectional Planning Area (SPA) Plan Amendment, a rezone and a Tentative Map. The Proposed Project also includes a Chula Vista MSCP Boundary Adjustment that would implement minor adjustments to the Planning Area 23 development limits and the adjacent MSCP Preserve open space areas.

The Proposed Project includes a Chula Vista General Plan Amendment, Sunbow General Development Plan Amendment, Sunbow II SPA Plan Amendment, a rezone, and a Tentative Map. The Proposed Project also includes a Chula Vista MSCP Boundary Adjustment to implement minor adjustments to the development limits and the adjacent MSCP Preserve areas that would result in a 0.09-acre increase to MSCP Preserve Area and an MSCP Minor Amendment to address off-site grading adjacent to the southwestern boundary of the development area.

Figure 2-1 shows the Project's Vicinity Map and **Figure 2-2** shows a more detailed Project Area Map. **Figure 2-3** shows the Project's site plan and the Sunbow II, Phase 3 Site Utilization Table, which shows the Project statistics.







3.0 REPORT APPROACH

In compliance with Senate Bill 743 (SB 743), this Transportation Impact Study evaluates the Project's potential vehicular impacts using a Vehicle Miles Traveled (VMT) metric, pursuant to direction from the Governor's Office of Planning and Research (OPR) in December 2018 (*Technical Advisory on Evaluating Transportation Impacts in CEQA*). Public Resources Code section 20199, enacted pursuant to SB 743, identifies Vehicle Miles Traveled (VMT) as an appropriate metric for measuring transportation impacts along with the elimination of automobile delay/Level of Service (LOS) for California Environmental Quality Act (CEQA) purposes statewide.

When OPR and the Secretary of Resources finalized the CEQA Guidelines implementing SB 743, it stated that a lead agency may elect to be governed by the VMT guidelines immediately. However, as of July 1, 2020, the VMT guidelines apply statewide.

In June 2020, the City of Chula Vista adopted their *Transportation Study Guidelines* (TSG) to comply with Senate Bill 743. However, at the time the Project's VMT analysis was prepared, the City was still in the process of developing their guidelines for VMT evaluation. Therefore, prior to June 2020, LLG coordinated with City Staff to develop an interim VMT analysis approach and methodology. The interim approach and methodology are consistent with the approved TSG for the purposes of evaluating the Project's potential vehicular impacts.

In addition to the VMT analysis, a Project-Specific Local Mobility Analysis (LMA) was also prepared that focuses on automobile delay/LOS. The LOS analysis was conducted to identify roadway deficiencies in the Project study area and recommend project improvements to address such deficiency; however, the CEQA significance determination for the proposed Project is based only on VMT and not on LOS.

3.1 Report Organization

This report is divided into two main analyses: a VMT Analysis and a Local Mobility Analysis:

VMT Analysis

Section 4.0 – Vehicle Miles Traveled (VMT) Overview & Background: This section presents background on VMT, SB 743, and Proposed Technical Guidance.

Section 5.0 – Project VMT Significance Criteria, Methodology, and Analysis: This section presents the Project's VMT significance criteria, VMT methodology, and Analysis to determine significant transportation impacts.

Section 6.0 – VMT Impacts Summary & Mitigation Measures Analysis: This section presents a summary of the Project's VMT impact and recommended mitigation measures.

Local Mobility Analysis

Section 7.0 – Local Mobility Analysis Methodology: This section describes the specific study area and methodology used to produce the intersection and street segment analyses contained in the study. A discussion of the concept of LOS is also provided in this section.

Section 8.0 – Existing Mobility Conditions: This section presents a description of the study area, existing roadway geometrics and traffic counts.

Section 9.0 – Substantial Effect Criteria: This section describes the criteria used for the vehicular mobility analysis.

Section 10.0 – Analysis of Existing Conditions: The existing traffic volumes are analyzed for the purposes of providing baseline conditions within the study area. This section contains a summary of the existing analyses.

Section 11.0 – Trip Generation, Distribution and Assignment: This section discusses the trip generation, distribution and assignment associated with the proposed Project.

Section 12.0 – Analysis of Existing + Project Conditions: This section provides information on the Existing + Project roadway conditions and traffic volumes. The results of the analyses of the addition of project traffic onto existing conditions are presented in this section.

Section 13.0 – Cumulative Projects: This section provides information on other projects in the study area that will add traffic to the local circulation system in the near future.

Section 14.0 – Analysis of Near-Term Conditions: This section provides information on the Near-Term roadway conditions and traffic volumes. The results of the analyses of the addition of project traffic onto Near-Term conditions are presented in this section.

Section 15.0 – Assessment of Year 2035 Conditions: This section provides information on Year 2035 conditions.

Section 16.0 – Access Assessment: This section provides information on the Project's proposed access points.

Section 17.0 – Substantial Effects and Operational Improvements: This section presents the transportation deficiencies caused by the addition of project traffic under Existing + Project and Near-Term analyses and the recommended improvements.

4.0 VEHICLES MILES TRAVELED (VMT): OVERVIEW AND BACKGROUND

This section presents an overview and background on VMT and the implementation of California State Law Senate Bill 743 (SB 743) requiring its use in the evaluation of transportation impacts for CEQA.

The City of Chula Vista adopted their *Transportation Study Guidelines* (TSG) in June of 2020. However, at the time the Project's VMT analysis was prepared, the City was still in the process of developing their guidelines for VMT evaluation. Therefore, prior to June 2020, LLG coordinated with City Staff to develop an interim approach and methodology, and to obtain the City's draft screening map which identifies residential VMT per capita for locations Regionwide. The interim approach and methodology are consistent with the approved TSG for the purposes of evaluating the Project's potential vehicular impacts.

4.1 VMT Background

VMT is defined as a measurement of miles traveled by vehicles within a specified region and for a specified time period. VMT is a measure of the use and efficiency of the transportation network. VMTs are calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (round trip) travel and is estimated for a typical weekday for the purposes of measuring transportation impacts. For residential projects, "VMT per capita" is the efficiency metric used for evaluation. In general, the analysis presents the project VMT per capita, and compares it to a regional VMT per capita to determine if the former is higher, equal to, or lower than the latter.

4.2 Senate Bill 743

In September 2013, the Governor's Office signed SB 743 into law, starting a process that fundamentally changes the way transportation impact analysis is conducted under CEQA. Within the State's CEQA Guidelines, these changes include the elimination of auto delay, LOS, and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts. The guidance identifies VMT as the most appropriate CEQA transportation metric, along with the elimination of auto delay / LOS for CEQA purposes statewide. The justification for this paradigm shift is that auto delay/ LOS impacts lead to improvements that increase roadway capacity and therefore induce more traffic and greenhouse gas emissions. The legislation was also intended to incentivize development in and around Transit Priority Areas (TPAs) and High-Quality Transit Corridors (HQTC's), and to encourage high density infill and mixed-use projects.

In January 2016, the Governor's Office of Planning and Research (OPR) issued Draft Guidance, which provided recommendations for updating the State's CEQA Guidelines in response to SB 743 and recommended practice for VMT analysis in an accompanying "*Technical Advisory on Evaluating Transportation Impacts in CEQA*" (Technical Advisory). OPR's most recent Technical Advisory is dated December 2018.

4.3 Proposed Technical Guidance

The following information is sourced from OPR's latest Technical Advisory (December 2018). This represents a non-regulatory advisory document on the evaluation of transportation impacts using VMT.

4.3.1 General Recommendations Regarding Methodology

The following is a discussion of the general methodology recommendations to evaluate VMT for various technical areas and project types. The Sunbow project would fall within the "Residential Projects" category, and the SANDAG Series 13 Year 2020 Travel Demand Model was used in the analysis presented in this report.

Using Models to Estimate VMT

Travel demand models, sketch models, spreadsheet models, research, and data can all be used to calculate and estimate VMT. To the extent possible, lead agencies should choose models that have sensitivity to features of the project that affect VMT. Those tools and resources can also assist in establishing thresholds of significance and estimating VMT reduction attributable to mitigation measures and project alternatives.

Vehicle Types

Vehicle Miles Traveled refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation.

Residential Projects

Residential project VMT is evaluated in terms of VMT per capita, with project results compared to established VMT thresholds to determine significance of project impacts.

Transit Priority Area (TPA)

Any project that includes in its geographic bounds a portion of an existing or planned Transit Priority Area (i.e., the project is within a ½ mile of an existing or planned major transit stop or an existing stop along a high-quality transit corridor) may employ VMT as its primary metric of transportation impact for the entire project. A high-quality transit corridor is defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

4.3.2 Recommendations Regarding Significance Thresholds

Lead agencies have the discretion to set or apply their own thresholds of significance. However, the criteria for determining the significance of transportation impacts should promote:

- Reduction of greenhouse gas emissions;
- Development of multimodal transportation networks; and
- A diversity of land uses

Given that the City had not yet adopted VMT thresholds at the time the Project's VMT analysis was prepared, the OPR Technical Advisory methodology was used for the Project's VMT analysis:

Residential Projects: A proposed project exceeding a level of fifteen percent (15%) below existing VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as Regional VMT per capita or as City VMT per capita.

Thus, for this analysis, the minimum threshold of significance for determination of the Project's transportation impact is ***15% or less of the Regional VMT per capita***. Any project whose VMT per capita is 15% or more below the Regional mean is presumed to be less than significant. This approach is consistent with the approved TSG.

5.0 VMT ANALYSIS

5.1 Local Agency Transition to SB743

In June 2020, the City of Chula Vista adopted their *Transportation Study Guidelines* (TSG) to comply with Senate Bill 743, which replaced Level of Service (LOS) with Vehicle Miles Traveled (VMT) as the metric for determining the significance of a project's transportation impacts under the California Environmental Quality Act (CEQA). -

Since the VMT analysis for the Project was prepared prior to formal adoption of the City's TSG, LLG consulted with City of Chula Vista staff and was instructed to utilize OPR guidance from the Technical Advisory and San Diego ITE Regional Guidelines to develop significance thresholds and technical methodologies for the Project.

5.2 Significance Criteria

Guidance from OPR's Technical Advisory is used to establish a significance threshold of a minimum 15% reduction or more from the Regional average VMT per capita for this residential evaluation. That means that if the Project's VMT per capita is more than 15% below the regional average, no significant transportation impact would result. This approach is consistent with the approved TSG.

5.3 Map-Based Screening

Prior to any detailed project-specific VMT analysis, OPR allows for the use of a "map-based screening" (screening map) to identify if a project would result in a less-than-significant impact. The City of Chula Vista's screening map which has been developed for their forthcoming VMT guidelines was utilized for the Project. This map provides VMT per capita evaluation for locations throughout the City, and accounts for surrounding land uses, population density, and transportation infrastructure in accordance with OPR guidelines. These elements collectively shape mobility behavior and provide a strong indication of expected project VMT.

In general, higher density and mix of land uses with access to mobility options are expected to generate lower VMT.

5.3.1 Screening Map Results

The City of Chula Vista's VMT Screening Tool (screening map) allows for a search by address of properties within the City of Chula Vista. The data presented in the screening map includes:

- Census Tract
- VMT per capita
- Percent of regional mean
- Residents
- Description of VMT results

Figure 5–1 shows a screen capture of the overall screening map. This figure shows the project location, the City boundaries, and the TPAs and HQTCS identified within the City. The data represented on this map follows the OPR guidance and displays VMT efficient areas that are 85% or less of the SANDAG regional average. The data shown is based on the SANDAG Series 13 Activity Based Model #1 (ABM1) for the base year of the model (2012).

As shown on *Figure 5–1*, the Project site is not fully located within a HQTC or TPA. A small portion of the Project site is within 0.5 miles (as the crow flies) of a High-quality Transit Corridor. Given the layout of the street network, pedestrians would have to walk more than one-mile from the project access driveway onto Olympic Parkway to the nearest bus stop on an HQTC line (route 712). Therefore, the project is not eligible for transit-based screening and a VMT per capita analysis was conducted as described below.

It should be noted that the SANDAG Series 14 ABM 2, including the base year 2016 VMT per employee by census tract data, was subsequently released following the preparation of the VMT analysis for the Project. The VMT analysis for the Project was performed based on Series 13 ABM 1, since Series 14 had not yet been released at the time the analysis was started.

5.4 VMT Analysis

In order to calculate the VMT per capita for the baseline and the Project, the SANDAG Series 13 Year 2020 Travel Demand Model was used. The model generates a land use-specific average trip length (residential) as well as an average daily volume, which ultimately calculates the total residential VMT per capita, both regionwide and for the Project. The SANDAG Series 13 Year 2020 Travel Demand Model results are included in **Appendix I**.

Table 5–1 summarizes the Regional average baseline VMT results provided by SANDAG using the Series 13 model. As seen in *Table 5–1*, the Regional average baseline VMT per capita is 16.4 miles per resident. For the purpose of determining the significance of VMT impacts, the Project VMT per capita would need to be 85% below the Regional average, which equates to 13.9 VMT per capita.

Similar to the Regional average baseline calculations, the Project VMT per capita was determined. However, since the Project site is currently zoned for industrial use, is coded as such in the SANDAG model, and it is difficult to accurately override the zoned land uses, a proxy site located just a few hundred feet north of the Project site with similar residential land use characteristics was used to determine the expected VMT per resident.

The proxy site is Traffic Analysis Zone (TAZ) 4728. It contains single-family residential units and is located immediately north of the Project site on Olympic Parkway. Typically trip lengths associated with residential uses are approximately 8.0 miles, therefore the use of a proxy site just a few hundred feet away would still result in an accurate VMT calculation. In addition, per SANDAG's *(Not So) Brief guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, single-family and multi-family residential units have the same trip lengths, so the difference in unit type between the proxy site and the Project site is not relevant. The proxy site does not have direct access

to Olympic Parkway, but this results in longer trip lengths (and therefore more VMT) as compared to the Project site, and therefore the VMT analysis is conservative. Lastly, OPR and SANDAG do not differentiate VMT between multi-family and single-family land uses so the fact that the proxy site contains single-family uses is not relevant.

As shown in *Table 5–1*, the Project average VMT per capita for TAZ 4728 is calculated at 14.1 VMT per resident.

Since the Project VMT per capita is higher than 85% of the Regional average, a significant VMT impact is calculated.

The results of the Project VMT comparison indicate that the Project would exceed the significance threshold by 1.4%. This would require a reduction of 1.4% or more to reduce the VMT to below the significance threshold.

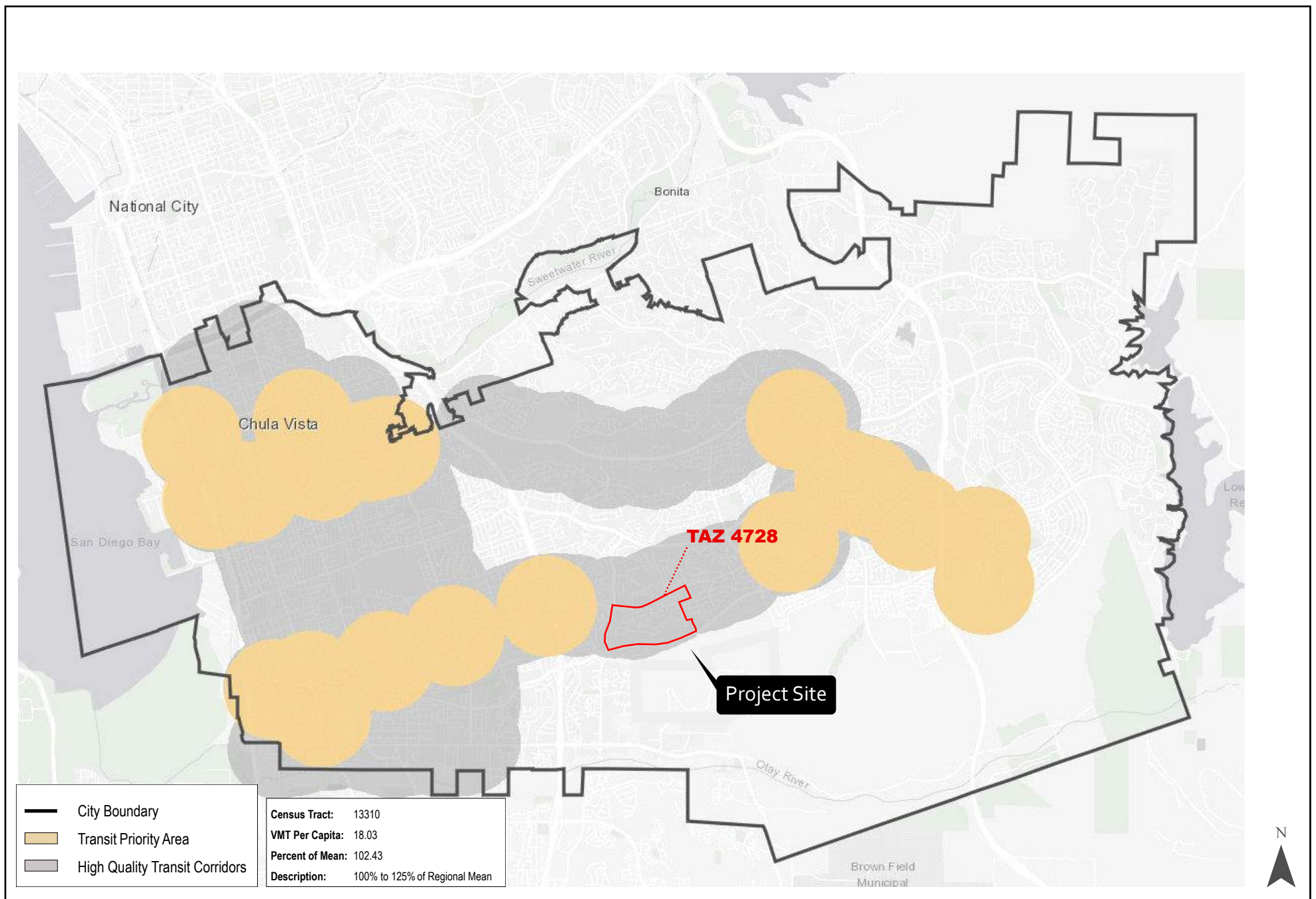
TABLE 5–1
PROJECT VEHICLE MILES TRAVELED ANALYSIS

VMT per Resident					
Geography	Residents	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Resident
San Diego Region	3,435,715	12,302,411	77,559,665	56,353,219	16.4
<i>Significance Threshold (85% of Regional Average VMT)</i>					13.9
Project Site ^a	2,053	7,173	41,393	28,780	14.1
Exceeds Threshold?					Yes

Footnotes:

- a. Since the Project site is currently zoned for industrial use, and is coded as such in the SANDAG model, a proxy site in the vicinity with similar characteristics was used to determine the expected VMT per resident. The proxy site is Traffic Analysis Zone (TAZ) 4728, and is located immediately north of the Project site on Olympic Parkway.

Source: SANDAG, February, 2020



6.0 VMT IMPACTS SUMMARY & MITIGATION MEASURES

Based on the screening map review and the Project specific VMT analysis presented in *Section 5*, a **significant transportation impact is calculated**. Several quantifiable Transportation Demand Management (TDM) strategies can be used to mitigate a project's VMT impacts. TDM strategies can be quantified using methodologies described in *Quantifying Green House Gas Mitigation Measures* published by the California Air Pollution Control Officers Association (CAPCOA) in 2010.

The transportation demand management measures identified in the CAPCOA document that would potentially mitigate residential project impacts are grouped into five (5) categories:

1. Land Use/ Location ("LUT" series measures)
2. Neighborhood/ Site Enhancement ("SDT" series measures)
3. Parking Policy/ Pricing ("PDT" series measures)
4. Commute Trip Reduction Programs ("TRT" series measures)
5. Transit System Improvements ("TST" series measures)

Upon review of the various categories and their respective measures, some Land Use/ Location series measures would apply to the overall Project VMT of 14.1 VMT per capita based on the intrinsic characteristics of the Project (e.g. suburban infill, proximity to transit, schools, employment, etc.). The overall maximum reduction of all Transportation Measures combined is 15%.

6.1 Trip Reduction Strategies

While many of the CAPCOA Measures were considered applicable to the Project, the following Land Use / Location series measure was selected to mitigate the Project's VMT impact:

LUT-1: Increase Density – Designing the Project with increased densities, where allowed by the General Plan and / or Zoning Ordinance reduces GHG emissions associated with traffic in several ways. Density is usually measured in terms of persons, jobs, or dwelling units per unit area. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose.

This measure is applicable to the Project because it proposes 718 multi-family residential dwelling units with a density of 16.3 units per acre, whereas the calculated VMT per resident of 14.1 is based on a proxy site where the residential dwelling units are exclusively single family.

6.2 VMT Reduction Analysis

Figure 6-1 illustrates a chart that outlines the maximum reduction at all levels and the global reduction given the Project setting as provided in the CAPCOA report as Chart 6-2. The calculations provided in the CAPCOA methodology for the recommended measure produces a VMT reduction based on the number of dwelling units per acre. Based on a density of 16.3 units per acre the VMT

reduction is 8.0%. This mitigation exceeds the Project's 1.4% VMT impact and is therefore considered sufficient to reduce the Project's VMT impact to less than significant.

Appendix G contains the CAPCOA VMT calculations and excerpts from the CAPCOA report. **Table 6-1** summarizes the VMT mitigation results.

TABLE 6-1
PROJECT VMT MITIGATION RESULTS

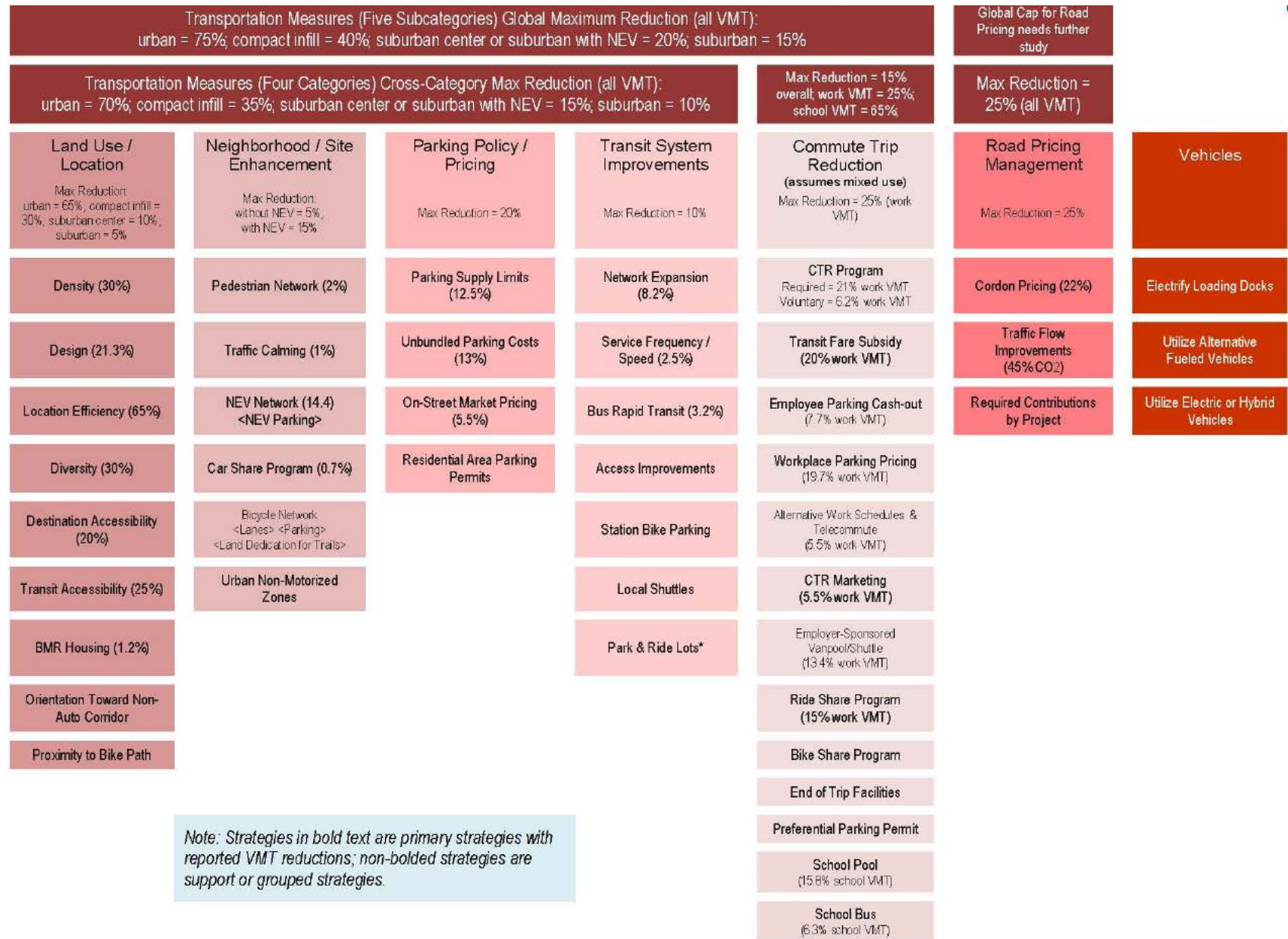
Mitigation Measure	Range of Effectiveness	DU / Acre	Resulting VMT Reduction	Project VMT to be Reduced	Impact Fully Mitigated?
LUT-1: Increase Density	0.8-30.0% VMT	16.3	8.0%	1.4%	Yes

General Notes:

1. Results based on methodology from *Quantifying Green House Gas Mitigation Measures* (CAPCOA – 2010)

In addition, the following trip reduction strategies will be implemented as Project features and conditions of approval, with implementation required at 50% occupancy. These strategies will further reduce the number of automobile trips generated by residents of the Project and the distance that the residents drive:

- Provide Ride Share coordination services thru the Project's Home Owner's Association to match residents interested in carpooling.
- Coordinate with near-by schools and / or the Project's Home Owner's Association to match residents interested in carpooling to / from schools.
- Provide on-site transit opportunities information.
- Encourage bicycling by providing on-site bicycle infrastructure such as bike racks.



7.0 LOCAL MOBILITY ANALYSIS STUDY AREA, ANALYSIS APPROACH AND METHODOLOGY

In addition to the VMT analysis presented above, a Project-Specific Local Mobility Analysis (LMA) was also prepared that focuses on automobile delay and LOS. The LOS analysis was conducted to identify Project effects on the roadway operations in the Project study area and recommend Project improvements to address noted deficiencies; however, the CEQA impact significance determination for the proposed Project is based only on VMT and not on LOS.

7.1 Study Area

The following study area was developed based on the anticipated assignment of Project traffic and locations which will carry the most Project traffic, per City of Chula Vista staff coordination and scoping meetings.

INTERSECTIONS

1. Olympic Parkway / I-805 Southbound Ramps
2. Olympic Parkway / I-805 Northbound Ramps
3. Olympic Parkway / Oleander Avenue
4. Olympic Parkway / Brandywine Avenue
5. Olympic Parkway / Project Driveway (West)
6. Olympic Parkway / Project Driveway (East)
7. Olympic Parkway / Heritage Road
8. Olympic Parkway / Santa Venetia Street
9. Olympic Parkway / La Media Road

STREET SEGMENTS

Olympic Parkway

1. West of I-805 Ramps
2. I-805 Ramps to Oleander Avenue
3. Oleander Avenue to Brandywine Avenue
4. Brandywine Avenue to Project Driveway (West)
5. Project Driveway (West) to Project Driveway (East)
6. Project Driveway (East) to Heritage Road
7. Heritage Road to Santa Venetia Street
8. Santa Venetia Street to La Media Road
9. La Media Road to Palomar Street

7.2 Analysis Scenarios

This study includes analysis of the following scenarios:

- Existing
- Existing + Project
- Near-Term without Project
- Near-Term with Project
- Year 2035

7.3 Analysis Methodology

There are various methodologies used to analyze signalized intersections and unsignalized intersections. The measure of effectiveness for intersection operations is Level of Service (LOS), which denotes the operating conditions which occur at a given intersection under various traffic volume loads.

LOS is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of a roadway segment or an intersection. Levels of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. LOS designation is reported differently for signalized and unsignalized intersections. In the 2010 Highway Capacity Manual (HCM), LOS for signalized intersections is defined in terms of delay. The LOS analysis results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

Table 7–1 summarizes the signalized intersections levels of service descriptions. **Table 7–2** depicts the intersection LOS and corresponding delay ranges, which are based on overall intersection delay (signalized intersections) and the average control delay for any particular minor movement (unsignalized intersections), respectively. LOS relative to signalized intersection is further described below.

LOS A describes operations with very low delay, (i.e., less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay in the range 10.1 seconds and 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

LOS C describes operations with delay in the range 20.1 seconds and 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant

at this level, although many still pass through the intersection without stopping.

LOS D describes operations with delay in the range 35.1 seconds and 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or higher volume (demand) / capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are frequent.

LOS E describes operations with delay in the range of 55.1 seconds to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of over 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

TABLE 7-1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

Level of Service	Description
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Generally, occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Generally, results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Generally, results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation i.e. when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

TABLE 7-2
INTERSECTION LOS & DELAY RANGES

LOS	Delay (seconds/vehicle)
	Signalized Intersections
A	≤ 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	≥ 80.1

Source: Highway Capacity Manual

7.3.1 Signalized Intersections

For signalized intersections, LOS criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Actual traffic signal timing data for each location was obtained from City of Chula Vista records, and inputted into the respective intersections.

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined using the methodology from Chapter 19 of the *Highway Capacity Manual 6th Edition (HCM 6)*, with the assistance of the *Synchro* (version 10) computer software.

7.3.2 Street Segments

Street segment analysis is based upon the comparison of average daily traffic volumes (ADTs) to the City of Chula Vista's *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The City of Chula Vista's *Roadway Classification, Level of Service and ADT* table is shown in **Table 7-3**.

TABLE 7-3
CITY OF CHULA VISTA ROADWAY CAPACITY STANDARDS
AVERAGE DAILY VEHICLE TRIPS

Road		Level Of Service (LOS)				
Class	X-Section V/C Ratio	A (0.6)	B (0.7)	C (0.8)	D (0.9)	E (1.0)
Expressway	104/128	52,000	61,300	70,000	78,800	87,500
Prime Arterial	104/128	37,500	43,800	50,000	56,300	62,500
Major Street (6 lanes)	104/128	30,000	35,000	40,000	45,000	50,000
Major Street (4 lanes)	80/104	22,500	26,300	30,000	33,800	37,500
Class I Collector	74/94	16,500	19,300	22,000	24,800	27,500

8.0 EXISTING MOBILITY CONDITIONS

Effective evaluation of the traffic effects associated with the proposed Project requires an understanding of the existing transportation system within the project area. **Figure 8-1** shows an existing conditions diagram, including signalized intersections and lane configurations.

8.1 Existing Roadway Conditions

The following is a description of the major roadways located within the immediate vicinity of the Project site at the time of the existing counts.

Olympic Parkway is classified as a Prime Arterial in the City of Chula Vista Circulation Plan. It is built as a six-lane divided road with three lanes westbound and three lanes eastbound and a raised median. The posted speed limit is 45 mph from I-805 to Brandywine Avenue and 50 mph east of Brandywine Avenue.

Oleander Avenue is classified as a two-lane collector street in the City of Chula Vista Circulation Plan. It is built as a two-lane undivided road with one lane northbound and one lane southbound. The posted speed limit is 25 mph.

Brandywine Avenue is classified as a Class I collector in the City of Chula Vista Circulation Plan. It is built as a four-lane undivided road with two lanes northbound and two lanes southbound north of Olympic Parkway, and as a two-lane undivided road with one lane northbound and one lane southbound south of Olympic Parkway. The posted speed limit is 40 mph north of Olympic Parkway and 35 mph south of Olympic Parkway.

Heritage Road is classified as a Prime Arterial in the City of Chula Vista Circulation Plan. Currently it is built as a six-lane divided road with three lanes northbound and three lanes southbound. The posted speed limit is 40 mph.

Santa Venetia Street is classified as a two-lane collector in the City of Chula Vista Circulation Plan. Currently it is built as a two-lane undivided road with one lane northbound and one lane southbound, south of Olympic Parkway. The assumed speed limit is 25 mph.

La Media Road is classified as a Prime Arterial in the City of Chula Vista Circulation Plan. Currently it is built as a six-lane divided road with three lanes northbound and three lanes southbound. The posted speed limit is 45 mph.

8.2 Existing Intersection Traffic Volumes

Weekday daily, and AM and PM peak hour intersection turning movement volume counts were commissioned on Thursday, January 16, 2020. The intersection counts were conducted between the hours of 7:00-9:00 AM and 4:00-6:00 PM to capture peak commuter activity. Area schools were in session during the time of the counts.

Traffic signal timing sheets were obtained from the City of Chula Vista and Caltrans and used in the intersection analyses.

Appendix A contains the count sheets and signal timing sheets.

Figure 8–2 shows the existing traffic volumes.

8.3 Existing Bicycle Network

There is a Class 2 bike lane on Olympic Parkway between Oleander Avenue and Lake Crest Drive. There is a Class 2 bike lane on Brandywine Avenue beginning at Telegraph Canyon Road and ending at Main Street. There is a Class 2 bike lane on Heritage Road beginning at Telegraph Canyon Road and ending at Main Street. Class 2 bike lanes are provided on both sides of La Media Road beginning at Telegraph Canyon Road and ending at Santa Luna Street.

8.4 Existing Pedestrian Conditions

Sidewalks are provided along both sides of Olympic Parkway, Oleander Avenue, Brandywine Avenue, Santa Venetia Street, and La Media Road. Sidewalks are also provided on both sides of Heritage Road. The Chula Vista Regional Trail is located along the west side of Heritage Road south of Olympic Parkway. Four signalized crosswalks with ramps on each corner are located adjacent to the Project site at the intersection of Olympic Parkway and Brandywine Avenue.

8.5 Existing Transit Conditions

The Project area is served by transit provided by the San Diego Metropolitan Transit System (MTS). There are no bus routes that travel directly along Olympic Parkway within the Project study area. The following five (5) MTS bus routes serve the general study area:

- **Route 225** runs from the Otay Mesa Transit Center to the Santa Fe Depot Transit Center via Broadway, I-805, and SR-125, as well as other streets that are not near the Project study area. There are 11 stops along this route with destinations to the East Palomar Transit Station, City College Transit Center, and the Santa Fe Depot.

Route 225 currently operates Monday through Friday from 4:49 AM through 10:13 PM departing from the Otay Mesa Transit Center and from 6:08 AM through 11:39 PM departing from The Santa Fe Depot Transit Center. Saturday and Sunday route schedule begins at 4:49 AM through 10:11 AM departing from the Otay Mesa Transit Center and begins at 6:08 AM to 11:37 PM departing from the Santa Fe Depot Transit Center. Route 225 operates on observed holidays with a Saturday or Sunday schedule. Weekday schedules include 30-minute headways. Weekend schedules include 30-minute headways.

- **Route 704** runs from the E Street Transit Center to the Palomar Street Transit Center via East Orange Avenue, Brandywine Avenue, and East Palomar Street, as well as other streets that are not near the project study area. There are 48 stops along this route with

destinations to the Chula Vista Public Library, Civic Center, Memorial Park, Sharp CV Medical Center, South County Regional Center, and the Veterans Home.

Route 704 currently operates Monday through Friday from 6:03 AM through 8:20 PM departing from the E Street Transit Center and from 5:28 AM through 9:00 PM departing from The Palomar Street Transit Center. Saturday route schedule begins at 6:26 AM through 8:25 AM departing from the E Street Transit Center and begins at 6:28 AM to 8:29 PM departing from the Palomar Street Transit Center. Sunday schedule begins at 7:22 AM through 6:22 PM departing from Sharp Medical Center and begins at 7:30 AM through 6:30 PM departing from the Palomar Street Transit Center. Route 704 operates on observed holidays with a Saturday or Sunday schedule. Weekday schedules include 30-minute headways. Weekend schedules include 1-hour headways.

- **Route 707** runs from Eastlake Parkway and Olympic Parkway to Southwestern College via East H Street and Eastlake Parkway. There are 26 stops along this route with destinations to Bonita Vista High School, Eastlake High School, Eastlake Village Center, Otay Ranch Town Center, and Southwestern College.

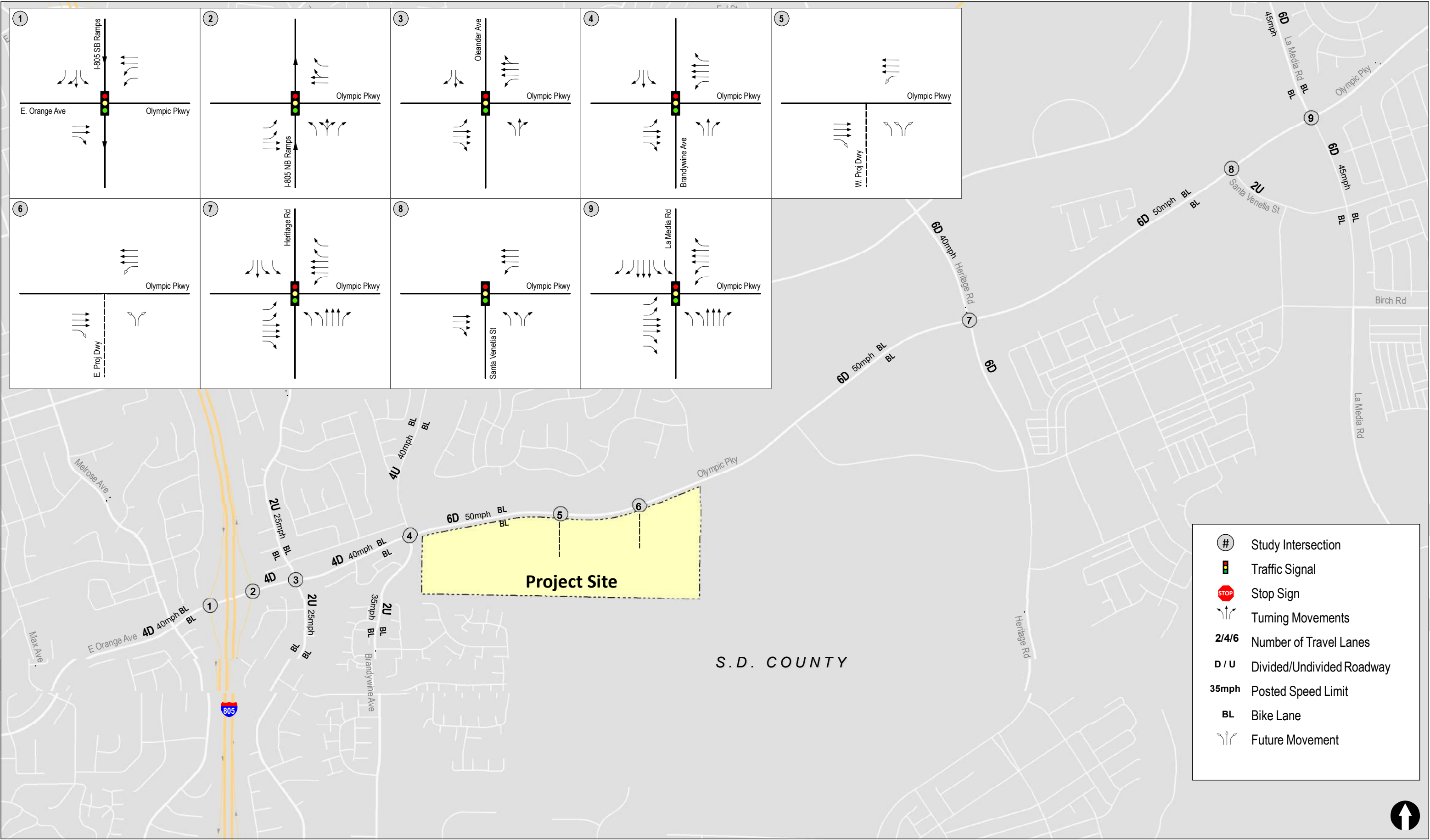
Route 707 currently operates Monday through Friday from 5:02 AM through 7:14 PM departing from Eastlake Parkway & Olympic Parkway and from 6:31 AM through 7:23 PM departing from Southwestern College. Weekday schedules include 30-minute headways. Route 707 does not operate on weekends or observed holidays.

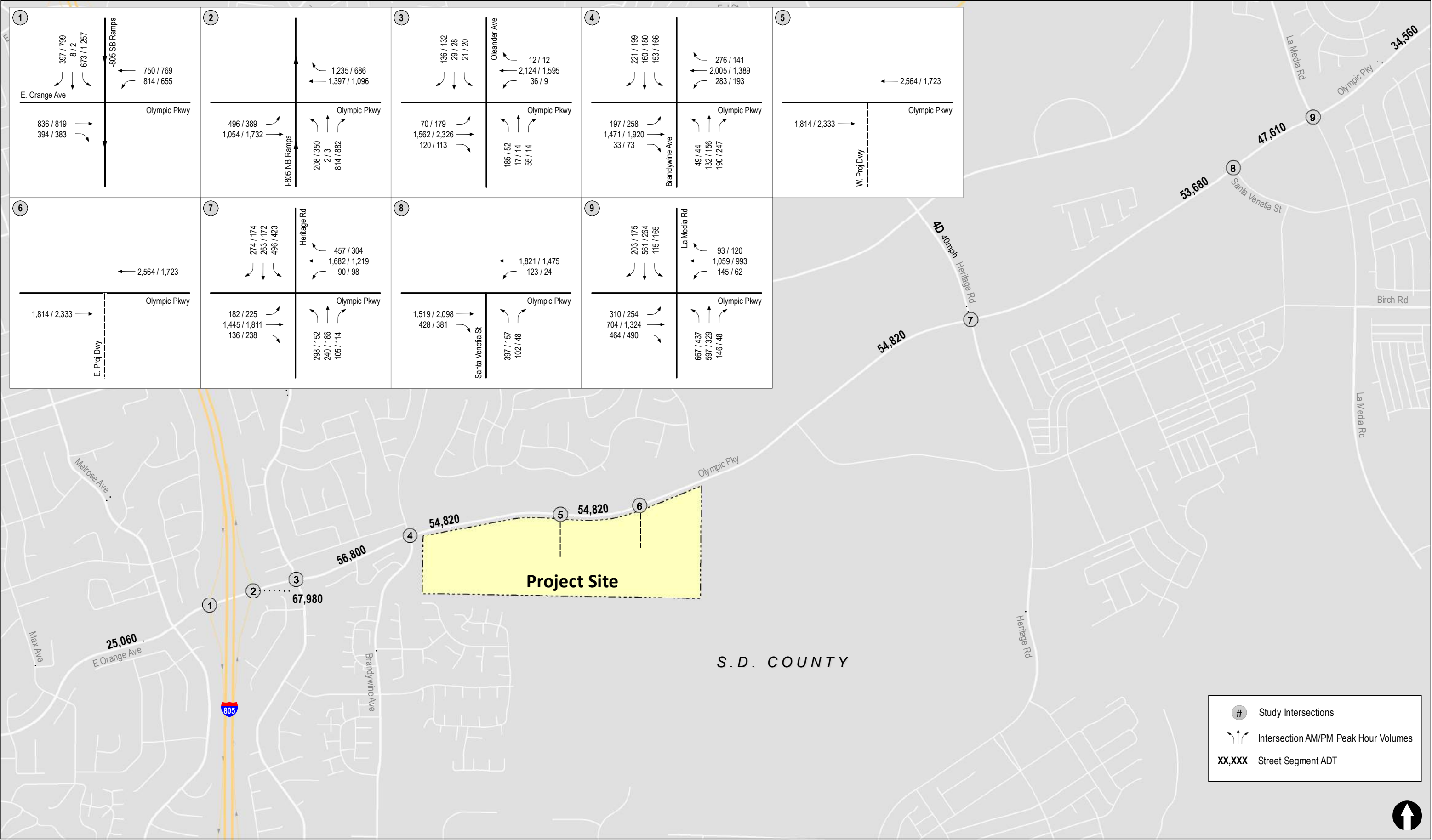
- **Route 709** runs from the H Street Transit Center to Eastlake Parkway & Olympic Parkway via East H Street, East Palomar Street, and La Media Road, as well as other streets that are not near the project study area. There are 22 stops along this route with destinations to Bonita Vista High School, Hilltop High School, Otay Ranch Town Center, Scripps Hospital and Southwestern College.

Route 709 currently operates Monday through Friday from 5:49 AM through 10:22 PM departing from the H Street Transit Center and from 4:52 AM through 10:06 PM departing from Eastlake Parkway & Olympic Parkway. Saturday route schedule begins at 6:22 AM through 9:55 AM departing from the H Street Transit Center and begins at 5:37 AM to 9:37 PM departing from Eastlake Parkway & Olympic Parkway. Sunday schedule begins at 6:51 AM through 8:07 PM departing from the H Street Transit Center and begins at 6:37 AM through 7:50 PM departing from Eastlake Parkway & Olympic Parkway. Route 709 operates on observed holidays with a Saturday or Sunday schedule. Weekday schedules include 30-minute headways. Weekend schedules include 1-hour headways.

- **Route 712** runs from the Palomar Street Transit Center to Southwestern College via Palomar Street and East Palomar Street. There are 26 stops along this route with destinations to Castle Park Middle School, Castle Park High School, Heritage Park, Palomar High School, Sharp Medical Center, and Veterans Park.

Route 712 currently operates Monday through Friday from 5:45 AM through 9:26 PM departing from the Palomar Street Transit Center and from 6:19 AM through 10:09 PM departing from Southwestern College. Saturday route schedule begins at 6:30 AM through 8:30 PM departing from the Palomar Street Transit Center and begins at 6:19 AM to 8:19 PM departing from Southwestern College. Sunday schedule begins at 8:00 AM through 7:00 PM departing from the Palomar Street Transit Center and begins at 6:49 AM through 6:48 PM departing from Southwestern College. Route 712 operates on observed holidays with a Saturday or Sunday schedule. Weekday schedules include 30-minute headways. Weekend schedules include 1-hour headways.





9.0 SUBSTANTIAL EFFECT CRITERIA

Traffic effects will be defined as either project specific effects or cumulative effects. Project specific effects are those effects for which the addition of project trips result in an identifiable degradation in LOS on intersections, triggering the need for specific project-related improvement strategies. Cumulative effects are those in which the project trips contribute to a poor LOS, at a level that falls below the Project-specific effect threshold.

Criteria for determining whether the project results in either project specific or cumulative effects on intersections in the City of Chula Vista are as follows:

9.1 Short-Term (Study Horizon Year 0 To 4)

9.1.1 *Intersections*

- a. Project specific effect if both the following criteria are met:
 - i. Level of service is LOS E or LOS F.
 - ii. Project trips comprise 5% or more of entering volume.
- b. Cumulative effect if only (i) is met.

9.1.2 *Street Links/Segments*

If the planning analysis using the volume to capacity ratio indicates LOS C or better, there is no effect. If the planning analysis indicates LOS D, E, or F, the GMOC method shall be utilized. The following criteria would then be utilized.

- a. Project specific effect if all the following criteria are met:
 - i. Level of service is LOS D for more than 2 hours or LOS E/F for 1 hour
 - ii. Project trips are 5% or more of segment volume
 - iii. Project adds greater than 800 ADT to the segment
- b. Cumulative effect if only (i) is met.

9.2 Long-Term (Study Horizon Year 5 and Later)

9.2.1 *Intersections*

- a. Project specific effect if all the following criteria are met:
 - i. Level of service is LOS E or LOS F.
 - ii. Project trips comprise 5% or more of entering volume.
- b. Cumulative effect if only (i) is met.

9.2.2 *Street Links/Segments*

Use the planning analysis using the volume to capacity ratio methodology only. The GMOC analysis methodology is not applicable beyond a four-year horizon.

- a. Project specific effect if all the following criteria are met:
 - i. Level of service is LOS D, E or F.
 - ii. Project trips are 5% or more of segment volume
 - iii. Project adds greater than 800 ADT to the segment

- b. Cumulative effect if only (i) is met. However, if the intersections along a LOS D or LOS E segment all operate at LOS D or better, the segment effect is considered not substantial since intersection analysis is more indicative of actual roadway system operations than street segment analysis. If segment Level of Service is LOS F, effect is substantial regardless of intersection LOS.

10.0 ANALYSIS OF EXISTING CONDITIONS

10.1 Peak Hour Intersection Analysis

Table 10–1 summarizes the peak hour intersection operations under Existing conditions in the study area. As shown, the study area intersections are calculated to currently operate acceptably at LOS D or better during the AM and PM peak hours, with the exception of the following:

- Olympic Parkway / I-805 Southbound Ramps (LOS F during the PM peak hour)
- Olympic Parkway / I-805 Northbound Ramps (LOS F during the AM peak hour)

Appendix B contains the Existing intersection analysis worksheets.

10.2 Daily Street Segment Operations

Table 10–2 summarizes the Existing street segment operations along the key study area roadways. As shown, the study area street segments are calculated to currently operate acceptably at LOS C or better, with the exception of the following:

- Olympic Parkway: I-805 Ramps to Oleander Avenue (LOS F)
- Olympic Parkway: Oleander Avenue to Brandywine Avenue (LOS E)
- Olympic Parkway: Brandywine Avenue to Project Driveway (West) (LOS D)
- Olympic Parkway: Project Driveway (West) to Project Driveway (East) (LOS D)
- Olympic Parkway: Project Driveway (East) to Heritage Road (LOS D)
- Olympic Parkway: Heritage Road to Santa Venetia Street (LOS D)

TABLE 10-1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay ^a	LOS ^b
1. Olympic Parkway/ I-805 Southbound Ramps	Signal	AM PM	43.6 87.3	D F
2. Olympic Parkway / I-805 Northbound Ramps	Signal	AM PM	>100 45.6	F D
3. Olympic Parkway / Oleander Avenue	Signal	AM PM	26.6 7.2	C A
4. Olympic Parkway / Brandywine Avenue	Signal	AM PM	43.6 32.8	D C
5. Olympic Parkway / Project Driveway (West)	DNE ^c	AM PM	- -	- -
6. Olympic Parkway / Project Driveway (East)	DNE ^c	AM PM	- -	- -
7. Olympic Parkway / Heritage Road	Signal	AM PM	45.8 36.2	D D
8. Olympic Parkway / Santa Venetia Street	Signal	AM PM	14.4 8.2	B A
9. Olympic Parkway / La Media Road	Signal	AM PM	53.5 39.1	D D

Footnotes:

- b. Average delay expressed in seconds per vehicle.
- c. Level of Service.
- d. Intersection does not exist under Existing conditions

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 10-2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Functional Classification	Capacity (LOS C) ^a	Existing	
			ADT ^b	LOS ^c
Olympic Parkway				
West of I-805 Ramps	4-Lane Major	30,000	25,060	B
I-805 Ramps to Oleander Avenue	6-Lane Prime	50,000	67,980	F
Oleander Avenue to Brandywine Avenue	6-Lane Prime	50,000	56,800	E
Brandywine Avenue to Project Driveway (West)	6-Lane Prime	50,000	54,820	D
Project Driveway (West) to Project Driveway (East)	6-Lane Prime	50,000	54,820	D
Project Driveway (East) to Heritage Road	6-Lane Prime	50,000	54,820	D
Heritage Road to Santa Venetia Street	6-Lane Prime	50,000	53,680	D
Santa Venetia Street to La Media Road	6-Lane Prime	50,000	47,610	C
La Media Road to Paloma Street	6-Lane Prime	50,000	34,560	A

Footnotes:

- a. Capacities based on City of Chula Vista Roadway Classification Table.
- b. Average Daily Traffic Volumes.
- c. Level of Service.

11.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

11.1 Trip Generation

Trip generation rates were obtained from the (Not So) *Brief guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002 by SANDAG. The trip rates for Condominiums were used to estimate the Project trip generation.

The proposed Project currently includes the construction of 718-multi-family units. However, the analysis conducted for the Project's Local Mobility assessment assumes 720-multi-family units. This is a conservative approach as it assumes two additional dwelling units as compared to the currently proposed Project.

Table 11–1 summarizes the trip generation for the Project, assuming 720-multi-family units. As shown in *Table 11–1*, the Project is calculated to generate 5,760 daily trips with a total of 461 trips during the AM peak hour (92 inbound/ 369 outbound trips) and 576 trips during PM peak hour (403 inbound/ 173 outbound trips).

TABLE 11–1
PROJECT TRIP GENERATION

Use	Quantity	Daily Trip Ends (ADTS) ^a		AM Peak Hour				PM Peak Hour			
		Rate ^b	Volume	% of ADT	In:Out Split	Volume		% of ADT	In:Out Split	Volume	
						In	Out			In	Out
Condominiums	720 Units	8 / Unit	5,760	8%	20:80	92	369	10%	70:30	403	173

Footnotes:

- a. Average Daily Trips
- b. Trip Generation Rate from the SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, 2002.

11.2 Trip Distribution and Assignment

A Project-specific SANDAG Select Zone model was used to estimate the Project's distribution with adjustments made to account for the locations of the proposed access points, traffic patterns observed from the existing traffic counts, and the locations of employment centers and retail opportunities.

Figure 11–1 shows the distribution of the Project trips. **Figure 11–2** shows the Project traffic volumes. **Figure 11–3** shows the Existing with Project traffic volumes.

The unadjusted SANDAG Select Zone model run is included in **Appendix F**.

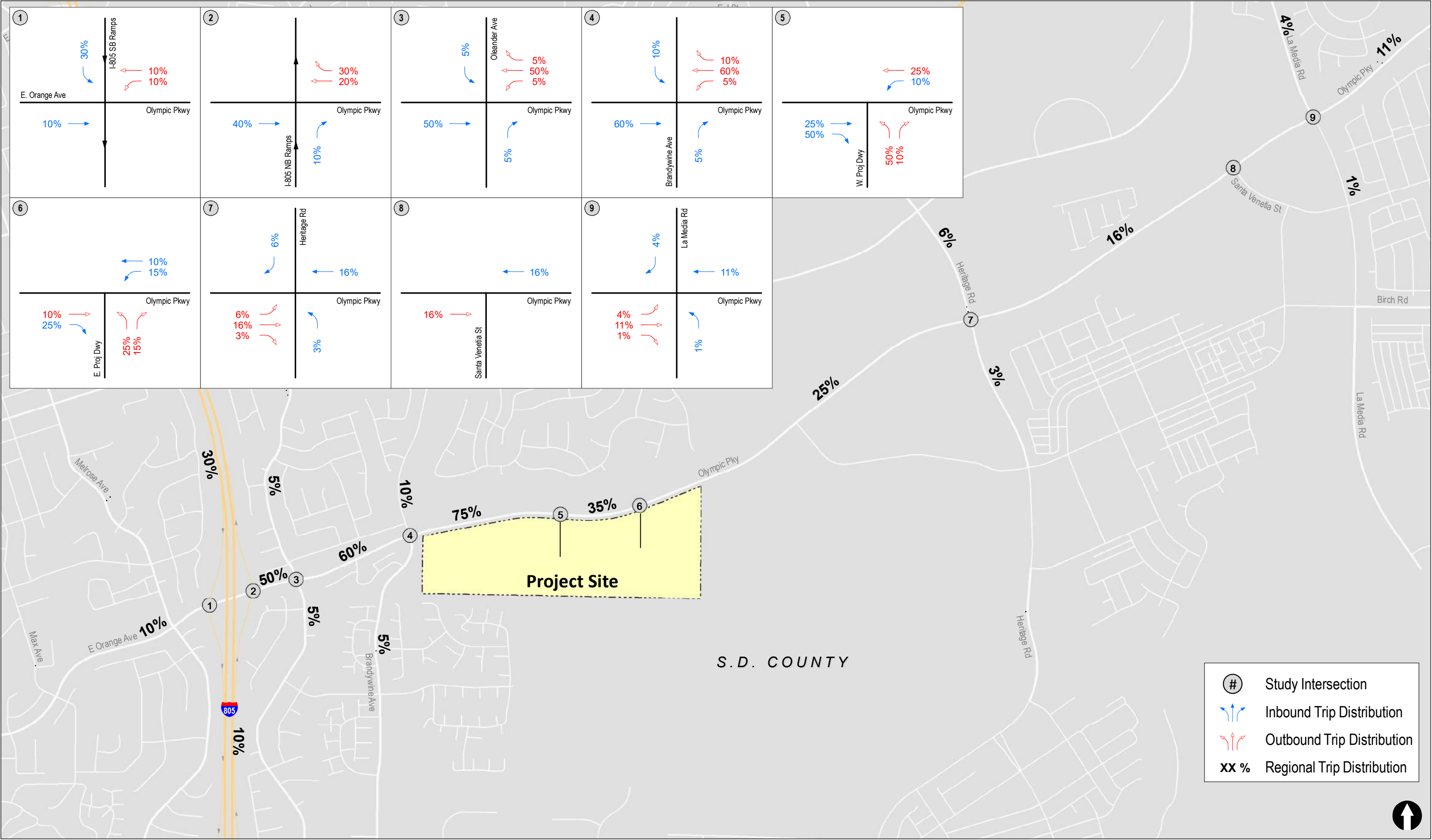


Figure 11-1
Project Traffic Distribution

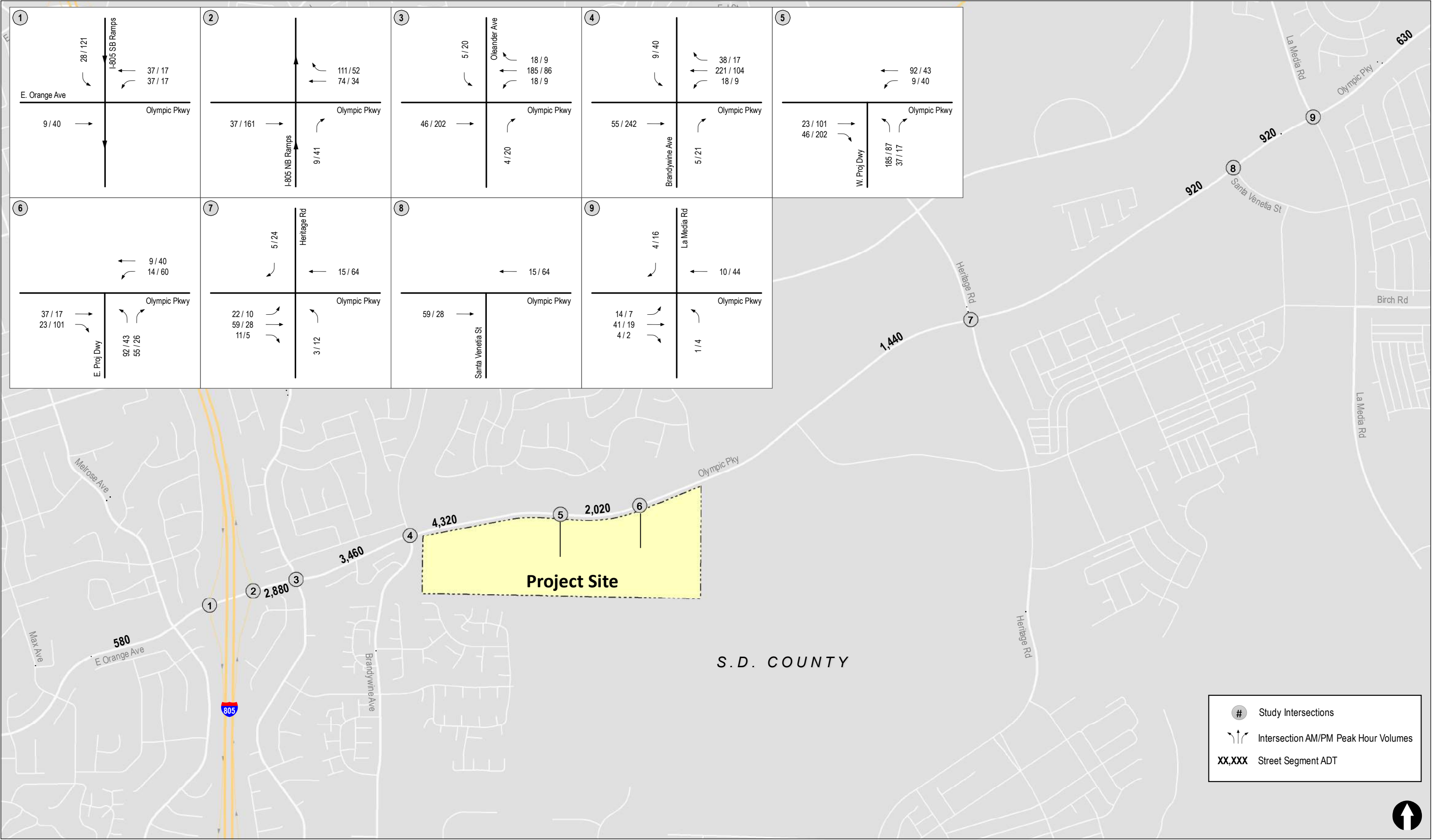


Figure 11-2
Project Traffic Volumes

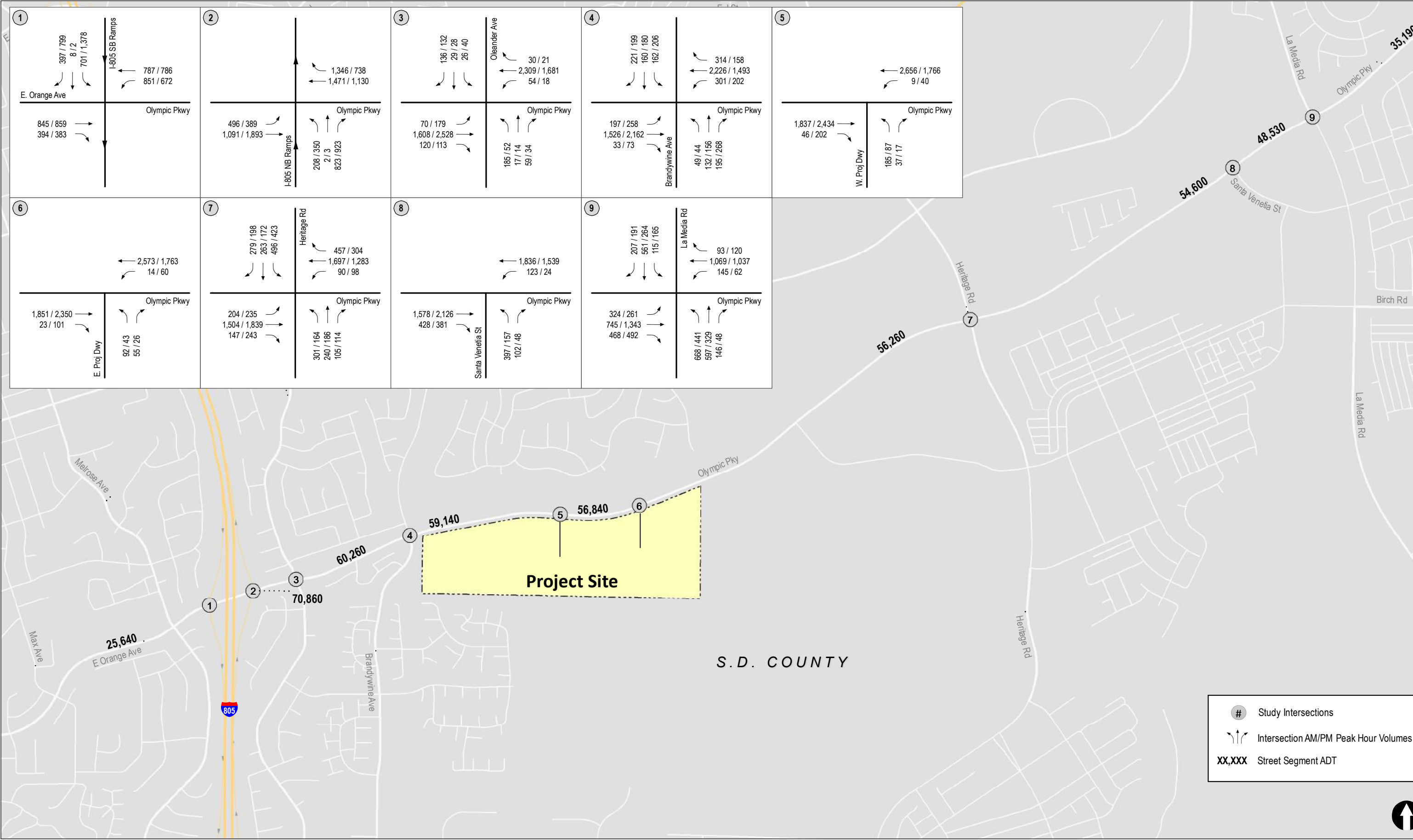


Figure 11-3
Existing + Project Traffic Volumes

12.0 ANALYSIS OF EXISTING + PROJECT CONDITIONS

12.1 Peak Hour Intersection Analysis

Table 12–1 summarizes the peak hour intersection operations under Existing + Project conditions in the study area. As shown, the study area intersections are calculated to continue to operate acceptably at LOS D or better during the AM and PM peak hours, with the exception of the following:

- Olympic Parkway / I-805 Southbound Ramps (LOS F during the PM peak hour)
- Olympic Parkway / I-805 Northbound Ramps (LOS F during the AM peak hour)

The Project contributes less than 5% of traffic to these locations. ***Therefore, the Project effects are considered substantial cumulative effects.***

Appendix C contains the Existing + Project intersection analysis worksheets.

12.2 Daily Street Segment Operations

Table 12–2 summarizes the Existing + Project street segment operations along the key study area roadways. As shown, the study area street segments are calculated to continue to operate acceptably at LOS C or better, with the exception of the following:

- Olympic Parkway: I-805 Ramps to Oleander Avenue (LOS F)
- Olympic Parkway: Oleander Avenue to Brandywine Avenue (LOS E)
- Olympic Parkway: Brandywine Avenue to Project Driveway (West) (LOS E)
- Olympic Parkway: Project Driveway (West) to Project Driveway (East) (LOS E)
- Olympic Parkway: Project Driveway (East) to Heritage Road (LOS D)
- Olympic Parkway: Heritage Road to Santa Venetia Street (LOS D)

The Project contributes more than 800 ADT, but less than 5% of traffic to the following locations. ***Therefore, the Project effects are considered substantial cumulative effects.***

- Olympic Parkway: I-805 Ramps to Oleander Avenue
- Olympic Parkway: Project Driveway (West) to Project Driveway (East)
- Olympic Parkway: Project Driveway (East) to Heritage Road
- Olympic Parkway: Heritage Road to Santa Venetia Street

The Project contributes more 800 ADT and more than 5% of traffic to the following location. ***Therefore, the Project effects are considered substantial project specific effects.***

- Olympic Parkway: Oleander Avenue to Brandywine Avenue
- Olympic Parkway: Brandywine Avenue to Project Driveway (West)

TABLE 12-1
EXISTING WITH PROJECT INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing with Project		Project % of Entering Volume (>5%)	Effect Type
			Delay ^a	LOS ^b	Delay	LOS		
1. Olympic Parkway / I-805 Southbound Ramps	Signal	AM	43.6	D	44.1	D	2.8%	Cumulative
		PM	87.3	F	92.5	F	4.0%	
2. Olympic Parkway / I-805 Northbound Ramps	Signal	AM	>100	F	>100	F	4.2%	Cumulative
		PM	45.6	D	49.3	D	5.3%	
3. Olympic Parkway / Oleander Avenue	Signal	AM	26.6	C	28.0	C	5.9%	None
		PM	7.2	A	7.4	A	7.1%	
4. Olympic Parkway / Brandywine Avenue	Signal	AM	43.6	D	43.6	D	6.3%	None
		PM	32.8	C	36.2	D	8.0%	
5. Olympic Parkway / Project Driveway (West)	DNE / Signal ^c	AM	-	-	11.0	B	8.2%	None
		PM	-	-	22.5	C	10.8%	
6. Olympic Parkway / Project Driveway (East)	DNE / Signal ^c	AM	-	-	17.5	B	5.0%	None
		PM	-	-	19.7	B	6.6%	
7. Olympic Parkway / Heritage Road	Signal	AM	45.8	D	47.2	D	2.0%	None
		PM	36.2	D	36.4	D	2.7%	
8. Olympic Parkway / Santa Venetia Street	Signal	AM	14.4	B	14.6	B	1.7%	None
		PM	8.2	A	8.2	A	2.2%	
9. Olympic Parkway / La Media Road	Signal	AM	53.5	D	53.8	D	1.4%	None
		PM	39.1	D	39.5	D	1.9%	

Footnotes:

- Average delay expressed in seconds per vehicle.
- Level of Service.
- Intersection does not exist under Existing conditions. The Project driveway will be signalized.

SIGNALIZED	
DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 12-2
EXISTING WITH PROJECT STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS C) ^a	Existing		Existing with Project		Substantial Effects Criteria		Effect Type
		ADT ^b	LOS ^c	ADT	LOS	Project ADT > 800	Project Contribution > 5%	
Olympic Parkway								
West of I-805 Ramps	30,000	25,060	B	25,640	B	580	2.3%	None
I-805 Ramps to Oleander Avenue	50,000	67,980	F	70,860	F	2,880	4.1%	Cumulative
Oleander Avenue to Brandywine Avenue	50,000	56,800	E	60,260	E	3,460	5.7%	Project Specific
Brandywine Avenue to Project Driveway (West)	50,000	54,820	D	59,140	E	4,320	7.3%	Project Specific
Project Driveway (West) to Project Driveway (East)	50,000	54,820	D	56,840	E	2,020	3.6%	Cumulative
Project Driveway (East) to Heritage Road	50,000	54,820	D	56,260	D	1,440	2.6%	Cumulative
Heritage Road to Santa Venetia Street	50,000	53,680	D	54,600	D	920	1.7%	Cumulative
Santa Venetia Street to La Media Road	50,000	47,610	C	48,530	C	920	1.9%	None
La Media Road to Paloma Street	50,000	34,560	A	35,190	A	630	1.8%	None

Footnotes:

- a. Capacities based on City of Chula Vista Roadway Classification Table.
- b. Average Daily Traffic Volumes.
- c. Level of Service.

13.0 CUMULATIVE PROJECTS

13.1 Summary of Cumulative Projects

Cumulative projects are other projects in the study area that will add traffic to the local circulation system in the near future. Based on information from City of Chula Vista staff, the following projects were identified for inclusion in the near-term cumulative analysis. The following is a brief description of each of the cumulative projects in the general vicinity of the Project. **Table 13-1** provides additional information on the cumulative projects' land uses and density at buildout.

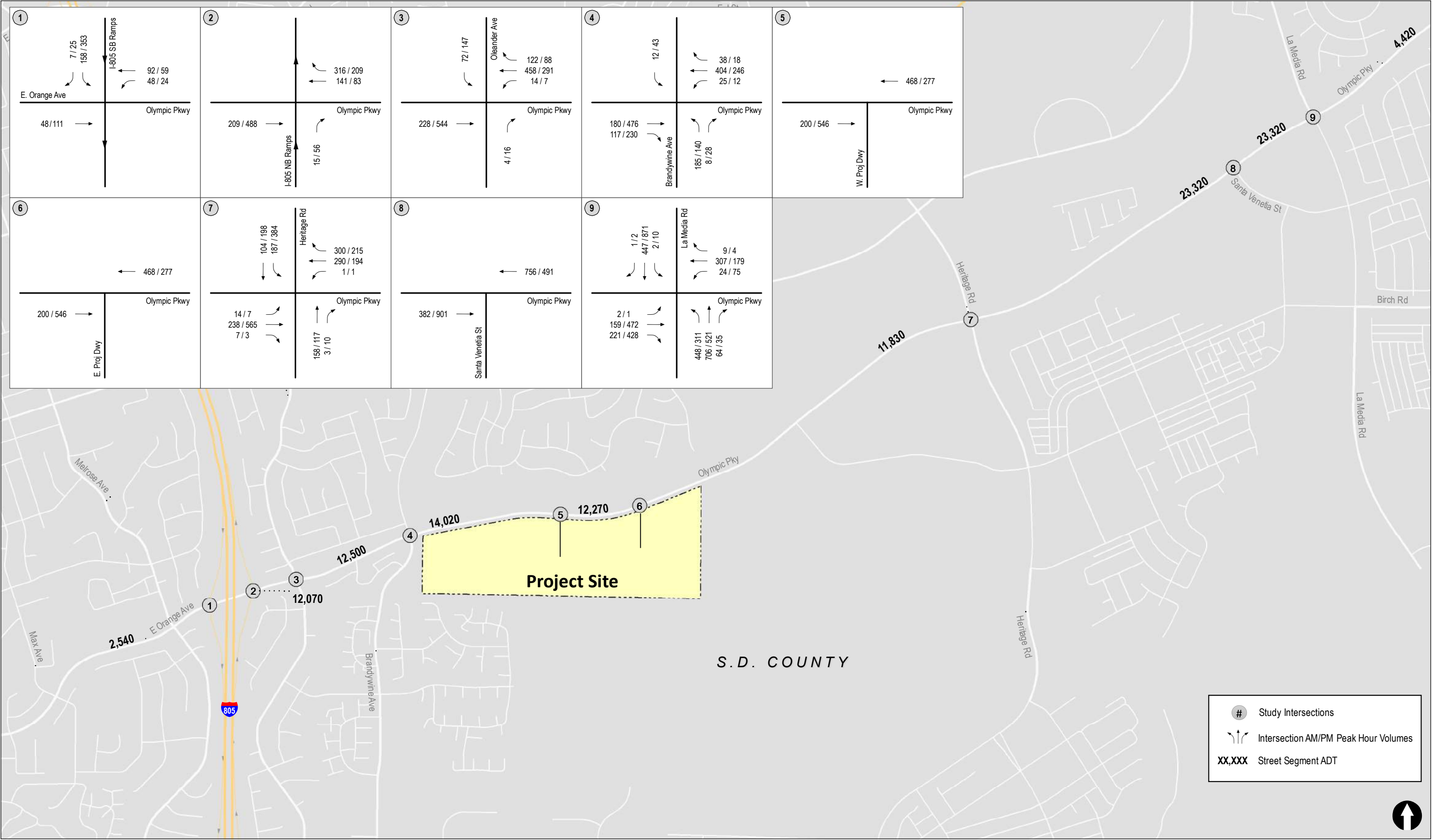
1. **University Villages** project encompasses Village Three North and a Portion of Village Four, Village Eight East, and Village Ten. The development program for the project is based on the Chula Vista General Plan and the approved Otay Ranch planning documents (Otay Ranch GDP, Overall Design Plan, and other SPA plans for Otay Ranch).
2. **Eastern Urban Center (Millenia)** project site is located east of SR 125 and west of Eastlake Parkway, south of Birch Street. Designated uses and density at buildout of the project include 2,983 multi-family residential units, regional and specialty shopping, multi-use cultural arts facilities, local parks, business parks, visitor commercial, a transit station, an elementary school, and other civic facilities.
3. **Village 4 South Residential** project site is planned to be located west of the future La Media Road / Main Street couplet. The project proposes 275 multi-family and 75 single family homes.
4. **Planning Area 12 Freeway Commercial** project site is located east of SR 125 and west of Eastlake Parkway, south of Olympic Parkway. The project proposes 900 multi-family homes, commercial, mixed use, hotel and park uses.
5. **Village 2** project site is located east of the Project site and west of La Media Road, south of Olympic Parkway. The project includes development of 4,538 residential units (614 single-family and 3,924 multi-family units) and three industrial areas within approximately 87.9 acres.
6. **Village 8 West** will be located in the southwest portion of Otay Ranch and will be developed around the future intersection of La Media Road and Main Street. The project will be built in several phases. The following components of the project were included in the Project' near-term cumulative analysis: 561 single family homes, 1,773 multi-family homes, 50,000 SF of office uses, 250,000 SF of commercial retail, an elementary school, and 23.4 acres of parks.
7. **Village 9** will be located east of SR 125 and south of the Millenia Project. Designated uses and density at buildout of the project include. 3,959 residential units: 266 SF units and 3,693 MF units; 1,200,000 SF Commercial/Office; 300,000 SF Retail; 5 Acres of CPF; 27.5 Acres of Parks; 19.8 Acres of School.

8. **Eastlake Behavioral Health Hospital** will be located at the terminus of the Showroom Place cul-de-sac, north of Fenton Street. The project proposes the development of a new 120-bed hospital.

Figure 13–1 shows the Cumulative Projects only traffic volumes on the existing street network.

TABLE 13-1
CUMULATIVE PROJECTS SUMMARY

Project	Land Uses at Buildout
University Villages, consisting of:	
Village 3	1,638 residential units: 813 SF units, 457 MF units, and 327 unallocated units; 20,000 SF Retail (7.4 Acres); 29.3 Acres of Industrial; 15.3 Acres of Parks; 4.3 Acres of CPF; 8.3 Acres of School.
Village 8 East	Base Scenario: 3,276 residential units: 943 SF units and 2,333 MF units; 20,000 SF Retail; 4.2 Acres of CPF; 30.4 (Required) Acres of Parks; 10.8 Acres of School. Per 2020 Amendment
Village 10	1,740 residential units: 695 SF units and 1,045 MF units; 7.6 Acres of Parks; 4.3 Acres of CPF; 9.2 Acres of School.
Millenia	2,983 multi-family residential units and 3.324 million square feet of non-residential uses, including regional and specialty shopping, multi-use cultural arts facilities, local parks, business parks, visitor commercial, a transit station, an elementary school, and other civic facilities.
Village 4	275 multi-family and 75 single family homes.
PA12	900 multi-family homes, commercial, mixed use, hotel and park uses.
Village 2	The project includes development of 4,538 residential units (614 single-family and 3,924 multi-family units) and three industrial areas within approximately 87.9 acres.
Village 8W	The following components of the project were included in the Project' near-term cumulative analysis: 561 single family homes, 1,773 multi-family homes, up to 50,000 SF of office uses and 250,000 SF of commercial retail, an elementary school, and 23.4 acres of parks
Village 9	3,959 residential units: 266 SF units and 3,693 MF units; 1,200,000 SF Commercial/Office; 300,000 SF Retail; 5 Acres of CPF; 27.5 Acres of Parks; 19.8 Acres of School.
Eastlake Behavioral Health	120 beds



14.0 ANALYSIS OF NEAR-TERM CONDITIONS

The following section presents the analysis of study area intersections and street segments under Near-Term conditions without and with the proposed Project.

14.1 Near-Term Traffic Volumes

Near-Term without Project traffic volumes were calculated by adding the cumulative projects traffic volumes onto the Existing traffic volumes. Near-Term + Project traffic volumes were calculated by then adding the Project traffic volumes.

Figure 14–1 shows the Near-Term traffic volumes. **Figure 14–2** shows the Near-Term + Project traffic volumes.

14.2 Near-Term without Project Conditions

14.2.1 Peak Hour Intersection Analysis

Table 14–1 summarizes the peak hour intersection operations under Near-Term conditions in the study area. As shown, the study area intersections are calculated to operate acceptably at LOS D or better during the AM and PM peak hours, with the exception of the following:

- Olympic Parkway / I-805 Southbound Ramps (LOS E during the PM peak hour)
- Olympic Parkway / I-805 Northbound Ramps (LOS F during the AM and LOS E during the PM peak hours)
- Olympic Parkway / Brandywine Avenue (LOS F during the AM and PM peak hours)
- Olympic Parkway / Heritage Road (LOS F during the AM and PM peak hours)
- Olympic Parkway / La Media Road (LOS F during the AM and LOS E during the PM peak hours)

Appendix D contains the Near-Term intersection analysis worksheets.

14.2.2 Daily Street Segment Operations

Table 14–2 summarizes the Near-Term street segment operations along the key study area roadways. As shown, the study area street segments are calculated to operate acceptably at LOS C or better, with the exception of the following:

- Olympic Parkway: I-805 Ramps to Oleander Avenue (LOS F)
- Olympic Parkway: Oleander Avenue to Brandywine Avenue (LOS F)
- Olympic Parkway: Brandywine Avenue to Project Driveway (West) (LOS F)
- Olympic Parkway: Project Driveway (West) to Project Driveway (East) (LOS F)
- Olympic Parkway: Project Driveway (East) to Heritage Road (LOS F)
- Olympic Parkway: Heritage Road to Santa Venetia Street (LOS F)
- Olympic Parkway: Santa Venetia Street to La Media Road (LOS F)

14.3 Near-Term with Project Conditions

14.3.1 Peak Hour Intersection Analysis

Table 14–1 summarizes the peak hour intersection operations under Near-Term + Project conditions in the study area. As shown, the study area intersections are calculated to operate acceptably at LOS D or better during the AM and PM peak hours, with the exception of the following:

- Olympic Parkway / I-805 Southbound Ramps (LOS E during the PM peak hour)
- Olympic Parkway / I-805 Northbound Ramps (LOS F during the AM and PM peak hours)
- Olympic Parkway / Brandywine Avenue (LOS F during the AM and PM peak hours)
- Olympic Parkway / Heritage Road (LOS F during the AM and PM peak hours)
- Olympic Parkway / La Media Road (LOS F during the AM and LOS E during the PM peak hours)

The Project contributes less than 5% of traffic to the following locations. ***Therefore, the Project effects are considered substantial cumulative effects.***

- East Orange Avenue / I-805 Southbound Ramps
- Olympic Parkway / I-805 Northbound Ramps
- Olympic Parkway / Heritage Road
- Olympic Parkway / La Media Road

The Project contributes more than 5% of traffic to the following location. ***Therefore, the Project effects are considered substantial project specific effects.***

- Olympic Parkway / Brandywine Avenue

Appendix E contains the Near-Term + Project intersection analysis worksheets.

14.3.2 Daily Street Segment Operations

Table 14–2 summarizes the Near-Term + Project street segment operations along the key study area roadways. As shown, the study area street segments are calculated to operate acceptably at LOS C or better, with the exception of the following:

- Olympic Parkway: I-805 Ramps to Oleander Avenue (LOS F)
- Olympic Parkway: Oleander Avenue to Brandywine Avenue (LOS F)
- Olympic Parkway: Brandywine Avenue to Project Driveway (West) (LOS F)
- Olympic Parkway: Project Driveway (West) to Project Driveway (East) (LOS F)
- Olympic Parkway: Project Driveway (East) to Heritage Road (LOS F)
- Olympic Parkway: Heritage Road to Santa Venetia Street (LOS F)
- Olympic Parkway: Santa Venetia Street to La Media Road (LOS F)

The Project contributes more than 800 ADT, but less than 5% of traffic to the following locations.
Therefore, the Project effects are considered substantial cumulative effects.

- Olympic Parkway: I-805 to Oleander Avenue
- Olympic Parkway: Oleander Avenue to Brandywine Avenue
- Olympic Parkway: Project Driveway (West) to Project Driveway (East)
- Olympic Parkway: Project Driveway (East) to Heritage Road
- Olympic Parkway: Heritage Road to Santa Venetia Street
- Olympic Parkway: Santa Venetia Street to La Media Road

The Project contributes more 800 ADT and more than 5% of traffic to the following location.
Therefore, the Project effects are considered substantial project specific effects.

- Olympic Parkway: Brandywine Avenue to Project Driveway (West)

TABLE 14-1
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Near-Term		Near-Term with Project		Project % of Entering Volume (>5%)	Effect Type
			Delay ^a	LOS ^b	Delay	LOS		
1. Olympic Parkway / I-805 Southbound Ramps	Signal	AM	47.6	D	49.2	D	2.6%	Cumulative
		PM	72.8	E	76.9	E	3.6%	
2. Olympic Parkway / I-805 Northbound Ramps	Signal	AM	>100	F	>100	F	3.8%	Cumulative
		PM	67.1	E	85.4	F	4.6%	
3. Olympic Parkway / Oleander Avenue	Signal	AM	31.1	C	41.7	D	5.0%	None
		PM	8.6	A	11.9	B	5.8%	
4. Olympic Parkway / Brandywine Avenue	Signal	AM	>100	F	>100	F	5.3%	Project Specific
		PM	>100	F	>100	F	6.6%	
5. Olympic Parkway / Project Driveway (West)	DNE / Signal ^c	AM		-	11.0	B	7.2%	None
		PM		-	22.5	C	9.1%	
6. Olympic Parkway / Project Driveway (East)	DNE / Signal ^c	AM		-	17.5	B	4.4%	None
		PM		-	19.7	B	5.6%	
7. Olympic Parkway / Heritage Road	Signal	AM	65.2	E	66.5	E	1.6%	Cumulative
		PM	92.0	F	92.1	F	2.1%	
8. Olympic Parkway / Santa Venetia Street	Signal	AM	14.5	B	15.0	B	1.3%	None
		PM	12.6	B	13.2	B	1.6%	
9. Olympic Parkway / La Media Road	Signal	AM	91.4	F	92.9	F	1.0%	Cumulative
		PM	66.3	E	67.7	E	1.2%	

Footnotes:

- Average delay expressed in seconds per vehicle.
- Level of Service.
- Intersection does not exist under Existing conditions. The Project driveway will be signalized.

SIGNALIZED	
DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 14-2
NEAR-TERM STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS C) ^a	Near-Term		Near-Term with Project		Substantial Effects Criteria		Effect Type
		ADT ^b	LOS ^c	ADT	LOS	Project ADT > 800	Project Contribution > 5%	
Olympic Parkway								
West of I-805 Ramps	30,000	27,600	C	28,180	C	580	2.1%	None
I-805 Ramps to Oleander Avenue	50,000	80,050	F	82,930	F	2,880	3.5%	Cumulative
Oleander Avenue to Brandywine Avenue	50,000	69,300	F	72,760	F	3,460	4.8%	Cumulative
Brandywine Avenue to Project Driveway (West)	50,000	68,840	F	73,160	F	4,320	5.9%	Project Specific
Project Driveway (West) to Project Driveway (East)	50,000	67,090	F	69,110	F	2,020	2.9%	Cumulative
Project Driveway (East) to Heritage Road	50,000	66,650	F	68,090	F	1,440	2.1%	Cumulative
Heritage Road to Santa Venetia Street	50,000	77,000	F	77,920	F	920	1.2%	Cumulative
Santa Venetia Street to La Media Road	50,000	70,930	F	71,850	F	920	1.3%	Cumulative
La Media Road to Paloma Street	50,000	38,980	B	39,610	B	630	1.6%	None

Footnotes:

- a. Capacities based on City of Chula Vista Roadway Classification Table.
- b. Average Daily Traffic Volumes.
- c. Level of Service.

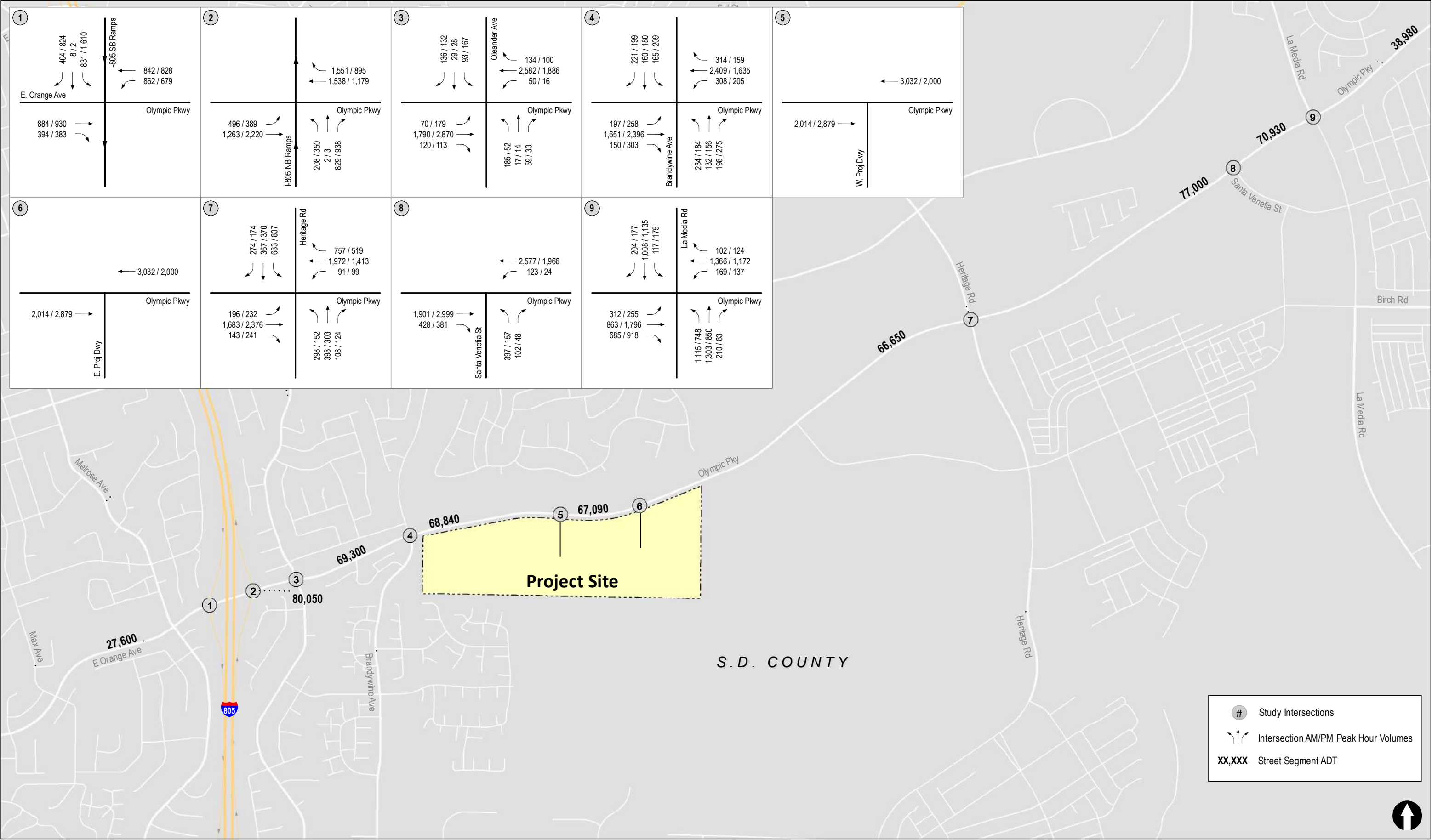


Figure 14-1
Near-Term Traffic Volumes

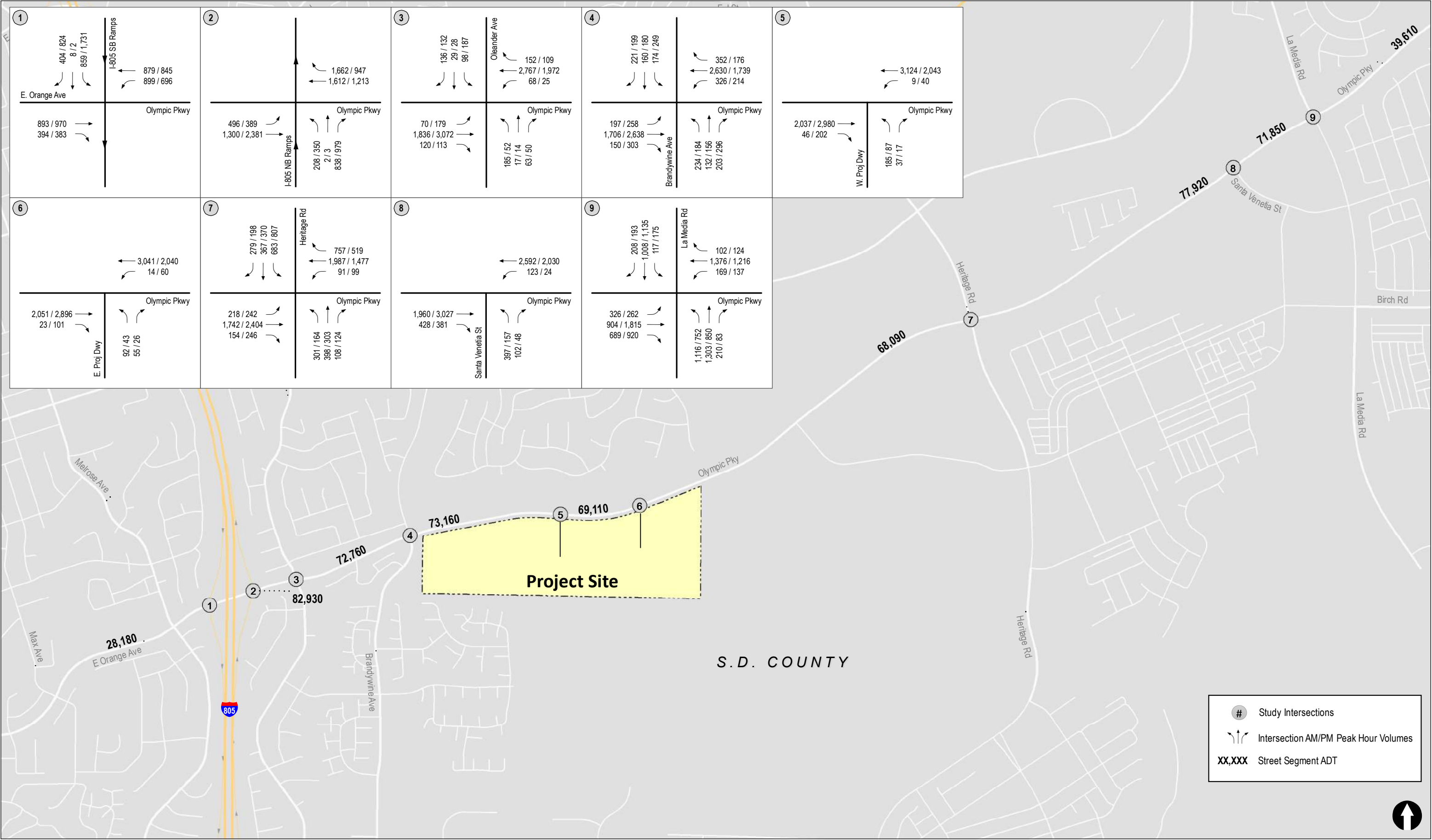


Figure 14-2
Near-Term + Project Traffic Volumes

15.0 ASSESSMENT OF YEAR 2035 CONDITIONS

The following section presents an assessment of the study area street segments under Year 2035 conditions. As noted earlier in this study, the Project site is currently zoned for industrial land uses and is assumed as such in the SANDAG model.

Table 15-1 compares the trip generation calculations for the existing industrial land use zoning and the proposed residential project. As shown, the Project will generate 72 additional daily trips (1.3% more trips) and fewer peak hour trips as compared to the industrial zoning. Therefore, it can be concluded that the Project is included in the SANDAG Series 13 Year 2035 model.

Table 15-2 summarizes the Year 2035 conditions street segment operations along the study area roadways. ADT traffic volumes were obtained directly from the SANDAG Series 13 Year 2035 Traffic Model. As shown, under Year 2035 conditions (which include the Project's anticipated trips) the study area street segments are calculated to operate acceptably at LOS C or better, with the exception of the following:

- Olympic Parkway: I-805 Ramps to Oleander Avenue (LOS E)
- Olympic Parkway: Oleander Avenue to Brandywine Avenue (LOS D)
- Olympic Parkway: Brandywine Avenue to Project Driveway (West) (LOS D)
- Olympic Parkway: Project Driveway (West) to Project Driveway (East) (LOS D)
- Olympic Parkway: Project Driveway (East) to Heritage Road (LOS D)

It should be noted that the majority Series 13 Year 2035 ADTs are lower than the Existing ADTs counted in January 2020. This is because the model assumes buildout of the City of Chula Vista General Plan Circulation Element, including the following network enhancements which are expected to reduce the number of trips on Olympic Parkway:

- Heritage Road from Olympic Parkway to Main Street as a 6-Lane Prime Arterial
- Extension of La Media Road from Santa Luna Street to Main Street
- Extension of Main Street from Heritage Road to East Lake Parkway including crossing at SR 125
- Otay Valley Road from Main Street to Village 9 including crossing at SR 125
- Construction of SR 125 Ramps at Main Street

The distribution of Project trips shown on *Figure 11-1* may change with the implementation of the Circulation Element network enhancements since drivers will be provided with additional travel routes. The Series 13 Year 2035 ADTs reflect any such changes to the distribution.

Since the Project does not generate more traffic than the currently zoned industrial land use, the Project would not contribute to substantial effects under Year 2035 conditions.

TABLE 15-1
TRIP GENERATION COMPARISON

Use	Quantity	Daily Trip Ends (ADTS) ^a		AM Peak Hour				PM Peak Hour			
		Rate ^b	Volume	% of ADT	In:Out Split	Volume		% of ADT	In:Out Split	Volume	
						In	Out			In	Out
Current Zoning											
Industrial	47.4 Acres	120 / Acre	5,688	14%	80:20	637	159	15%	30:70	256	597
Proposed Project											
Condominiums	720 Units	8 / Unit	5,760	8%	20:80	92	369	10%	70:30	403	173
Increase / Decrease in Trips			72	-		-545	210			147	-424

Footnotes:

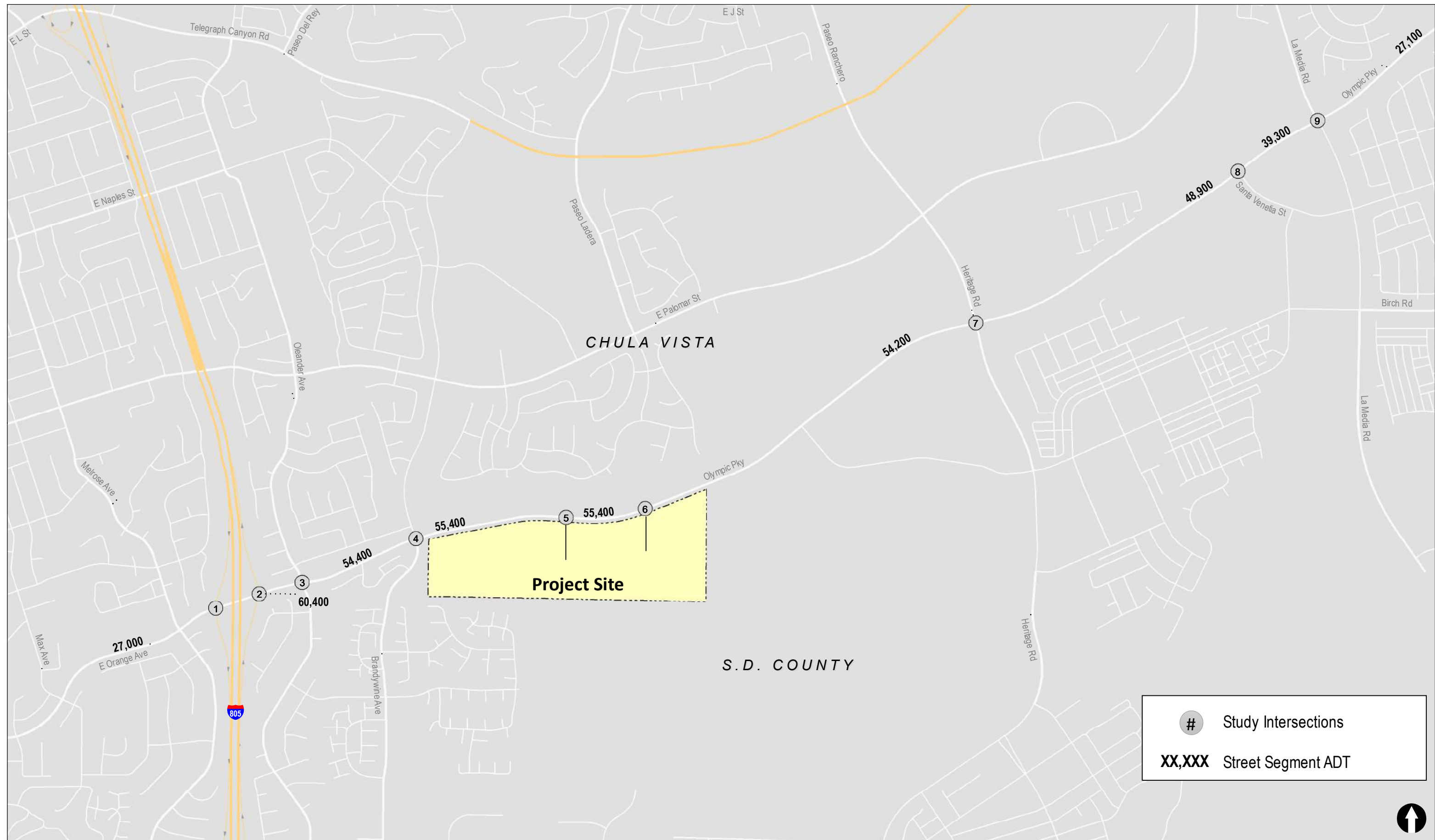
- d. Average Daily Trips
- e. Trip Generation Rate from the SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, 2002*.

TABLE 15-2
YEAR 2035 STREET SEGMENT OPERATIONS

Street Segment	Functional Classification	Capacity (LOS C) ^a	Buildout (Year 2035)	
			ADT ^b	LOS ^c
Olympic Parkway				
West of I-805 Ramps	4-Lane Major	30,000	27,000	C
I-805 Ramps to Oleander Avenue	6-Lane Prime	50,000	60,400	E
Oleander Avenue to Brandywine Avenue	6-Lane Prime	50,000	54,400	D
Brandywine Avenue to Project Driveway (West)	6-Lane Prime	50,000	55,400	D
Project Driveway (West) to Project Driveway (East)	6-Lane Prime	50,000	55,400	D
Project Driveway (East) to Heritage Road	6-Lane Prime	50,000	54,200	D
Heritage Road to Santa Venetia Street	6-Lane Prime	50,000	48,900	C
Santa Venetia Street to La Media Road	6-Lane Prime	50,000	39,300	B
La Media Road to Paloma Street	6-Lane Prime	50,000	27,100	A

Footnotes:

- a. Capacities based on City of Chula Vista Roadway Classification Table.
- b. Average Daily Traffic Volumes.
- c. Level of Service.



16.0 ACCESS ASSESSMENT

The Project site is located south of Olympic Parkway, between Brandywine Avenue and Heritage Road in the City of Chula Vista. Two signalized points of access to the site are planned from Olympic Parkway, in the locations designated in the 1998 Sunbow SPA Plan.

Peak Hour signal warrant analyses based on the warrants contained in Chapter 4C, “Traffic Control Signal Needs Studies,” of the *2014 California Manual on Uniform Traffic Control Devices, Revision 5* (CA MUTCD) were conducted for the Project’s proposed driveways to ensure signalization is warranted. The signal warrant calculations are provided in **Appendix H**, and show that both driveways meet the Peak Hour signal warrant.

As noted in *Sections 12 and 14* of this study, the Project’s signalized driveways are calculated to operate acceptably at LOS C or better. The recommended lane configurations at the Project’s signalized driveways are shown in **Figure 16-1**.

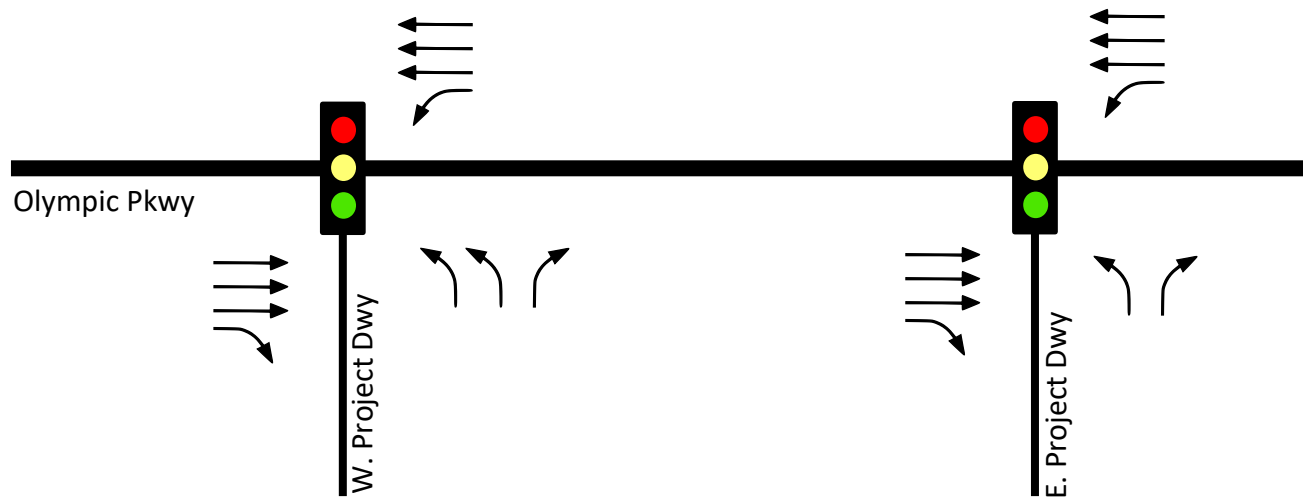


Figure 16-1

Recommended Project Driveway Lane Configurations

Sunbow II, Phase 3

17.0 SUBSTANTIAL EFFECTS AND OPERATIONAL IMPROVEMENTS

The following section identifies Project-related substantial effects and recommends operational improvements to address the substantial effects.

17.1 Eastern Transportation Development Fee

City identified capital improvement projects are summarized in the published *Eastern Transportation Development Impact Fee* (“Eastern TDIF”) (September 2014). Additionally, City capital improvement projects include traffic signal upgrades for intersections in the study area published in the City of Chula Vista, *Traffic Signal Communications Master Plan Study* (July 2017). These two documents were referenced when identifying potential operational improvements to address Project-related effects.

17.2 Substantial Project Specific Effects and Operational Improvements

The Project is calculated to cause ***substantial project specific effects*** at the following locations:

- **TRA 1: Intersection No. 4: Olympic Parkway / Brandywine Avenue**: This intersection is built-out, and the provision of additional lanes is considered physically infeasible. Additionally, a review of the *Eastern Transportation Development Impact Fee* and the *Traffic Signal Communications Master Plan Study* indicate that there are currently no proposed physical operational improvements for this signalized intersection.

Payment of the City’s TDIF should be applied towards other planned network enhancements included in the Eastern TDIF study that would reduce traffic on Olympic Parkway. Large-scale network enhancements included in the Eastern TDIF, such as the extension of La Media Road and the extension of Main Street, are expected to reduce the number of trips on Olympic Parkway.

As discussed in *Section 15* this report, the majority of the ADTs on Olympic Parkway are lower under Year 2035 model conditions (which assumes buildout of the City’s General Plan Circulation Element and includes Project traffic) as compared to the Existing ADTs, counted in January 2020. **Table 17-1** shows that, on average, the Year 2035 traffic volumes are 6.1% lower as compared to the Existing ADTs, which supports the assertion that the contribution of TDIF funds towards other planned network enhancements included in the Eastern TDIF study will reduce the amount of traffic on Olympic Parkway, thereby addressing the Project’s substantial effect.

In addition, the Project will contribute its fair share contribution towards the provision of Adaptive Traffic Signal Control (ATSC) modules to each signalized intersection along the Olympic Parkway corridor between the I-805 Ramps and La Media Road.

TABLE 17-1
OLYMPIC PARKWAY ADT COMPARISON

Street Segment	Existing (January 2020)	Year 2035	% Increase / Decrease from Existing
Olympic Parkway			
West of I-805 Ramps	25,060	27,000	7.7%
I-805 Ramps to Oleander Avenue	67,980	60,400	-11.2%
Oleander Avenue to Brandywine Avenue	56,800	54,400	-4.2%
Brandywine Avenue to Project Driveway (West)	54,820	55,400	1.1%
Project Driveway (West) to Project Driveway (East)	54,820	55,400	1.1%
Project Driveway (East) to Heritage Road	54,820	54,200	-1.1%
Heritage Road to Santa Venetia Street	53,680	48,900	-8.9%
Santa Venetia Street to La Media Road	47,610	39,300	-17.5%
La Media Road to Paloma Street	34,560	27,100	-21.6%
Average Decrease in Traffic			-6.1%

Footnotes:

a. Average Daily Traffic Volumes.

- TRA 2: Olympic Parkway Segments: Oleander Avenue to Project Driveway (West): Olympic Parkway is classified as a Prime Arterial in the City of Chula Vista Circulation Plan. Currently it is built as a 6-lane divided road with three lanes westbound and three lanes eastbound and a raised median. Therefore, Olympic Parkway is built-out, and the provision of additional lanes is considered physically infeasible and inconstant with the City's General Plan. Additionally, a review of the *Eastern Transportation Development Impact Fee* and the *Traffic Signal Communications Master Plan Study* indicate that there are currently no proposed physical operational improvements for this segment of Olympic Parkway.

Payment of the City's TDIF should be applied towards other planned network enhancements included in the Eastern TDIF study that would reduce traffic on Olympic Parkway. Large-scale network enhancements included in the Eastern TDIF, such as the extension of La Media Road and the extension of Main Street, are expected to reduce the number of trips on Olympic Parkway.

As discussed in *Section 15* this report, the majority of the ADTs on Olympic Parkway are lower under Year 2035 model conditions (which assumes buildout of the City's General Plan Circulation Element and includes Project traffic) as compared to the Existing ADTs, counted in January 2020. *Table 17-1* shows that, on average, the Year 2035 traffic volumes are 6.1% lower as compared to the Existing ADTs, which supports the assertion that the contribution of TDIF funds towards other planned network

enhancements included in the Eastern TDIF study will reduce the amount of traffic on Olympic Parkway, thereby addressing the Project's substantial effect.

In addition, the Project will contribute its fair share contribution towards the provision of Adaptive Traffic Signal Control (ATSC) modules to each signalized intersection along the Olympic Parkway corridor between the I-805 Ramps and La Media Road.

17.3 Substantial Cumulative Effects and Operational Improvements

The Project is calculated to cause ***substantial cumulative effects*** at the following locations:

- TRA 3: Intersection No. 1: E. Orange Avenue / I-805 Southbound Ramps: This intersection is built-out, and the provision of additional lanes is considered physically infeasible. Additionally, a review of the *Eastern Transportation Development Impact Fee* and the *Traffic Signal Communications Master Plan Study* indicate that there are currently no proposed physical operational improvements for this signalized intersection.

Payment of the City's TDIF should be applied towards other planned network enhancements included in the Eastern TDIF study that would reduce traffic on Olympic Parkway. Large-scale network enhancements included in the Eastern TDIF, such as the extension of La Media Road and the extension of Main Street, are expected to reduce the number of trips on Olympic Parkway.

As discussed in *Section 15* this report, the majority of the ADTs on Olympic Parkway are lower under Year 2035 model conditions (which assumes buildout of the City's General Plan Circulation Element and includes Project traffic) as compared to the Existing ADTs, counted in January 2020. *Table 17-1* shows that, on average, the Year 2035 traffic volumes are 6.1% lower as compared to the Existing ADTs, which supports the assertion that the contribution of TDIF funds towards other planned network enhancements included in the Eastern TDIF study will reduce the amount of traffic on Olympic Parkway, thereby addressing the Project's substantial effect.

In addition, the Project will contribute its fair share contribution towards the provision of Adaptive Traffic Signal Control (ATSC) modules to each signalized intersection along the Olympic Parkway corridor between the I-805 Ramps and La Media Road.

- TRA 4: Intersection No. 2: Olympic Parkway / I-805 Northbound Ramps: This intersection is built-out, and the provision of additional lanes is considered physically infeasible. Additionally, a review of the *Eastern Transportation Development Impact Fee* and the *Traffic Signal Communications Master Plan Study* indicate that there are currently no proposed physical operational improvements for this signalized intersection.

Payment of the City's TDIF should be applied towards other planned network enhancements included in the Eastern TDIF study that would reduce traffic on Olympic Parkway. Large-scale network enhancements included in the Eastern TDIF, such as the extension of La Media Road and the extension of Main Street, are expected to reduce the number of trips on Olympic Parkway.

As discussed in *Section 15* this report, the majority of the ADTs on Olympic Parkway are lower under Year 2035 model conditions (which assumes buildout of the City's General Plan Circulation Element and includes Project traffic) as compared to the Existing ADTs, counted in January 2020. *Table 17-1* shows that, on average, the Year 2035 traffic volumes are 6.1% lower as compared to the Existing ADTs, which supports the assertion that the contribution of TDIF funds towards other planned network enhancements included in the Eastern TDIF study will reduce the amount of traffic on Olympic Parkway, thereby addressing the Project's substantial effect.

In addition, the Project will contribute its fair share contribution towards the provision of Adaptive Traffic Signal Control (ATSC) modules to each signalized intersection along the Olympic Parkway corridor between the I-805 Ramps and La Media Road.

- TRA 5: Intersection No. 7: Olympic Parkway / Heritage Road: This intersection is built-out, and the provision of additional lanes is considered physically infeasible. Additionally, a review of the *Eastern Transportation Development Impact Fee* and the *Traffic Signal Communications Master Plan Study* indicate that there are currently no proposed physical operational improvements for this signalized intersection.

Payment of the City's TDIF should be applied towards other planned network enhancements included in the Eastern TDIF study that would reduce traffic on Olympic Parkway. Large-scale network enhancements included in the Eastern TDIF, such as the extension of La Media Road and the extension of Main Street, are expected to reduce the number of trips on Olympic Parkway.

As discussed in *Section 15* this report, the majority of the ADTs on Olympic Parkway are lower under Year 2035 model conditions (which assumes buildout of the City's General Plan Circulation Element and includes Project traffic) as compared to the Existing ADTs, counted in January 2020. *Table 17-1* shows that, on average, the Year 2035 traffic volumes are 6.1% lower as compared to the Existing ADTs, which supports the assertion that the contribution of TDIF funds towards other planned network enhancements included in the Eastern TDIF study will reduce the amount of traffic on Olympic Parkway, thereby addressing the Project's substantial effect.

In addition, the Project will contribute its fair share contribution towards the provision of Adaptive Traffic Signal Control (ATSC) modules to each signalized intersection along the Olympic Parkway corridor between the I-805 Ramps and La Media Road.

- TRA 6: Intersection No. 9: Olympic Parkway / La Media Road: This intersection is built-out, and the provision of additional lanes is considered physically infeasible. Additionally, a review of the *Eastern Transportation Development Impact Fee* and the *Traffic Signal Communications Master Plan Study* indicate that there are currently no proposed physical operational improvements for this signalized intersection.

Payment of the City's TDIF should be applied towards other planned network enhancements included in the Eastern TDIF study that would reduce traffic on Olympic Parkway. Large-scale network enhancements included in the Eastern TDIF, such as the

extension of La Media Road and the extension of Main Street, are expected to reduce the number of trips on Olympic Parkway.

As discussed in *Section 15* this report, the majority of the ADTs on Olympic Parkway are lower under Year 2035 model conditions (which assumes buildout of the City's General Plan Circulation Element and includes Project traffic) as compared to the Existing ADTs, counted in January 2020. *Table 17-1* shows that, on average, the Year 2035 traffic volumes are 6.1% lower as compared to the Existing ADTs, which supports the assertion that the contribution of TDIF funds towards other planned network enhancements included in the Eastern TDIF study will reduce the amount of traffic on Olympic Parkway, thereby addressing the Project's substantial effect.

In addition, the Project will contribute its fair share contribution towards the provision of Adaptive Traffic Signal Control (ATSC) modules to each signalized intersection along the Olympic Parkway corridor between the I-805 Ramps and La Media Road..

- TRA 7: Olympic Parkway Segments: I-805 Ramps to Oleander Avenue and Project Driveway (West) to La Media Road: Olympic Parkway is classified as a Prime Arterial in the City of Chula Vista Circulation Plan. Currently it is built as a 6-lane divided road with three lanes westbound and three lanes eastbound and a raised median. Therefore, Olympic Parkway is built-out, and the provision of additional lanes is considered physically infeasible and inconstant with the City's General Plan. Additionally, a review of the *Eastern Transportation Development Impact Fee* and the *Traffic Signal Communications Master Plan Study* indicate that there are currently no proposed physical operational improvements for this segment of Olympic Parkway.

Payment of the City's TDIF should be applied towards other planned network enhancements included in the Eastern TDIF study that would reduce traffic on Olympic Parkway. Large-scale network enhancements included in the Eastern TDIF, such as the extension of La Media Road and the extension of Main Street, are expected to reduce the number of trips on Olympic Parkway.

As discussed in *Section 15* this report, the majority of the ADTs on Olympic Parkway are lower under Year 2035 model conditions (which assumes buildout of the City's General Plan Circulation Element and includes Project traffic) as compared to the Existing ADTs, counted in January 2020. *Table 17-1* shows that, on average, the Year 2035 traffic volumes are 6.1% lower as compared to the Existing ADTs, which supports the assertion that the contribution of TDIF funds towards other planned network enhancements included in the Eastern TDIF study will reduce the amount of traffic on Olympic Parkway, thereby addressing the Project's substantial effect.

In addition, the Project will contribute its fair share contribution towards the provision of Adaptive Traffic Signal Control (ATSC) modules to each signalized intersection along the Olympic Parkway corridor between the I-805 Ramps and La Media Road.

TECHNICAL APPENDICES
SUNBOW II, PHASE 3
Chula Vista, California
March, 2021

LLG Ref. 3-19-3199

APPENDIX A

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS & SIGNAL TIMING PLANS

Intersection Turning Movement - Peak Hour Vehicle Count



Location: #01
 Intersection: East Orange Avenue & I-805 Southbound Ramps
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-01
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	I-805 SB Off Ramp Southbound			E. Orange Avenue Westbound			I-805 SB On Ramp Northbound			E. Orange Avenue Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	154	2	54	159	90	0	0	0	0	0	187	49	695
7:15	138	1	74	192	161	0	0	0	0	0	197	86	849
7:30	178	1	106	211	219	0	0	0	0	0	194	95	1004
7:45	184	1	118	212	202	0	0	0	0	0	226	115	1058
8:00	173	5	99	199	168	0	0	0	0	0	219	98	961
8:15	105	0	69	162	167	0	0	0	0	0	226	88	817
8:30	116	0	59	174	145	0	0	0	0	0	160	92	746
8:45	106	1	73	183	164	0	0	0	0	0	157	75	759
Total	1154	11	652	1492	1316	0	0	0	0	0	1566	698	6889
Approach%	63.5	0.6	35.9	53.1	46.9	-	-	-	-	-	69.2	30.8	
Total%	16.8	0.2	9.5	21.7	19.1	-	-	-	-	-	22.7	10.1	

AM Intersection Peak Hour: 07:15 to 08:15

Volume	673	8	397	814	750	-	-	-	-	836	394	3,872
Approach%	62.4	0.7	36.8	52.0	48.0	-	-	-	-	68.0	32.0	
Total%	17.4	0.2	10.3	21.0	19.4	-	-	-	-	21.6	10.2	
PHF			0.89			0.91		#DIV/0!			0.90	0.91

PM	I-805 SB Off Ramp Southbound			E. Orange Avenue Westbound			I-805 SB On Ramp Northbound			E. Orange Avenue Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	313	5	185	186	184	0	0	0	0	0	182	112	1167
16:15	314	1	189	178	194	0	0	0	0	0	235	110	1221
16:30	290	0	169	151	193	0	0	0	0	0	214	107	1124
16:45	312	0	204	144	192	0	0	0	0	0	209	98	1159
17:00	330	1	206	166	172	0	0	0	0	0	187	89	1151
17:15	302	1	193	166	216	0	0	0	0	0	220	96	1194
17:30	313	0	196	179	189	0	0	0	0	0	203	100	1180
17:45	310	1	198	163	172	0	0	0	0	0	184	108	1136
Total	2484	9	1540	1333	1512	0	0	0	0	0	1634	820	9332
Approach%	61.6	0.2	38.2	46.9	53.1	-	-	-	-	-	66.6	33.4	
Total%	26.6	0.1	16.5	14.3	16.2	-	-	-	-	-	17.5	8.8	

PM Intersection Peak Hour: 16:45 to 17:45

Volume	1,257	2	799	655	769	-	-	-	-	819	383	4,684
Approach%	61.1	0.1	38.8	46.0	54.0	-	-	-	-	68.1	31.9	
Total%	26.8	0.0	17.1	14.0	16.4	-	-	-	-	17.5	8.2	
PHF			0.96			0.93		#DIV/0!			0.95	0.98

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #01
 Intersection: East Orange Avenue & I-805 Southbound Ramps
 Date of Count: Thursday, January 16, 2020

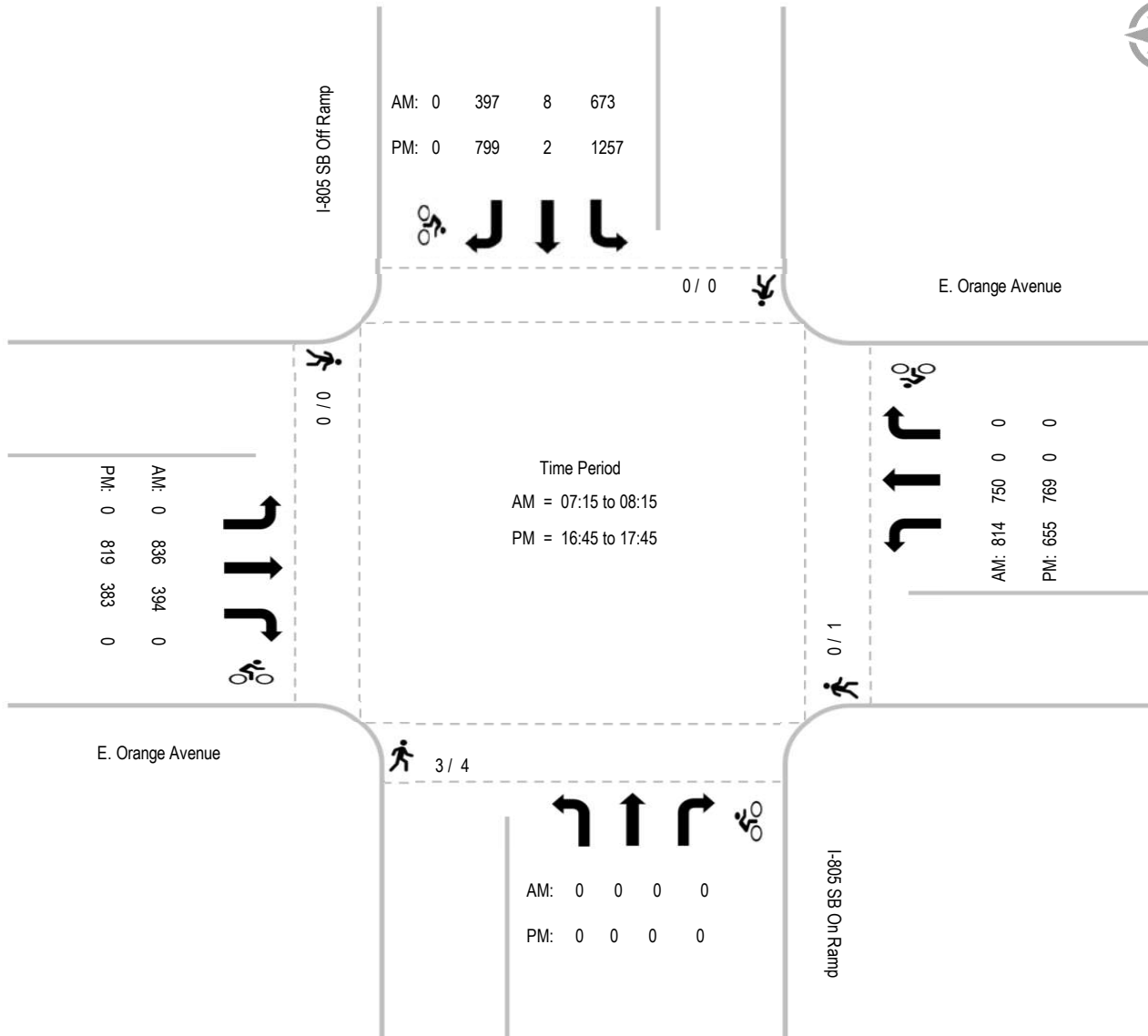
File Name: ITM-20-004-01
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	I-805 SB Off Ramp Southbound				E. Orange Avenue Westbound				I-805 SB On Ramp Northbound				E. Orange Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
8:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Ped Total	0				0				3				0				3	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	I-805 SB Off Ramp Southbound				E. Orange Avenue Westbound				I-805 SB On Ramp Northbound				E. Orange Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				1				4				0				5	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #01	File Name: ITM-20-004-01
	Intersection: East Orange Avenue & I-805 Southbound Ramps	Project: LLG Ref. 3-19-3181
	Date of Count: Thursday, January 16, 2020	Chula Vista



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #02
 Intersection: Olympic Parkway & I-805 Northbound Ramps
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-02
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	I-805 NB On Ramp Southbound			Olympic Parkway Westbound			I-805 NB Off Ramp Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	0	0	0	251	315	28	0	180	96	252	0	1122
7:15	0	0	0	0	332	281	42	0	203	131	207	0	1196
7:30	0	0	0	0	383	333	60	0	190	116	270	0	1352
7:45	0	0	0	0	362	302	64	1	216	135	298	0	1378
8:00	0	0	0	0	320	319	42	1	205	114	279	0	1280
8:15	0	0	0	0	279	280	49	0	159	131	210	0	1108
8:30	0	0	0	0	284	246	48	0	153	97	181	0	1009
8:45	0	0	0	0	308	225	44	0	151	93	177	0	998
Total	0	0	0	0	2519	2301	377	2	1457	913	1874	0	9443
Approach%	-	-	-	-	52.3	47.7	20.5	0.1	79.4	32.8	67.2	-	
Total%	-	-	-	-	26.7	24.4	4.0	0.0	15.4	9.7	19.8	-	

AM Intersection Peak Hour: 07:15 to 08:15

Volume	-	-	-	-	1,397	1,235	208	2	814	496	1,054	-	5,206
Approach%	-	-	-	-	53.1	46.9	20.3	0.2	79.5	32.0	68.0	-	
Total%	-	-	-	-	26.8	23.7	4.0	0.0	15.6	9.5	20.2	-	
PHF	#DIV/0!				0.92			0.91			0.89		0.94

PM	I-805 NB On Ramp Southbound			Olympic Parkway Westbound			I-805 NB Off Ramp Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	0	0	306	169	78	0	193	92	413	0	1251
16:15	0	0	0	0	306	167	89	1	205	98	461	0	1327
16:30	0	0	0	0	264	196	89	0	233	104	406	0	1292
16:45	0	0	0	0	262	162	87	1	228	101	425	0	1266
17:00	0	0	0	0	264	161	85	1	216	86	440	0	1253
17:15	0	0	0	0	308	199	91	1	201	81	433	0	1314
17:30	0	0	0	0	287	185	101	2	201	109	416	0	1301
17:45	0	0	0	0	249	191	72	1	182	65	419	0	1179
Total	0	0	0	0	2246	1430	692	7	1659	736	3413	0	10183
Approach%	-	-	-	-	61.1	38.9	29.3	0.3	70.4	17.7	82.3	-	
Total%	-	-	-	-	22.1	14.0	6.8	0.1	16.3	7.2	33.5	-	

PM Intersection Peak Hour: 16:15 to 17:15

Volume	-	-	-	-	1,096	686	350	3	882	389	1,732	-	5,138
Approach%	-	-	-	-	61.5	38.5	28.3	0.2	71.4	18.3	81.7	-	
Total%	-	-	-	-	21.3	13.4	6.8	0.1	17.2	7.6	33.7	-	
PHF	#DIV/0!				0.94			0.96			0.95		0.97

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #02
 Intersection: Olympic Parkway & I-805 Northbound Ramps
 Date of Count: Thursday, January 16, 2020

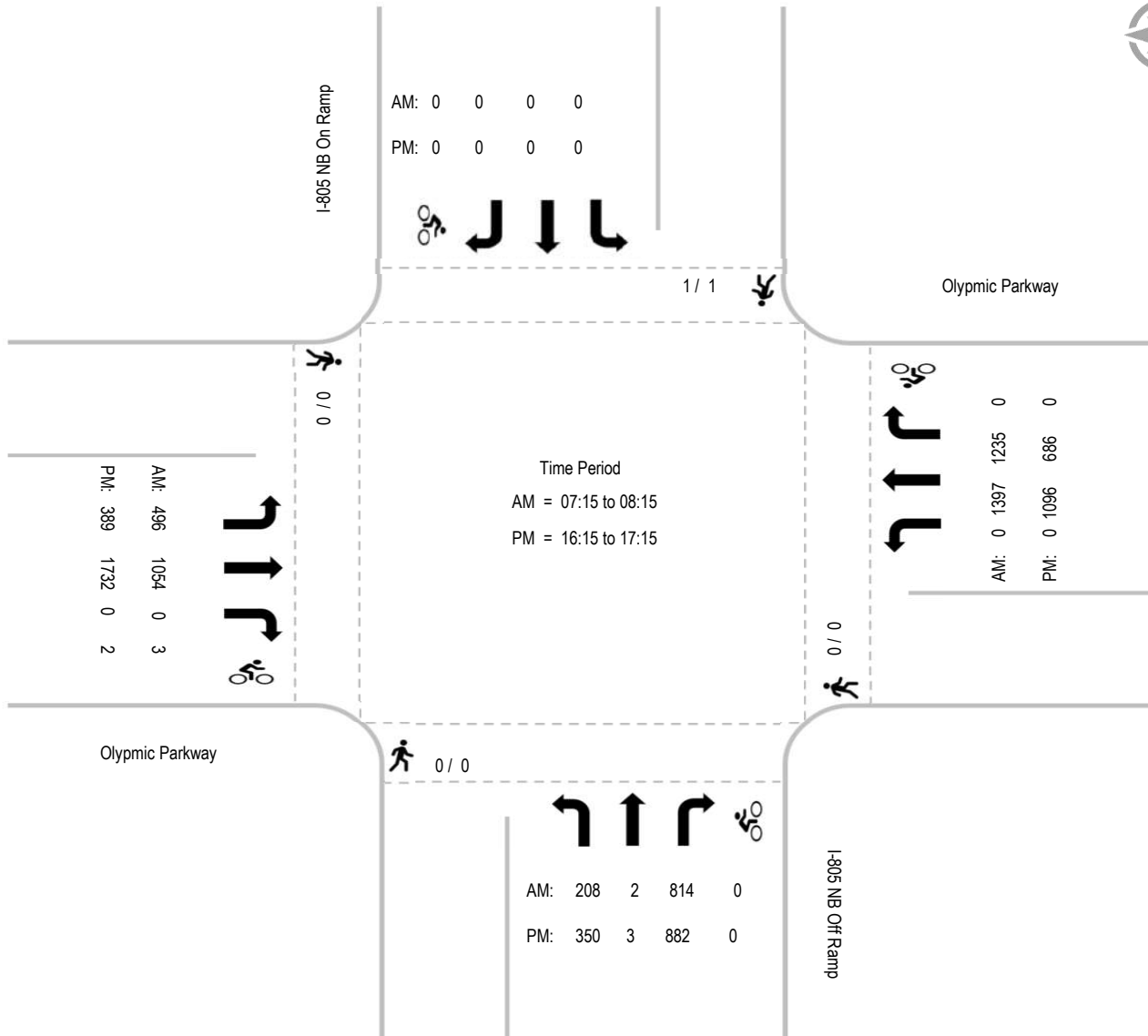
File Name: ITM-20-004-02
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	I-805 NB On Ramp Southbound				Olympic Parkway Westbound				I-805 NB Off Ramp Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
7:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	1				0				0				0				1	
Bike Total		0	0	0		0	0	0		0	0	0		0	3	0		3

PM	I-805 NB On Ramp Southbound				Olympic Parkway Westbound				I-805 NB Off Ramp Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	1				0				0				0				1	
Bike Total		0	0	0		0	0	0		0	0	0		0	2	0		2

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #02	File Name: ITM-20-004-02
	Intersection: Olympic Parkway & I-805 Northbound Ramps	Project: LLG Ref. 3-19-3181
	Date of Count: Thursday, January 16, 2020	Chula Vista



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #03
 Intersection: Olympic Parkway & Oleander Avenue
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-03
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	Oleander Avenue Southbound			Olympic Parkway Westbound			Oleander Avenue Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	8	2	47	4	473	3	18	0	5	11	386	13	970
7:15	12	2	29	7	522	4	22	0	9	13	356	16	992
7:30	1	5	37	12	590	2	44	2	9	18	376	31	1127
7:45	4	15	37	12	507	3	55	8	18	22	406	56	1143
8:00	4	7	33	5	505	3	64	7	19	17	424	17	1105
8:15	6	2	37	0	500	2	25	7	12	36	336	13	976
8:30	2	8	48	3	442	4	15	8	4	29	295	6	864
8:45	4	8	55	1	455	0	14	1	1	11	285	9	844
Total	41	49	323	44	3994	21	257	33	77	157	2864	161	8021
Approach%	9.9	11.9	78.2	1.1	98.4	0.5	70.0	9.0	21.0	4.9	90.0	5.1	
Total%	0.5	0.6	4.0	0.5	49.8	0.3	3.2	0.4	1.0	2.0	35.7	2.0	

AM Intersection Peak Hour: 07:15 to 08:15

Volume	21	29	136	36	2,124	12	185	17	55	70	1,562	120	4,367
Approach%	11.3	15.6	73.1	1.7	97.8	0.6	72.0	6.6	21.4	4.0	89.2	6.8	
Total%	0.5	0.7	3.1	0.8	48.6	0.3	4.2	0.4	1.3	1.6	35.8	2.7	
PHF			0.83			0.90			0.71			0.90	0.96

PM	Oleander Avenue Southbound			Olympic Parkway Westbound			Oleander Avenue Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	8	6	34	5	427	0	17	8	9	30	526	22	1092
16:15	8	7	35	1	371	1	16	6	7	39	605	26	1122
16:30	5	9	33	6	397	1	14	2	6	45	561	19	1098
16:45	3	8	35	1	370	3	15	4	4	33	602	31	1109
17:00	8	6	18	0	389	1	9	5	3	48	565	34	1086
17:15	4	5	46	2	439	7	14	3	1	53	598	29	1201
17:30	5	6	22	6	385	6	13	2	5	36	525	47	1058
17:45	2	10	27	1	375	3	16	7	3	36	547	40	1067
Total	43	57	250	22	3153	22	114	37	38	320	4529	248	8833
Approach%	12.3	16.3	71.4	0.7	98.6	0.7	60.3	19.6	20.1	6.3	88.9	4.9	
Total%	0.5	0.6	2.8	0.2	35.7	0.2	1.3	0.4	0.4	3.6	51.3	2.8	

PM Intersection Peak Hour: 16:30 to 17:30

Volume	20	28	132	9	1,595	12	52	14	14	179	2,326	113	4,494
Approach%	11.1	15.6	73.3	0.6	98.7	0.7	65.0	17.5	17.5	6.8	88.8	4.3	
Total%	0.4	0.6	2.9	0.2	35.5	0.3	1.2	0.3	0.3	4.0	51.8	2.5	
PHF			0.82			0.90			0.87			0.96	0.94

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #03
 Intersection: Olympic Parkway & Oleander Avenue
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-03
 Project: LLG Ref. 3-19-3181
 Chula Vista

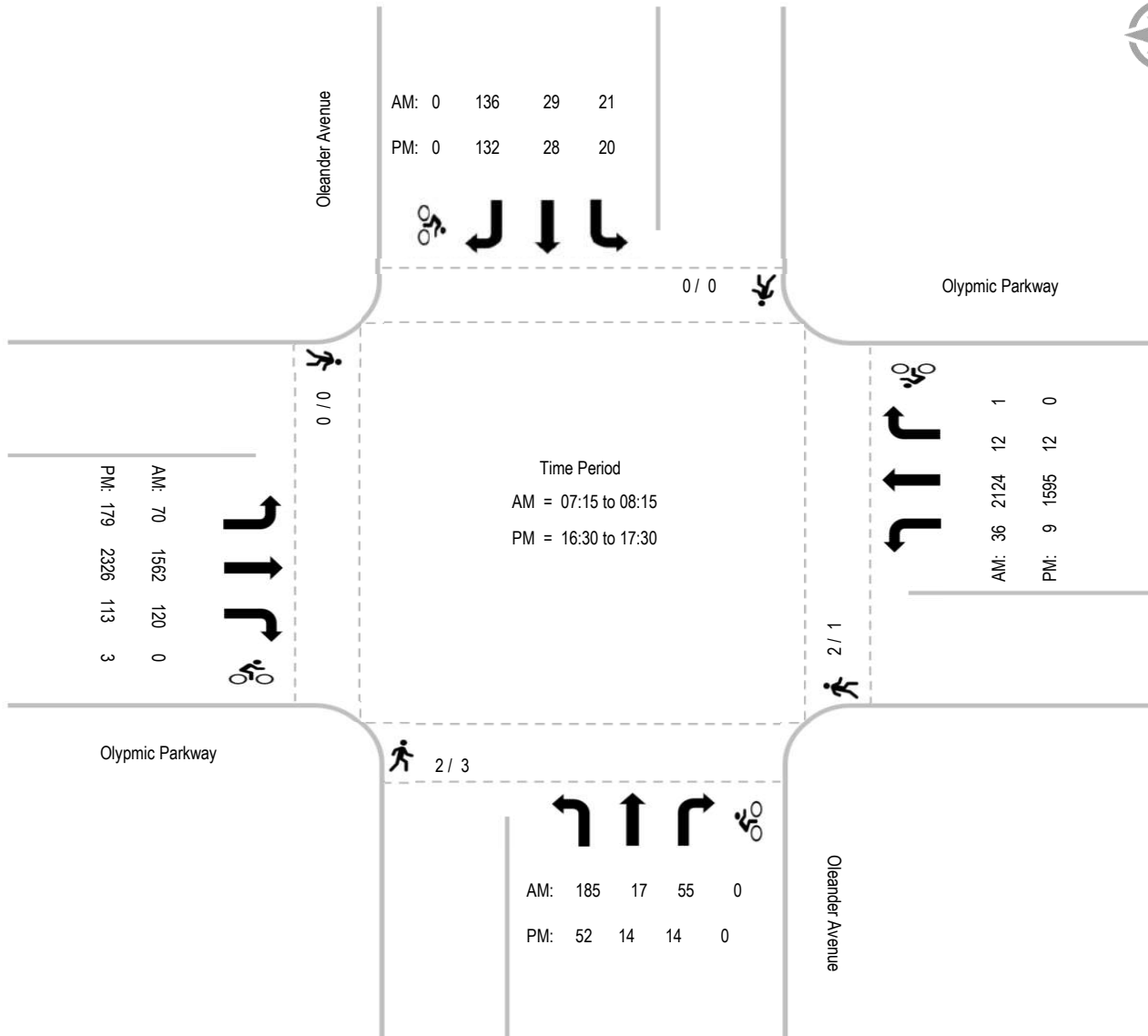
AM	Oleander Avenue Southbound				Olympic Parkway Westbound				Oleander Avenue Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				2				2				0				4	
Bike Total		0	0	0		0	1	0		0	0	0		0	0	0		1

PM	Oleander Avenue Southbound				Olympic Parkway Westbound				Oleander Avenue Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				1				3				0				4	
Bike Total		0	0	0		0	0	0		0	0	0		0	3	0		3

Intersection Turning Movement - Peak Hour Summary



Location: #03	File Name: ITM-20-004-03
Intersection: Olympic Parkway & Oleander Avenue	Project: LLG Ref. 3-19-3181
Date of Count: Thursday, January 16, 2020	Chula Vista



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #04
 Intersection: Olympic Parkway & Brandywine Avenue
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-04
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	Brandywine Avenue Southbound			Olympic Parkway Westbound			Brandywine Avenue Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	77	45	48	30	449	54	10	32	94	17	381	6	1243
7:15	39	35	57	62	516	77	10	22	51	27	368	4	1268
7:30	37	51	53	68	531	85	16	32	53	31	324	5	1286
7:45	44	38	63	101	489	65	12	41	50	70	376	11	1360
8:00	33	36	48	52	469	49	11	37	36	69	403	13	1256
8:15	28	24	49	45	474	39	16	30	29	51	289	8	1082
8:30	18	30	53	61	381	45	15	31	25	53	255	8	975
8:45	19	32	58	33	395	28	12	30	23	52	245	7	934
Total	295	291	429	452	3704	442	102	255	361	370	2641	62	9404
Approach%	29.1	28.7	42.3	9.8	80.6	9.6	14.2	35.5	50.3	12.0	85.9	2.0	
Total%	3.1	3.1	4.6	4.8	39.4	4.7	1.1	2.7	3.8	3.9	28.1	0.7	

AM Intersection Peak Hour: 07:15 to 08:15

Volume	153	160	221	283	2,005	276	49	132	190	197	1,471	33	5,170
Approach%	28.7	30.0	41.4	11.0	78.2	10.8	13.2	35.6	51.2	11.6	86.5	1.9	
Total%	3.0	3.1	4.3	5.5	38.8	5.3	0.9	2.6	3.7	3.8	28.5	0.6	
PHF			0.92			0.94			0.90			0.88	0.95

PM	Brandywine Avenue Southbound			Olympic Parkway Westbound			Brandywine Avenue Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	38	44	57	50	316	43	15	63	62	60	479	14	1241
16:15	45	54	47	48	341	34	7	47	62	52	532	10	1279
16:30	38	40	50	43	336	33	9	36	61	65	494	15	1220
16:45	45	49	39	43	319	33	11	40	60	63	485	13	1200
17:00	46	47	48	54	347	35	9	36	77	61	474	19	1253
17:15	37	44	62	53	387	40	15	44	49	69	467	26	1293
17:30	36	47	47	33	355	29	15	32	39	42	450	13	1138
17:45	43	41	52	40	290	26	8	48	37	56	420	14	1075
Total	328	366	402	364	2691	273	89	346	447	468	3801	124	9699
Approach%	29.9	33.4	36.7	10.9	80.9	8.2	10.1	39.2	50.7	10.7	86.5	2.8	
Total%	3.4	3.8	4.1	3.8	27.7	2.8	0.9	3.6	4.6	4.8	39.2	1.3	

PM Intersection Peak Hour: 16:30 to 17:30

Volume	166	180	199	193	1,389	141	44	156	247	258	1,920	73	4,966
Approach%	30.5	33.0	36.5	11.2	80.6	8.2	9.8	34.9	55.3	11.5	85.3	3.2	
Total%	3.3	3.6	4.0	3.9	28.0	2.8	0.9	3.1	5.0	5.2	38.7	1.5	
PHF			0.95			0.90			0.92			0.98	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #04
 Intersection: Olympic Parkway & Brandywine Avenue
 Date of Count: Thursday, January 16, 2020

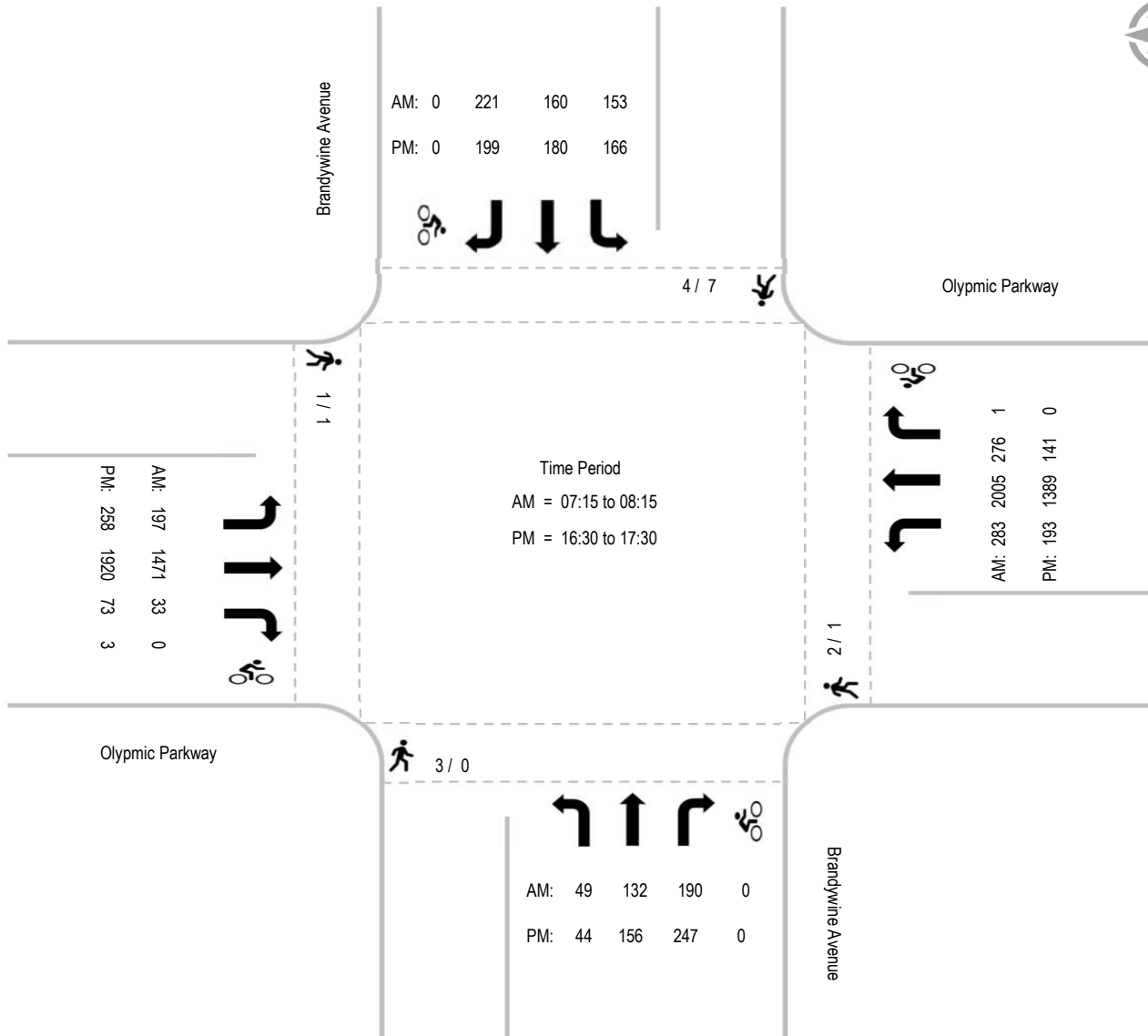
File Name: ITM-20-004-04
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	Brandywine Avenue Southbound				Olympic Parkway Westbound				Brandywine Avenue Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	4	0	0	0	2	0	1	0	3	0	0	0	1	0	0	0	10	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	4				2				3				1				10	
Bike Total		0	0	0		0	1	0		0	0	0		0	0	0		1

PM	Brandywine Avenue Southbound				Olympic Parkway Westbound				Brandywine Avenue Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1	2
16:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
16:45	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	7				1				0				1				9	
Bike Total		0	0	0		0	0	0		0	0	0		0	3	0		3

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #04	File Name: ITM-20-004-04
	Intersection: Olympic Parkway & Brandywine Avenue	Project: LLG Ref. 3-19-3181
	Date of Count: Thursday, January 16, 2020	Chula Vista



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #05
Intersection: Olympic Parkway & Heritage Road
Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-05
Project: LLG Ref. 3-19-3181
Chula Vista

AM	Heritage Road Southbound			Olympic Parkway Westbound			Heritage Road Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	164	69	53	20	334	124	73	70	29	46	380	38	1400
7:15	148	76	75	23	450	165	91	86	29	39	387	29	1598
7:30	113	69	81	15	466	106	71	47	24	41	310	29	1372
7:45	71	49	65	32	432	62	63	37	23	56	368	40	1298
8:00	62	50	43	30	324	46	72	50	22	38	305	60	1102
8:15	53	37	54	19	386	70	59	47	20	31	319	22	1117
8:30	27	29	59	17	389	54	37	27	14	33	240	28	954
8:45	29	39	46	18	308	32	37	35	21	33	245	12	855
Total	667	418	476	174	3089	659	503	399	182	317	2554	258	9696
Approach%	42.7	26.8	30.5	4.4	78.8	16.8	46.4	36.8	16.8	10.1	81.6	8.2	
Total%	6.9	4.3	4.9	1.8	31.9	6.8	5.2	4.1	1.9	3.3	26.3	2.7	

AM Intersection Peak Hour: 07:00 to 08:00

Volume	496	263	274	90	1,682	457	298	240	105	182	1,445	136	5,668
Approach%	48.0	25.5	26.5	4.0	75.5	20.5	46.3	37.3	16.3	10.3	82.0	7.7	
Total%	8.8	4.6	4.8	1.6	29.7	8.1	5.3	4.2	1.9	3.2	25.5	2.4	
PHF			0.86			0.87			0.78			0.95	0.87

PM	Heritage Road Southbound			Olympic Parkway Westbound			Heritage Road Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	77	38	50	26	287	83	46	40	26	58	436	63	1230
16:15	75	37	36	22	294	79	33	50	30	74	508	54	1292
16:30	122	40	48	27	269	62	47	51	25	50	429	59	1229
16:45	92	41	39	28	263	79	29	45	28	60	496	54	1254
17:00	107	43	44	25	343	90	38	39	40	58	450	61	1338
17:15	102	48	43	18	344	73	38	51	21	57	436	64	1295
17:30	82	55	56	17	266	54	40	47	25	51	410	47	1150
17:45	59	44	47	20	242	61	39	30	26	55	400	60	1083
Total	716	346	363	183	2308	581	310	353	221	463	3565	462	9871
Approach%	50.2	24.3	25.5	6.0	75.1	18.9	35.1	39.9	25.0	10.3	79.4	10.3	
Total%	7.3	3.5	3.7	1.9	23.4	5.9	3.1	3.6	2.2	4.7	36.1	4.7	

PM Intersection Peak Hour: 16:30 to 17:30

Volume	423	172	174	98	1,219	304	152	186	114	225	1,811	238	5,116
Approach%	55.0	22.4	22.6	6.0	75.2	18.8	33.6	41.2	25.2	9.9	79.6	10.5	
Total%	8.3	3.4	3.4	1.9	23.8	5.9	3.0	3.6	2.2	4.4	35.4	4.7	
PHF			0.92			0.88			0.92			0.93	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #05
 Intersection: Olympic Parkway & Heritage Road
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-05
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	Heritage Road Southbound				Olympic Parkway Westbound				Heritage Road Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	4	0	0	0	0	0	5	0	0	0	1	0	4	6
7:15	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
8:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				8				0				0				8	
Bike Total		0	0	0		0	0	0		0	5	0		0	1	0		6

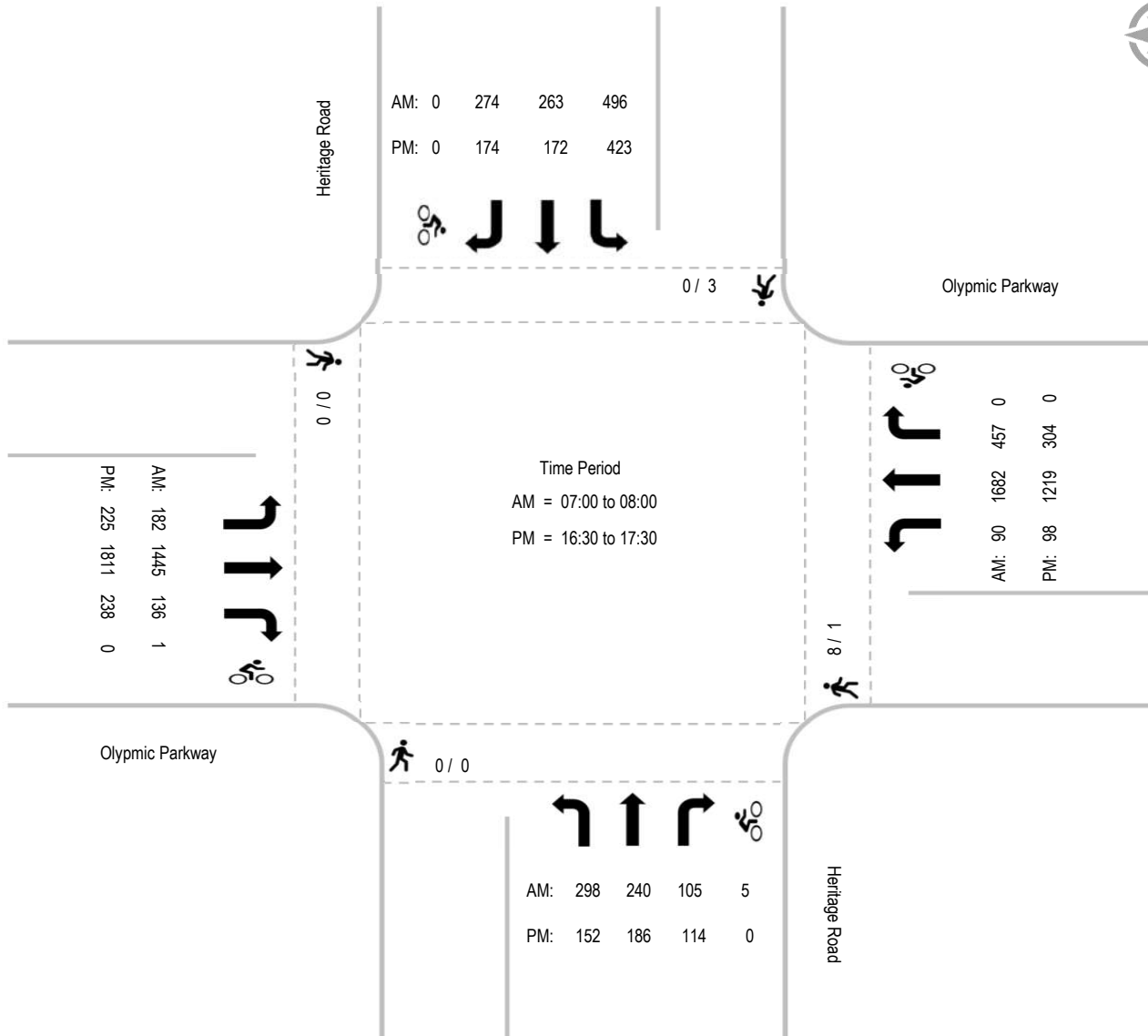
PM	Heritage Road Southbound				Olympic Parkway Westbound				Heritage Road Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Ped Total	3				1				0				0				4	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary



Location: #05
 Intersection: Olympic Parkway & Heritage Road
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-05
 Project: LLG Ref. 3-19-3181
 Chula Vista



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #06R
 Intersection: Olympic Parkway & Santa Ventia Street
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-06R
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	Santa Ventia Street Southbound			Olympic Parkway Westbound			- Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	0	0	60	375	0	98	0	26	0	298	139	996
7:15	0	0	0	36	460	0	104	0	35	0	418	130	1183
7:30	0	0	0	19	504	0	127	0	27	0	414	97	1188
7:45	0	0	0	8	482	0	68	0	14	0	389	62	1023
8:00	0	0	0	8	408	0	43	0	6	0	358	80	903
8:15	0	0	0	8	452	0	60	0	8	0	339	66	933
8:30	0	0	0	3	410	0	46	0	5	0	239	38	741
8:45	0	0	0	4	385	0	26	0	7	0	251	37	710
Total	0	0	0	146	3476	0	572	0	128	0	2706	649	7677
Approach%	-	-	-	4.0	96.0	-	81.7	-	18.3	-	80.7	19.3	
Total%	-	-	-	1.9	45.3	-	7.5	-	1.7	-	35.2	8.5	

AM Intersection Peak Hour: 07:00 to 08:00

Volume	-	-	-	123	1,821	-	397	-	102	-	1,519	428	4,390
Approach%	-	-	-	6.3	93.7	-	79.6	-	20.4	-	78.0	22.0	
Total%	-	-	-	2.8	41.5	-	9.0	-	2.3	-	34.6	9.7	
PHF			#DIV/0!			0.93			0.81			0.89	0.92

PM	Santa Ventia Street Southbound			Olympic Parkway Westbound			- Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	0	8	432	0	44	0	14	0	458	90	1046
16:15	0	0	0	6	357	0	43	0	9	0	470	72	957
16:30	0	0	0	8	324	0	59	0	10	0	452	72	925
16:45	0	0	0	1	372	0	41	0	10	0	534	96	1054
17:00	0	0	0	10	371	0	29	0	12	0	559	111	1092
17:15	0	0	0	5	392	0	33	0	11	0	531	89	1061
17:30	0	0	0	8	340	0	54	0	15	0	474	85	976
17:45	0	0	0	7	300	0	48	0	8	0	529	88	980
Total	0	0	0	53	2888	0	351	0	89	0	4007	703	8091
Approach%	-	-	-	1.8	98.2	-	79.8	-	20.2	-	85.1	14.9	
Total%	-	-	-	0.7	35.7	-	4.3	-	1.1	-	49.5	8.7	

PM Intersection Peak Hour: 16:45 to 17:45

Volume	-	-	-	24	1,475	-	157	-	48	-	2,098	381	4,183
Approach%	-	-	-	1.6	98.4	-	76.6	-	23.4	-	84.6	15.4	
Total%	-	-	-	0.6	35.3	-	3.8	-	1.1	-	50.2	9.1	
PHF			#DIV/0!			0.94			0.74			0.93	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #06R
 Intersection: Olympic Parkway & Santa Ventia Street
 Date of Count: Thursday, January 16, 2020

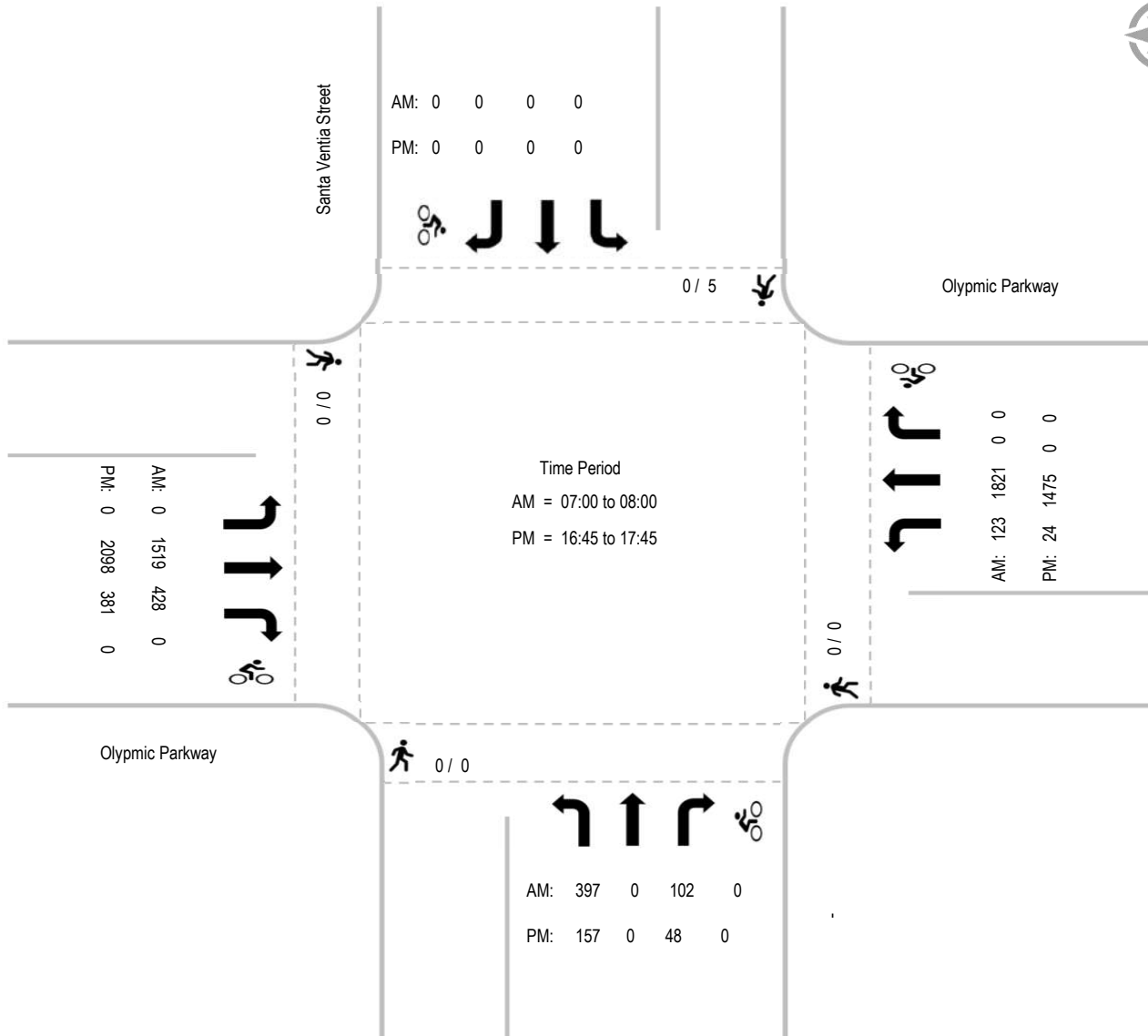
File Name: ITM-20-004-06R
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	Santa Ventia Street Southbound				Olympic Parkway Westbound				- Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	Santa Ventia Street Southbound				Olympic Parkway Westbound				- Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ped Total	5				0				0				0				5	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #06R	File Name: ITM-20-004-06R
	Intersection: Olympic Parkway & Santa Ventia Street	Project: LLG Ref. 3-19-3181
	Date of Count: Thursday, January 16, 2020	Chula Vista



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #07
 Intersection: Olympic Parkway & La Media Road
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-07
 Project: LLG Ref. 3-19-3181
 Chula Vista

AM	La Media Road Southbound			Olympic Parkway Westbound			La Media Road Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	23	194	66	78	230	22	148	134	38	34	98	95	1160
7:15	24	171	58	43	249	22	153	156	46	118	187	138	1365
7:30	26	102	44	11	301	30	179	180	39	87	201	127	1327
7:45	42	94	35	13	279	19	187	127	23	71	218	104	1212
8:00	22	87	35	8	273	17	122	99	9	61	229	106	1068
8:15	19	78	44	9	278	30	126	82	16	60	215	118	1075
8:30	17	45	32	4	269	13	128	78	16	38	173	56	869
8:45	14	38	26	11	215	20	104	63	4	55	183	50	783
Total	187	809	340	177	2094	173	1147	919	191	524	1504	794	8859
Approach%	14.0	60.6	25.4	7.2	85.7	7.1	50.8	40.7	8.5	18.6	53.3	28.1	
Total%	2.1	9.1	3.8	2.0	23.6	2.0	12.9	10.4	2.2	5.9	17.0	9.0	

AM Intersection Peak Hour: 07:00 to 08:00

Volume	115	561	203	145	1,059	93	667	597	146	310	704	464	5,064
Approach%	13.1	63.8	23.1	11.2	81.6	7.2	47.3	42.3	10.4	21.0	47.6	31.4	
Total%	2.3	11.1	4.0	2.9	20.9	1.8	13.2	11.8	2.9	6.1	13.9	9.2	
PHF			0.78			0.95			0.89			0.83	0.93

PM	La Media Road Southbound			Olympic Parkway Westbound			La Media Road Northbound			Olympic Parkway Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	43	83	43	17	245	25	92	82	10	51	317	110	1118
16:15	33	106	37	14	246	28	82	73	6	61	340	124	1150
16:30	51	83	38	13	261	38	107	76	6	62	321	119	1175
16:45	43	14	49	19	187	25	103	88	11	59	339	126	1063
17:00	38	84	50	14	266	32	128	76	13	70	351	129	1251
17:15	33	83	38	16	279	25	99	89	18	63	313	116	1172
17:30	41	79	22	18	213	23	84	61	7	54	333	116	1051
17:45	40	94	36	10	180	19	79	66	13	46	281	95	959
Total	322	626	313	121	1877	215	774	611	84	466	2595	935	8939
Approach%	25.5	49.6	24.8	5.5	84.8	9.7	52.7	41.6	5.7	11.7	64.9	23.4	
Total%	3.6	7.0	3.5	1.4	21.0	2.4	8.7	6.8	0.9	5.2	29.0	10.5	

PM Intersection Peak Hour: 16:30 to 17:30

Volume	165	264	175	62	993	120	437	329	48	254	1,324	490	4,661
Approach%	27.3	43.7	29.0	5.3	84.5	10.2	53.7	40.4	5.9	12.3	64.0	23.7	
Total%	3.5	5.7	3.8	1.3	21.3	2.6	9.4	7.1	1.0	5.4	28.4	10.5	
PHF			0.88			0.92			0.94			0.94	0.93

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #07
 Intersection: Olympic Parkway & La Media Road
 Date of Count: Thursday, January 16, 2020

File Name: ITM-20-004-07
 Project: LLG Ref. 3-19-3181
 Chula Vista

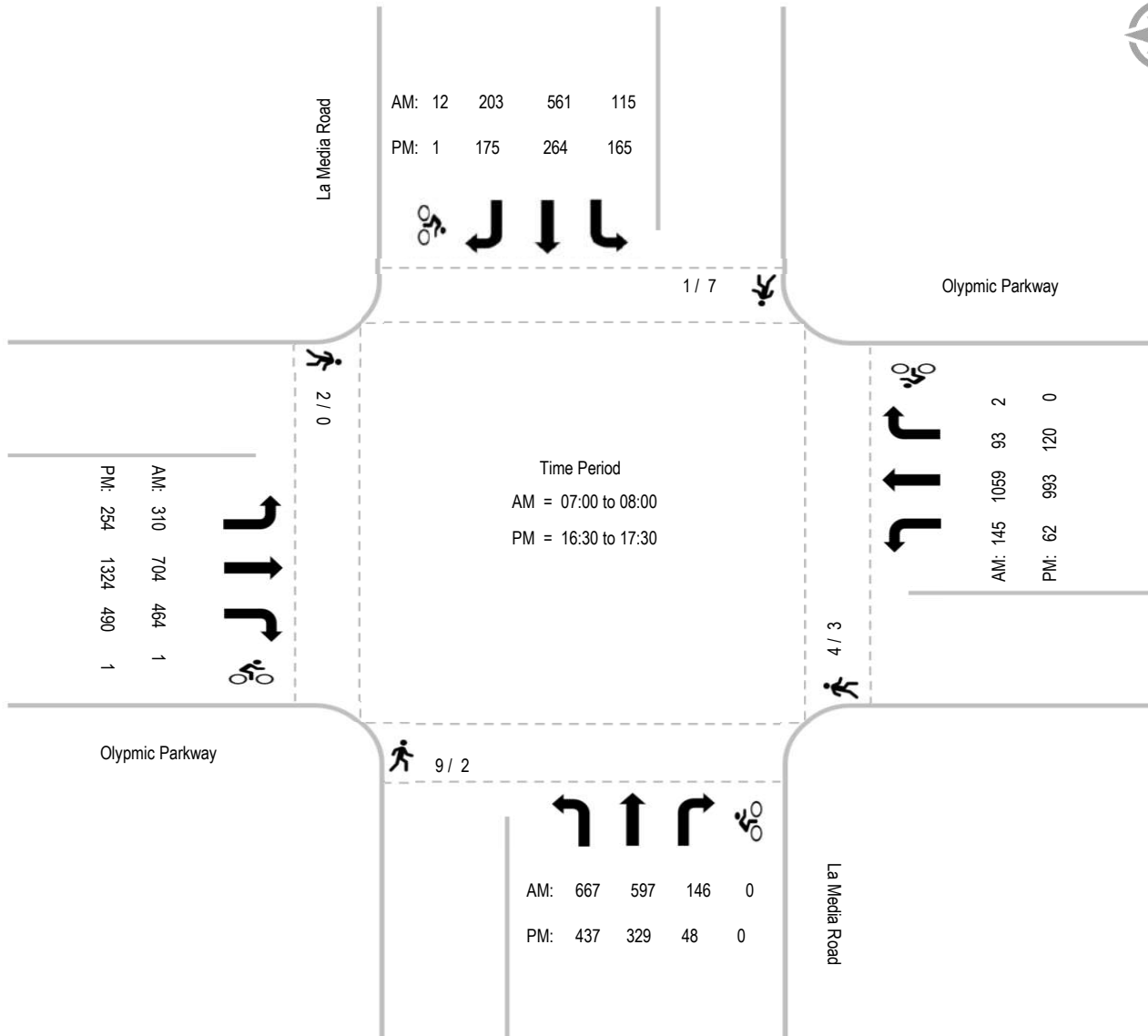
AM	La Media Road Southbound				Olympic Parkway Westbound				La Media Road Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	3	1
7:15	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
7:30	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	2	2
8:15	0	0	10	0	0	0	0	0	8	0	0	0	0	0	0	0	8	10
8:30	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	1				4				9				2				16	
Bike Total		0	12	0		0	2	0		0	0	0		0	1	0		15

PM	La Media Road Southbound				Olympic Parkway Westbound				La Media Road Northbound				Olympic Parkway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	5	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	7	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	2	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Ped Total	7				3				2				0				12	
Bike Total		1	0	0		0	0	0		0	0	0		0	1	0		2

Intersection Turning Movement - Peak Hour Summary



Location: #07	File Name: ITM-20-004-07
Intersection: Olympic Parkway & La Media Road	Project: LLG Ref. 3-19-3181
Date of Count: Thursday, January 16, 2020	Chula Vista



Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **E. Orange Ave, between Max Ave and Melrose Ave**

Date: Thursday, January 16, 2020						Total Daily Volume: 25058						Description: Total Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
171	127	114	120	284	574	951	1587	1421	1168	1204	1378	1390	1524	1793	2069	2022	1966	1557	1157	890	753	518	320
45	38	40	26	37	120	189	296	429	268	291	312	324	363	393	544	496	513	391	336	237	219	158	89
56	34	32	30	57	121	204	342	351	292	302	319	346	363	423	549	552	494	387	332	252	208	133	96
41	29	24	34	98	151	275	428	328	312	307	370	391	411	483	484	493	508	408	256	208	169	129	75
29	26	18	30	92	182	283	521	313	296	304	377	329	387	494	492	481	451	371	233	193	157	98	60

Date: Thursday, January 16, 2020						Total Daily Volume: 11903						Description: Eastbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
66	50	46	73	174	401	636	793	730	534	576	620	628	746	850	910	916	880	690	546	386	325	203	124
17	17	13	11	21	80	138	182	238	130	123	143	160	182	189	248	235	229	189	163	102	99	65	36
23	17	11	18	34	85	145	166	181	135	140	134	146	167	199	251	268	207	167	161	118	90	51	34
13	9	11	22	62	117	179	200	165	139	162	173	176	212	246	224	235	240	175	110	95	67	57	24
13	7	11	22	57	119	174	245	146	130	151	170	146	185	216	187	178	204	159	112	71	69	30	30

Date: Thursday, January 16, 2020						Total Daily Volume: 13155						Description: Westbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
105	77	68	47	110	173	315	794	691	634	628	758	762	778	943	1159	1106	1086	867	611	504	428	315	196
28	21	27	15	16	40	51	114	191	138	168	169	164	181	204	296	261	284	202	173	135	120	93	53
33	17	21	12	23	36	59	176	170	157	162	185	200	196	224	298	284	287	220	171	134	118	82	62
28	20	13	12	36	34	96	228	163	173	145	197	215	199	237	260	258	268	233	146	113	102	72	51
16	19	7	8	35	63	109	276	167	166	153	207	183	202	278	305	303	247	212	121	122	88	68	30

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Olympic Pkwy, between Melrose Ave and Oleander Ave**

Date: Thursday, January 16, 2020						Total Daily Volume: 67982						Description: Total Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
474	326	270	389	1101	2685	3877	4775	4173	3111	2889	2998	3394	3492	4637	5372	4834	4655	4235	3302	2493	2132	1487	881
153	77	62	62	170	540	877	1057	1264	780	704	721	773	773	1026	1320	1295	1110	1063	946	603	579	461	287
119	92	64	93	200	670	917	1107	1008	751	721	721	843	852	1054	1346	1204	1278	1113	904	713	563	365	225
112	75	80	105	309	721	1029	1297	935	815	721	717	843	944	1260	1342	1171	1149	1055	745	627	524	361	212
90	82	64	129	422	754	1054	1314	966	765	743	839	935	923	1297	1364	1164	1118	1004	707	550	466	300	157

Date: Thursday, January 16, 2020						Total Daily Volume: 32665						Description: Eastbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
307	178	143	149	201	484	1440	1935	1617	1239	1286	1420	1644	1888	2581	2576	2680	2629	2466	1927	1406	1156	839	474
101	39	38	31	30	81	208	462	512	295	317	329	390	395	607	656	633	672	657	557	351	301	272	139
74	60	31	29	46	113	314	428	402	329	311	348	388	445	629	657	691	678	629	540	404	303	198	135
76	37	41	39	59	114	461	481	366	280	309	332	406	492	664	645	678	644	593	403	335	264	191	107
56	42	33	50	66	176	457	564	337	335	349	411	460	556	681	618	678	635	587	427	316	288	178	93

Date: Thursday, January 16, 2020						Total Daily Volume: 35317						Description: Westbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
167	148	127	240	900	2201	2437	2840	2556	1872	1603	1578	1750	1604	2056	2796	2154	2026	1769	1375	1087	976	648	407
52	38	24	31	140	459	669	595	752	485	387	392	383	378	419	664	662	438	406	389	252	278	189	148
45	32	33	64	154	557	603	679	606	422	410	373	455	407	425	689	513	600	484	364	309	260	167	90
36	38	39	66	250	607	568	816	569	535	412	385	437	452	596	697	493	505	462	342	292	260	170	105
34	40	31	79	356	578	597	750	629	430	394	428	475	367	616	746	486	483	417	280	234	178	122	64

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Olympic Pkwy, between Oleander Ave and Brandywine Ave**

Date: Thursday, January 16, 2020						Total Daily Volume: 56795						Description: Total Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
417	293	237	324	925	2132	3108	3879	3353	2574	2364	2536	2803	2937	3881	4654	3907	3809	3519	3019	2176	1828	1332	788
136	68	54	48	136	442	645	902	991	628	585	579	622	647	863	1120	1010	937	877	876	550	499	405	257
103	80	52	68	177	523	711	926	833	617	600	648	696	724	911	1157	982	1036	937	808	612	478	328	199
98	70	73	93	275	581	849	1030	768	676	585	621	715	780	1033	1170	962	929	869	737	516	457	337	191
80	75	58	115	337	586	903	1021	761	653	594	688	770	786	1074	1207	953	907	836	598	498	394	262	141

Date: Thursday, January 16, 2020						Total Daily Volume: 28345						Description: Eastbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
276	166	127	132	174	411	1270	1621	1388	1066	1079	1225	1424	1624	2238	2212	2267	2175	2119	1920	1241	1002	757	431
91	36	34	25	27	67	191	402	447	246	274	258	319	341	521	565	532	558	561	562	330	266	238	130
62	53	24	23	44	92	268	383	337	288	268	326	331	382	523	555	592	566	545	530	343	258	182	119
72	35	39	37	52	105	402	392	314	242	246	295	347	418	620	563	559	526	500	458	282	229	180	98
51	42	30	47	51	147	409	444	290	290	291	346	427	483	574	529	584	525	513	370	286	249	157	84

Date: Thursday, January 16, 2020						Total Daily Volume: 28450						Description: Westbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
141	127	110	192	751	1721	1838	2258	1965	1508	1285	1311	1379	1313	1643	2442	1640	1634	1400	1099	935	826	575	357
45	32	20	23	109	375	454	500	544	382	311	321	303	306	342	555	478	379	316	314	220	233	167	127
41	27	28	45	133	431	443	543	496	329	332	322	365	342	388	602	390	470	392	278	269	220	146	80
26	35	34	56	223	476	447	638	454	434	339	326	368	362	413	607	403	403	369	279	234	228	157	93
29	33	28	68	286	439	494	577	471	363	303	342	343	303	500	678	369	382	323	228	212	145	105	57

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Olympic Pkwy, between Brandywine Ave and Heritage Rd**

Date: Thursday, January 16, 2020					Total Daily Volume: 54816										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
391	267	203	304	877	1941	2984	4179	3283	2416	2256	2363	2619	2824	3904	4391	3924	3826	3439	2600	2104	1766	1240	715
131	63	43	42	120	434	593	991	921	600	559	552	581	619	792	1166	917	1003	865	707	576	448	371	230
97	70	47	64	170	459	643	1056	923	619	588	576	649	713	951	1062	1022	1002	921	694	581	470	311	194
92	71	63	95	261	487	811	1069	770	641	544	602	674	742	976	1140	1005	941	882	651	471	456	295	152
71	63	50	103	326	561	937	1063	669	556	565	633	715	750	1185	1023	980	880	771	548	476	392	263	139

Date: Thursday, January 16, 2020					Total Daily Volume: 27748										Description: Eastbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
255	158	111	121	162	375	1256	1854	1402	1004	1056	1161	1333	1566	2223	2213	2373	2206	2053	1559	1213	970	721	403
87	33	29	25	26	67	177	504	429	242	270	267	300	334	463	560	542	565	538	401	348	245	232	120
58	49	25	20	40	80	236	474	400	254	273	277	315	388	570	590	634	556	568	419	319	244	176	114
68	36	32	36	49	83	365	412	288	258	244	285	330	390	558	567	594	558	478	385	264	241	150	88
42	40	25	40	47	145	478	464	285	250	269	332	388	454	632	496	603	527	469	354	282	240	163	81

Date: Thursday, January 16, 2020						Total Daily Volume: 27068										Description: Westbound Volume									
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00		
136	109	92	183	715	1566	1728	2325	1881	1412	1200	1202	1286	1258	1681	2178	1551	1620	1386	1041	891	796	519	312		
44	30	14	17	94	367	416	487	492	358	289	285	281	285	329	606	375	438	327	306	228	203	139	110		
39	21	22	44	130	379	407	582	523	365	315	299	334	325	381	472	388	446	353	275	262	226	135	80		
24	35	31	59	212	404	446	657	482	383	300	317	344	352	418	573	411	383	404	266	207	215	145	64		
29	23	25	63	279	416	459	599	384	306	296	301	327	296	553	527	377	353	302	194	194	152	100	58		

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Olympic Pkwy, between Heritage Rd and Santa Venetia St**

Date: Thursday, January 16, 2020						Total Daily Volume: 53681						Description: Total Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
373	220	186	272	762	1602	2702	4368	3180	2244	2127	2319	2541	2786	4052	4543	3917	3753	3396	2646	2076	1746	1171	699
121	57	38	41	111	356	462	1115	863	568	504	545	581	624	764	1278	923	1028	864	713	572	464	362	229
92	63	45	54	151	377	536	1207	926	581	579	571	647	674	960	1031	968	960	862	706	576	482	288	186
88	52	53	88	233	425	726	1052	736	578	527	576	681	727	1003	1163	999	933	908	656	454	417	270	147
72	48	50	89	267	444	978	994	655	517	517	627	632	761	1325	1071	1027	832	762	571	474	383	251	137

Date: Thursday, January 16, 2020						Total Daily Volume: 27177						Description: Eastbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
235	126	102	117	162	340	1180	1975	1400	970	1011	1172	1276	1500	2234	2336	2306	2169	1951	1531	1150	926	629	379
78	28	21	27	30	59	143	552	427	244	237	290	282	324	447	647	507	573	491	404	322	247	198	122
54	41	28	17	40	73	197	529	412	235	289	275	343	354	575	529	577	518	522	398	312	235	146	102
59	27	24	37	47	84	323	443	278	252	237	272	326	384	571	609	593	582	499	388	250	213	135	77
44	30	29	36	45	124	517	451	283	239	248	335	325	438	641	551	629	496	439	341	266	231	150	78

Date: Thursday, January 16, 2020						Total Daily Volume: 26504						Description: Westbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
138	94	84	155	600	1262	1522	2393	1780	1274	1116	1147	1265	1286	1818	2207	1611	1584	1445	1115	926	820	542	320
43	29	17	14	81	297	319	563	436	324	267	255	299	300	317	631	416	455	373	309	250	217	164	107
38	22	17	37	111	304	339	678	514	346	290	296	304	320	385	502	391	442	340	308	264	247	142	84
29	25	29	51	186	341	403	609	458	326	290	304	355	343	432	554	406	351	409	268	204	204	135	70
28	18	21	53	222	320	461	543	372	278	269	292	307	323	684	520	398	336	323	230	208	152	101	59

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Olympic Pkwy, between Santa Venetia St and La Media Rd**

Date: Thursday, January 16, 2020						Total Daily Volume: 47614						Description: Total Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
351	199	170	242	658	1429	2172	3553	2871	2046	1991	2134	2350	2570	3500	3828	3452	3425	3132	2358	1911	1579	1063	630
104	50	34	36	86	313	435	690	769	530	487	498	557	581	742	978	824	963	802	588	532	400	345	201
88	59	42	50	122	353	447	1019	805	536	541	526	589	637	850	911	851	865	781	682	532	455	265	171
86	49	48	83	199	391	587	918	682	511	478	540	628	672	836	977	881	844	831	578	407	377	237	127
73	41	46	73	251	372	703	926	615	469	485	570	576	680	1072	962	896	753	718	510	440	347	216	131

Date: Thursday, January 16, 2020						Total Daily Volume: 24004						Description: Eastbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
208	111	91	107	148	310	859	1614	1277	895	948	1083	1167	1361	1888	2086	1989	2000	1800	1356	1012	806	559	329
61	24	18	23	34	54	129	263	371	233	240	252	268	300	418	541	446	557	451	321	278	210	182	100
47	36	27	18	27	67	152	515	373	219	266	264	309	348	485	501	501	476	471	392	279	205	135	90
57	25	21	38	47	82	243	435	259	225	213	264	292	340	422	516	494	501	459	338	220	189	118	61
43	26	25	28	40	107	335	401	274	218	229	303	298	373	563	528	548	466	419	305	235	202	124	78

Date: Thursday, January 16, 2020						Total Daily Volume: 23610						Description: Westbound Volume											
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
143	88	79	135	510	1119	1313	1939	1594	1151	1043	1051	1183	1209	1612	1742	1463	1425	1332	1002	899	773	504	301
43	26	16	13	52	259	306	427	398	297	247	246	289	281	324	437	378	406	351	267	254	190	163	101
41	23	15	32	95	286	295	504	432	317	275	262	280	289	365	410	350	389	310	290	253	250	130	81
29	24	27	45	152	309	344	483	423	286	265	276	336	332	414	461	387	343	372	240	187	188	119	66
30	15	21	45	211	265	368	525	341	251	256	267	278	307	509	434	348	287	299	205	205	145	92	53

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Olympic Pkwy, between La Media Rd and E. Palomar St**

Date: Thursday, January 16, 2020					Total Daily Volume: 34555										Description: Total Volume									
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
295	152	123	178	408	986	1436	2222	1994	1478	1425	1576	1775	1921	2459	2810	2594	2559	2330	1867	1475	1230	785	477	
91	41	25	30	64	227	294	496	560	398	358	372	427	434	571	721	654	705	563	465	401	310	231	163	
75	44	28	38	98	221	307	548	540	368	368	387	417	496	577	647	624	631	606	531	415	346	205	136	
75	38	36	58	98	284	370	587	470	353	345	411	484	487	577	710	694	640	601	458	315	296	180	92	
54	29	34	52	148	254	465	591	424	359	354	406	447	504	734	732	622	583	560	413	344	278	169	86	

Date: Thursday, January 16, 2020					Total Daily Volume: 17618										Description: Eastbound Volume									
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
171	84	69	81	114	220	468	975	895	673	709	823	902	985	1303	1646	1495	1513	1350	1100	787	613	391	251	
53	21	15	19	25	42	79	162	261	182	171	195	216	223	292	446	360	400	331	269	205	142	114	92	
42	28	17	14	31	42	94	249	241	162	201	197	223	264	319	388	358	344	354	305	223	160	103	68	
46	19	18	28	22	63	123	266	199	153	162	210	232	235	286	383	394	394	362	277	176	152	76	38	
30	16	19	20	36	73	172	298	194	176	175	221	231	263	406	429	383	375	303	249	183	159	98	53	

Date: Thursday, January 16, 2020					Total Daily Volume: 16937										Description: Westbound Volume									
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
124	68	54	97	294	766	968	1247	1099	805	716	753	873	936	1156	1164	1099	1046	980	767	688	617	394	226	
38	20	10	11	39	185	215	334	299	216	187	177	211	211	279	275	294	305	232	196	196	168	117	71	
33	16	11	24	67	179	213	299	299	206	167	190	194	232	258	259	266	287	252	226	192	186	102	68	
29	19	18	30	76	221	247	321	271	200	183	201	252	252	291	327	300	246	239	181	139	144	104	54	
24	13	15	32	112	181	293	293	230	183	179	185	216	241	328	303	239	208	257	164	161	119	71	33	

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TRAFFIC SIGNAL TIMING SHEET -- CITY OF CHULA VISTA

BRANDYWINE / OLYMPIC

SCN: 162

ADDRESS: 10

Program:233; SET CLOCK: SET DATE:81=ddyy ; SET TIME:80=hhmmss [day]; 8F=mmss.s ; E KEY ENABLE: F-9-E = 9 ;SET MODE:{C-0-C=0} C-A-1=0 ; F-C-0=5.0 ; F-O-F=3.0 ;
ESTABLISH COMM: C-0-0=ADDRESS ; C-0-1=1 ; C-0-2=1 ; C-0-3=SCN ; SET PED PHASES: {C-0-E=125} E-F-5=[2] ; E-F-6=[6] ; E-F-7=[4] ; E-F-8=[8] ;
SET OPTICOM: {C-0-E=125} E-E-A=[2,5] ; E-E-B=[4,7] ; E-E-C=[1,6] ; E-E-D=[3,8] ; E-F-F=[3] ; F-0-8=F-0-9=2 ;

	PHASE FLAGS {C-0-F = 1} (F-F-X)															PHASE TIMING BANK 1							{C-0-F = 1} (F-PHASE-X)					LOCAL SCHEDULER{C-0-9 = 0.1} (PAGE 1)										
	0	1	2	3	4	6	7	8	9	A	B	C	D	E	F	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	9-EVENT	TIME	PLAN/OS	[	DAY	]	
PHASE																																						
1	X																	4		2.6	2.6	2.6	55						3.2	1.0	0 =	0630	8	A	[2,3,4,5,6]			
→ 2	X														X	7	16	10		1.2	5.5	5.9	2.0	60				1.4	4.3	1.0	1 =	0900	7	A	[2,3,4,5,6]			
3	X																	4		2.0	2.0	2.0	40						3.2	1.0	2 =	1430	9	A	[2,3,4,5,6]			
↓ 4	X															7	23	7		3.0	3.0	3.0	50						4.4	1.0	3 =	1900	E	A	[2,3,4,5,6]			
5	X																	4		2.5	2.5	2.5	55						3.2	1.0	4 =	2000		A	[1,7]			
← 6	X														X	7	14	10		1.2	5.5	5.9	2.0	60				1.4	5.2	1.0	5 =	1000	7	A	[1,7]			
7	X																	4		2.0	2.0	2.0	35						3.2	1.0	6 =			A				
↑ 8	X															7	26	7		3.0	3.0	3.0	50						4.0	1.0	7 =			A				

OTHER INPUTS: {C-0-E = 126} E-1-8 = E-1-9 = E-1-A = E-1-B = [4,5,7]
{C-0-C = 1} C-F-0 = [2,4,6,8] ;

NOTE:Plan E=Free ; Plan F=Flash

DETECTOR PARAM: {C-0-D = 0} D-1-0 = 2.0 ; D-3-0 = 1.5 ; D-2-0 = 2.0 ; D-4-0 = 1.5 ; D-1-6 = 2.0 ; D-3-6 = 1.5 ; D-2-6 = 2.0 ; D-4-6 = 1.5 ;

PLAN	CYCLE	COORDINATION						TIMING			PLAN	{C-0-C = 1}					(C-PLAN-X)				TIMING		PLAN	FUNCTIONS		{C-0-C = 2}		(C-PLAN-X)			
		FORCE-OFF						OFFSET									[SYNC	φ s	[LAG	φ s	PED-ADJ	RSRV-TIME[	RESERVED	φs]	[	PRETIMED	φs	[MAX	RECALL	φs]	
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	C-E-PLAN	C-F-PLAN		0	5	6	8	9						
1																															
2																															
3																															
4																															
5																															
6																															
7	128	90	0	24	65	90	0	24	65	0	12	0	0	27	255	0	[2,6]	[2,4,6,8]													
8	150	97	0	15	68	97	0	27	68	0	128	0	0	26	255	0	[2,6]	[2,4,6,8]													
9	140	86	0	20	52	86	0	20	52	0	113	0	0	26	255	3	[2,6]	[2,4,6,8]		3											

NOTE: VIEW CURRENT BANK: {C-0-F = 0} F-C-E = (Current Bank) ; BATT. CHECK: {C-0-E = 112} E-0-A = (85 is OK) = (84 is BAD) ;

DATE : April 20, 2016

VERSION: 2.1

TRAFFIC SIGNAL TIMING SHEET -- CITY OF CHULA VISTA

HERITAGE / OLYMPIC

SCN: 171

ADDRESS: 18

Program:233; SET CLOCK: SET DATE:81=ddyy ; SET TIME:80=hhmmss [day]; 8F=mmss.s ; E KEY ENABLE: F-9-E = 9 ;SET MODE:{C-0-C=0} C-A-1=0 ; F-C-0=5.0 ; F-O-F=3.0 ;
 ESTABLISH COMM: C-0-0=ADDRESS ; C-0-1=1 ; C-0-2=1 ; C-0-3=SCN ; SET PED PHASES: {C-0-E=125} E-F-5=[2] ; E-F-6=[6] ; E-F-7=[4] ; E-F-8=[8] ;
 SET OPTICOM: {C-0-E=125} E-E-A=[2,5] ; E-E-B=[4,7] ; E-E-C=[1,6] ; E-E-D=[3,8] ; E-F-F=[3] ; F-0-8=F-0-9=2 ;

PHASE FLAGS {C-0-F = 1} (F-F-X)																	PHASE TIMING BANK 1 {C-0-F = 1} (F-PHASE-X)													LOCAL SCHEDULER{C-0-9 = 0.1} (PAGE 1)							
PHASE	0	1	2	3	4	6	7	8	9	A	B	C	D	E	F	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	9-EVENT	TIME	PLAN/OS	[	DAY	]
1	X																	4		2.0	2.0	2.0	30					3.2	1.0	0 =	0000	E A	[1,2,3,4,5,6,7]				
→ 2	X			X						X	7	29	10							5.2	4.5	2.0	60			1.2	5.0	1.0	2 =	0800	3 A	[2,3,4,5,6]					
3	X																	4		2.0	2.0	2.0	30					3.2	1.0	3 =	1400	4 A	[2,3,4,5,6]				
↓ 4	X															7	29	7		3.5	3.5	3.5	40			0.6	4.7	1.0	4 =	1530	5 A	[2,3,4,5,6]					
5	X																	4		2.0	2.0	2.0	30					3.2	1.0	5 =	1830	E A	[7]				
← 6	X			X						X	7	29	10							5.2	4.5	2.0	60			1.2	5.0	1.0	6 =	1100	6 A	[7]					
7	X																	4		2.0	2.0	2.0	30					3.2	1.0	7 =	1730	E A					
↑ 8	X															7	32	7		3.5	3.5	3.5	40					4.4	1.0	8 =		A					
																														F =		A					

OTHER INPUTS: {C-0-E = 126} E-1-8 = E-1-9 = E-1-A = E-1-B = [4,5,7]
 {C-0-C = 1} C-F-0 = [2,4,6,8] ;

NOTE:Plan E=Free ; Plan F=Flash

DETECTOR PARAM: {C-0-D = 0} D-1-0 = 2.0 ; D-3-0 = 1.5 ; D-2-0 = 2.0 ; D-4-0 = 1.5 ; D-1-6 = 2.0 ; D-2-E = 10.0; D-2-6 = 2.0 ; D-4-6 = ; D-3-3 = ;
 [C-0-D = 0] D-2-F = 10.0

PLAN	COORDINATION						TIMING		PLAN		{C-0-C = 1}					(C-PLAN-X)				TIMING		PLAN		FUNCTIONS		{C-0-C = 2}		(C-PLAN-X)			
	CYCLE		FORCE-OFF				OFFSET									[SYNC ϕ s]		[LAG ϕ s]		PED-ADJ		RSRV-TIME[		RESERVED ϕs]		PRETIMED ϕs		[MAX RECALL ϕs]			
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	C-E-PLAN	C-F-PLAN		0	5	6	ϕs	8	9						
1																															
2	150	80	0	35	66	91	0	47	66	0	76	0	0	40	255	0	[2,6]	[2,4,6,8]		18											
3	115	57	0	20	39	57	0	20	39	0	109	0	0	23	255	0	[2,6]	[2,4,6,8]		18											
4	130	70	0	26	45	70	0	26	45	0	11	0	0	29	255	0	[2,6]	[2,4,6,8]		18											
5	144	79	0	27	50	79	0	31	50	0	95	0	0	34	255	0	[2,6]	[2,4,6,8]		18											
6	120	66	0	16	43	66	0	24	43	0	109	0	0	27	255	0	[2,6]	[2,4,6,8]		18											
7																															
8																															
9																															

NOTE: VIEW CURRENT BANK: {C-0-F = 0} F-C-E = (Current Bank) ; BATT. CHECK: {C-0-E = 112} E-0-A = (85 is OK) = (84 is BAD) ;

DATE : April 11, 2019

VERSION: 2.4

TRAFFIC SIGNAL TIMING SHEET -- CITY OF CHULA VISTA

LA MEDIA / OLYMPIC

SCN: 175

ADDRESS: 4

Program:233; SET CLOCK: SET DATE:81=ddyy ; SET TIME:80=hhmmss [day]; 8F=mmss.s ; E KEY ENABLE: F-9-E = 9 ;SET MODE:{C-0-C=0} C-A-1=0 ; F-C-0=5.0 ; F-O-F=3.0 ;
ESTABLISH COMM: C-0-0=ADDRESS ; C-0-1=1 ; C-0-2=1 ; C-0-3=SCN ; SET PED PHASES: {C-0-E=125} E-F-5=[2] ; E-F-6=[6] ; E-F-7=[4] ; E-F-8=[8] ;
SET OPTICOM: {C-0-E=125} E-E-A=[2,5] ; E-E-B=[4,7] ; E-E-C=[1,6] ; E-E-D=[3,8] ; E-F-F=[3] ; F-0-8=F-0-9=2 ;

	PHASE FLAGS {C-0-F = 1} (F-F-X)															PHASE TIMING BANK 1 {C-0-F = 1} (F-PHASE-X)															LOCAL SCHEDULER{C-0-9 = 0.1} (PAGE 1)									
	0	1	2	3	4	6	7	8	9	A	B	C	D	E	F	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	9-EVENT	TIME	PLAN/OS	[	DAY	]			
PHASE																																								
1	X																	4		2.5	2.5	2.5	40					3.2	1.0	0 =	0000	E A	[1,2,3,4,5,6,7]							
→ 2	X			X											X	7	29	10		5.2	5.8	2.0	60				1.3	5.0	1.0	1 =	0630	2 A	[2,3,4,5,6]							
3	X																	4		2.5	2.5	2.5	40					3.2	1.0	2 =	0800	3 A	[2,3,4,5,6]							
↓ 4	X															7	33	7		4.4	4.9	2.0	46				1.3	4.7	1.0	3 =	1400	4 A	[2,3,4,5,6]							
5	X																	4		2.5	2.5	2.5	40					3.2	1.0	4 =	1530	5 A	[2,3,4,5,6]							
← 6	X			X											X	7	32	10		5.2	5.8	2.0	60				1.3	5.0	1.0	5 =	1830	E A	[2,3,4,5,6]							
7	X																	4		2.5	2.5	2.5	40					3.2	1.0	6 =	1100	6 A	[7]							
↑ 8	X															7	29	7		3.5	3.5	3.5	46				0.0	4.7	1.0	7 =	1730	E A	[7]							

OTHER INPUTS: {C-0-E = 126} E-1-8 = E-1-9 = E-1-A = E-1-B = [4,5,7]
{C-0-C = 1} C-F-0 = [2,4,6,8] ;

NOTE:Plan E=Free ; Plan F=Flash

DETECTOR PARAM: {C-0-D = 0} D-1-0 = 2.0 ; D-3-0 = 1.5 ; D-2-0 = 2.0 ; D-4-0 = 1.5 ; D-1-6 = 2.0 ; D-3-6 = 1.5 ; D-2-6 = 2.0 ; D-4-6 = 1.5 ;
D-2-E = D-2-F = 10.0

PLAN	COORDINATION										TIMING					PLAN		{C-0-C = 1}					(C-PLAN-X)		TIMING		PLAN		FUNCTIONS		{C-0-C = 2}		(C-PLAN-X)	
	CYCLE		FORCE-OFF						OFFSET								[SYNC φ s]		[LAG φ s]		PED-ADJ		RSRV-TIME		RESERVED φs		PRETIMED φs		[MAX RECALL φs]					
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	C-E-PLAN	C-F-PLAN		0		5		6		8		9						
1																																		
2	144	85	0	39	65	96	0	20	65	0	137	0	0	43	255	0	[2,6]	[2,4,6,8]		12														
3	115	68	0	30	52	73	0	19	52	0	29	0	0	28	255	0	[2,6]	[2,4,6,8]		16														
4	130	75	0	38	60	80	0	17	60	0	49	0	0	29	255	0	[2,6]	[2,4,6,8]		15														
5	144	73	0	31	54	83	0	19	54	0	130	0	0	34	255	0	[2,6]	[2,4,6,8]		15														
6	120	68	0	27	48	68	0	18	48	0	29	0	0	30	255	0	[2,6]	[2,4,6,8]		17														
7																																		
8																																		
9																																		

NOTE: VIEW CURRENT BANK: {C-0-F = 0} F-C-E = (Current Bank) ; BATT. CHECK: {C-0-E = 112} E-0-A = (85 is OK) = (84 is BAD) ;

DATE : February 21, 2019

VERSION: 2.2

TRAFFIC SIGNAL TIMING SHEET -- CITY OF CHULA VISTA

OLEANDER / OLYMPIC

SCN: 163

ADDRESS: 11

Program:233; SET CLOCK: SET DATE:81=ddyy ; SET TIME:80=hhmmss [day]; 8F=mmss.s ; E KEY ENABLE: F-9-E = 9 ;SET MODE:{C-0-C=0} C-A-1=0 ; F-C-0=5.0 ; F-O-F=3.0 ;
ESTABLISH COMM: C-0-0=ADDRESS ; C-0-1=1 ; C-0-2=1 ; C-0-3=SCN ; SET PED PHASES: {C-0-E=125} E-F-5=[2] ; E-F-6=[6] ; E-F-7=[] ; E-F-8=[3] ;
SET OPTICOM: {C-0-E=125} E-E-A=[2,5]; E-E-B=[4]; E-E-C=[1,6]; E-E-D=[3]; E-F-F=[3] ; F-0-8=F-0-9=2 ;

	PHASE FLAGS {C-0-F = 1} (F-F-X)															PHASE TIMING BANK 1 {C-0-F = 1} (F-PHASE-X)															LOCAL SCHEDULER{C-0-9 = 0.1} (PAGE 1)															
	0	1	2	3	4	6	7	8	9	A	B	C	D	E	F	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	9-EVENT	TIME	PLAN/OS	[	DAY	]									
PHASE																																														
1	X																4				2.0	2.0	2.0	30											3.2	1.0	0 =	0630	8	A	[2,3,4,5,6]					
→ 2	X	X														X	7	7	10	1.0	4.0	4.5	2.0	50											1.6	5.0	1.0	1 =	0900	7	A	[2,3,4,5,6]				
↑ 3	X																7	24	7				3.5	3.5	3.5	30											3.2	1.0	2 =	1430	9	A	[2,3,4,5,6]			
↓ 4	X																			7				2.5	2.5	2.5	30											3.7	1.0	3 =	1900	7	A	[1,7]		
5	X																			4				2.0	2.0	2.0	30											3.2	1.0	4 =			A			
← 6	X	X														X	7	10	10	1.0	4.0	4.5	2.0	50											1.6	4.3	1.0	5 =			A					
7																																				6 =			A							
8																																				7 =			A							
																																				8 =			A							
																																				9 =			A							
																																				A =			A							
																																				B =			A							
																																				C =			A							
																																				D =			A							
																																				E =			A							
																																				F =			A							

OTHER INPUTS: {C-0-E = 126} E-1-8 = E-1-9 = E-1-A = E-1-B = [4,5,7]; E-6-B = [3] ;
{C-0-C = 1} C-F-0 = [2,4,6] ;

NOTE:Plan E=Free ; Plan F=Flash

DETECTOR PARAM:

PLAN	COORDINATION										TIMING		PLAN		{C-0-C = 1}					(C-PLAN-X)		TIMING		PLAN		FUNCTIONS		{C-0-C = 2}		(C-PLAN-X)		
	CYCLE		FORCE-OFF					OFFSET			A	B	C	D	E	F	[SYNC ϕ s]	[LAG ϕ s]	PED-ADJ	RSRV-TIME	[RESERVED ϕ s]	[PRETIMED ϕ s]	[MAX RECALL ϕ s]									
	0	1	2	3	4	5	6	7	8	9							C-E-PLAN	C-F-PLAN		0	5	6	8	9								
1																																
2																																
3																																
4																																
5																																
6																																
7	128	75	0	30	55	75	0	0	0	0	16	0	0	58	255	0	[2,6]	[2,4,6]														
8	150	20	0	84	51	103	20	0	0	0	136	0	0	52	255	5	[2,6]	[1,3,6]	5													
9	140	14	0	53	74	97	14	0	0	0	126	0	0	60	255	0	[2,6]	[1,4,6]														

NOTE: VIEW CURRENT BANK: {C-0-F = 0} F-C-E = (Current Bank) ; BATT. CHECK: {C-0-E = 112} E-0-A = (85 is OK) = (84 is BAD) ;

DATE : April 20, 2016

VERSION: 2.7

TRAFFIC SIGNAL TIMING SHEET -- CITY OF CHULA VISTA

OLYMPIC / SANTA VENETIA

SCN: 190

ADDRESS: 30

Program:233; SET CLOCK: SET DATE:81=ddyy ; SET TIME:80=hhmmss [day]; 8F=mmss.s ; E KEY ENABLE: F-9-E = 9 ; SET MODE:{C-0-C=0} C-A-1=0 ; F-C-0=5.0 ; F-O-F=3.0 ;
ESTABLISH COMM: C-0-0=ADDRESS ; C-0-1=1 ; C-0-2=1 ; C-0-3=SCN ; SET PED PHASES: {C-0-E=125} E-F-5=[2] ; E-F-6=[] ; E-F-7=[] ; E-F-8=[] ;
SET OPTICOM: {C-0-E=125} E-E-A=[2] ; E-E-B=[] ; E-E-C=[1,6] ; E-E-D=[8] ; E-F-F=[3] ; F-0-8=F-0-9=2 ;

PHASE FLAGS {C-0-F = 1} (F-F-X)										PHASE TIMING BANK 1 {C-0-F = 1} (F-PHASE-X)										LOCAL SCHEDULER{C-0-9 = 0.1} (PAGE 1)																	
PHASE	0	1	2	3	4	6	7	8	9	A	B	C	D	E	F	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	9-EVENT	TIME	PLAN/OS	[	DAY	]
1	X																	4		2.0	2.0	2.0	30					3.2	1.0	0 =	0000	E A	[1,2,3,4,5,6,7]				
→ 2	X			X					X	7	11	10								5.5	6.4	2.0	50				0.9	5.0	1.0	1 =	0630	2 A	[2,3,4,5,6]				
3																															2 =	0800	3 A	[2,3,4,5,6]			
																															3 =	1400	4 A	[2,3,4,5,6]			
4																															4 =	1530	5 A	[2,3,4,5,6]			
5																															5 =	1830	E A	[2,3,4,5,6]			
																															6 =	1100	6 A	[7]			
																															7 =	1730	E A	[7]			
← 6	X			X					X									10		5.5	6.4	2.0	50				0.9	5.0	1.0	8 =		A					
7																															9 =		A				
↑ 8	X																	7		3.0	3.0	3.0	40					3.6	1.0	A =		A					
																															F =		A				

OTHER INPUTS: {C-0-E = 126} E-1-8 = E-1-9 = E-1-A = E-1-B = [4,5,7] ;
{C-0-C = 1} C-F-0 = [2,6,8] ;

NOTE:Plan E=Free ; Plan F=Flash

DETECTOR PARAM: {C-0-D = 0} D-1-0 = 2.0 ; D-3-0 = 1.5 ; D-2-7 = 2.0 ; D-2-8 = 4.0 ;

PLAN	CYCLE	COORDINATION								TIMING		PLAN	{C-0-C = 1}					(C-PLAN-X)					TIMING		PLAN	FUNCTIONS		{C-0-C = 2}		(C-PLAN-X)			
		FORCE-OFF						OFFSET																									
												A	B	C	D	E	F	[SYNC	φ s]	[LAG	φ s]	PED-ADJ	RSRV-TIME	[	RESERVED	φs]	[	PRETIMED	φs	]	[MAX	RECALL	φs]
		0	1	2	3	4	5	6	7	8	9							C-E-PLAN	C-F-PLAN														
1																																	
2	144	59	0	0	0	0	0	0	29	0	82	0	0	10	255	0		[2,6]		[2,6,8]													
3	115	41	0	0	0	0	0	0	27	0	45	0	0	10	255	0		[2,6]		[2,6,8]													
4	130	53	0	0	0	0	0	0	29	0	66	0	0	10	255	0		[2,6]		[2,6,8]													
5	144	48	0	0	0	0	0	0	31	0	21	0	0	10	255	0		[2,6]		[2,6,8]													
6	120	48	0	0	0	0	0	0	28	0	45	0	0	10	255	0		[2,6]		[2,6,8]													
7																																	
8																																	
9																																	

NOTE: VIEW CURRENT BANK: {C-0-F = 0} F-C-E = (Current Bank) ; BATT. CHECK: {C-0-E = 112} E-0-A = (85 is OK) = (84 is BAD) ;

DATE : February 21, 2019

VERSION: 1.7

APPENDIX B

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	836	394	814	750	0	0	0	0	673	8	397
Future Volume (veh/h)	0	836	394	814	750	0	0	0	0	673	8	397
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	919	433	895	824	0				746	0	436
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1218	543	947	2303	0				995	0	443
Arrive On Green	0.00	0.34	0.34	0.46	1.00	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	919	433	895	824	0				746	0	436
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	34.4	37.1	37.1	0.0	0.0				28.6	0.0	41.0
Cycle Q Clear(g_c), s	0.0	34.4	37.1	37.1	0.0	0.0				28.6	0.0	41.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1218	543	947	2303	0				995	0	443
V/C Ratio(X)	0.00	0.75	0.80	0.95	0.36	0.00				0.75	0.00	0.98
Avail Cap(c_a), veh/h	0	1218	543	1044	2303	0				995	0	443
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	43.7	44.6	39.6	0.0	0.0				49.3	0.0	53.7
Incr Delay (d2), s/veh	0.0	4.4	11.6	2.1	0.0	0.0				3.2	0.0	38.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	15.5	15.9	13.4	0.0	0.0				13.2	0.0	21.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	48.1	56.1	41.7	0.0	0.0				52.5	0.0	92.4
LnGrp LOS	A	D	E	D	A	A				D	A	F
Approach Vol, veh/h		1352			1719						1182	
Approach Delay, s/veh		50.7			21.7						67.2	
Approach LOS		D			C						E	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	45.8	57.2		47.0		103.0						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 45	* 48		41.9		97.2						
Max Q Clear Time (g_c+I1), s	39.1	39.1		43.0		2.0						
Green Ext Time (p_c), s	2.0	4.6		0.0		6.2						

Intersection Summary

HCM 6th Ctrl Delay 43.6

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	496	1054	0	0	1397	1235	208	2	814	0	0	0
Future Volume (veh/h)	496	1054	0	0	1397	1235	208	2	814	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	528	1121	0	0	2057	933	148	0	946			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	585	2172	0	0	1535	651	563	0	1002			
Arrive On Green	0.34	1.00	0.00	0.00	0.41	0.41	0.32	0.00	0.32			
Sat Flow, veh/h	3456	3647	0	0	3741	1585	1781	0	3170			
Grp Volume(v), veh/h	528	1121	0	0	2057	933	148	0	946			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	21.8	0.0	0.0	0.0	61.6	61.6	9.3	0.0	43.6			
Cycle Q Clear(g_c), s	21.8	0.0	0.0	0.0	61.6	61.6	9.3	0.0	43.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	585	2172	0	0	1535	651	563	0	1002			
V/C Ratio(X)	0.90	0.52	0.00	0.00	1.34	1.43	0.26	0.00	0.94			
Avail Cap(c_a), veh/h	848	2172	0	0	1535	651	587	0	1044			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.54	0.54	0.00	0.00	0.36	0.36	1.00	0.00	1.00			
Uniform Delay (d), s/veh	48.4	0.0	0.0	0.0	44.2	44.2	38.2	0.0	50.0			
Incr Delay (d2), s/veh	5.6	0.5	0.0	0.0	154.5	198.6	0.2	0.0	15.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.2	0.1	0.0	0.0	60.3	59.1	4.2	0.0	19.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.0	0.5	0.0	0.0	198.8	242.8	38.5	0.0	65.8			
LnGrp LOS	D	A	A	A	F	F	D	A	E			
Approach Vol, veh/h	1649			2990			1094					
Approach Delay, s/veh	17.6			212.5			62.1					
Approach LOS	B			F			E					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	97.5			30.1			67.4			52.5		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	2.0			23.8			63.6			45.6		
Green Ext Time (p_c), s	9.8			1.6			0.0			1.8		

Intersection Summary

HCM 6th Ctrl Delay 127.7

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	70	1562	120	36	2124	12	185	17	55	21	29	136
Future Volume (veh/h)	70	1562	120	36	2124	12	185	17	55	21	29	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	1627	125	38	2212	12	193	18	57	22	30	142
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	88	2819	216	49	2940	16	228	50	160	78	107	238
Arrive On Green	0.05	0.58	0.58	0.03	0.56	0.56	0.13	0.13	0.13	0.10	0.10	0.10
Sat Flow, veh/h	1781	4836	371	1781	5241	28	1781	395	1250	775	1057	1585
Grp Volume(v), veh/h	73	1145	607	38	1436	788	193	0	75	52	0	142
Grp Sat Flow(s),veh/h/ln	1781	1702	1804	1781	1702	1865	1781	0	1645	1832	0	1585
Q Serve(g_s), s	5.3	27.5	27.5	2.8	41.7	41.7	13.8	0.0	5.4	3.4	0.0	10.9
Cycle Q Clear(g_c), s	5.3	27.5	27.5	2.8	41.7	41.7	13.8	0.0	5.4	3.4	0.0	10.9
Prop In Lane	1.00		0.21	1.00		0.02	1.00		0.76	0.42		1.00
Lane Grp Cap(c), veh/h	88	1984	1051	49	1910	1046	228	0	210	185	0	238
V/C Ratio(X)	0.83	0.58	0.58	0.78	0.75	0.75	0.85	0.00	0.36	0.28	0.00	0.60
Avail Cap(c_a), veh/h	88	1984	1051	74	1910	1046	425	0	392	255	0	299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	0.49	0.49	0.49	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.3	17.0	17.1	62.8	21.7	21.7	55.5	0.0	51.8	54.0	0.0	51.5
Incr Delay (d2), s/veh	38.0	0.9	1.8	13.5	1.4	2.5	8.4	0.0	1.0	0.8	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	10.2	11.0	1.4	15.6	17.5	6.7	0.0	2.3	1.6	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.3	18.0	18.8	76.3	23.1	24.2	63.9	0.0	52.8	54.9	0.0	53.9
LnGrp LOS	F	B	B	E	C	C	E	A	D	D	A	D
Approach Vol, veh/h	1825				2262		268				194	
Approach Delay, s/veh	21.5				24.4		60.8				54.2	
Approach LOS	C				C		E				D	
Timer - Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	7.8	81.8			17.9	10.6	78.9	22.6				
Change Period (Y+Rc), s	* 4.2	6.0			* 4.7	* 4.2	* 6	6.0				
Max Green Setting (Gmax), s	* 5.4	54.6			* 18	* 6.4	* 54	31.0				
Max Q Clear Time (g_c+I1), s	4.8	29.5			12.9	7.3	43.7	15.8				
Green Ext Time (p_c), s	0.0	13.2			0.3	0.0	8.7	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			26.6									
HCM 6th LOS			C									
Notes												

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	197	1471	33	283	2005	276	49	132	190	153	160	221
Future Volume (veh/h)	197	1471	33	283	2005	276	49	132	190	153	160	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	1548	35	298	2111	291	52	139	200	161	168	233
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	2412	55	312	2660	826	67	230	473	176	345	292
Arrive On Green	0.12	0.47	0.47	0.18	0.52	0.52	0.04	0.12	0.12	0.10	0.18	0.18
Sat Flow, veh/h	1781	5137	116	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	207	1026	557	298	2111	291	52	139	200	161	168	233
Grp Sat Flow(s),veh/h/ln	1781	1702	1849	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	17.3	34.3	34.3	24.9	50.7	16.2	4.3	10.6	15.2	13.4	12.1	21.1
Cycle Q Clear(g_c), s	17.3	34.3	34.3	24.9	50.7	16.2	4.3	10.6	15.2	13.4	12.1	21.1
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	1598	868	312	2660	826	67	230	473	176	345	292
V/C Ratio(X)	0.94	0.64	0.64	0.95	0.79	0.35	0.78	0.60	0.42	0.92	0.49	0.80
Avail Cap(c_a), veh/h	221	1598	868	312	2660	826	119	411	627	176	466	395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	0.66	0.82	0.82	0.82	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.1	30.2	30.2	61.3	29.4	21.1	71.6	62.3	42.2	67.0	54.8	58.5
Incr Delay (d2), s/veh	33.2	1.3	2.4	34.3	2.1	1.0	17.3	2.5	0.6	44.5	1.1	8.0
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	9.7	13.7	15.2	13.9	19.9	6.3	2.3	5.2	6.1	8.3	5.8	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.4	31.5	32.6	95.5	31.4	22.1	88.8	64.8	42.8	111.5	55.9	66.5
LnGrp LOS	F	C	C	F	C	C	F	E	D	F	E	E
Approach Vol, veh/h		1790			2700			391			562	
Approach Delay, s/veh		39.6			37.5			56.8			76.2	
Approach LOS		D			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.5	76.6	9.8	33.0	22.8	84.3	19.0	23.9				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 26	* 57	* 10	37.4	* 19	64.0	* 15	* 33				
Max Q Clear Time (g_c+I1), s	26.9	36.3	6.3	23.1	19.3	52.7	15.4	17.2				
Green Ext Time (p_c), s	0.0	10.2	0.0	1.5	0.0	9.4	0.0	1.3				

Intersection Summary

HCM 6th Ctrl Delay 43.6

HCM 6th LOS D

Notes

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

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	1445	136	90	1682	457	298	240	105	496	263	274
Future Volume (veh/h)	182	1445	136	90	1682	457	298	240	105	496	263	274
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	198	1571	148	98	1828	497	324	261	114	539	286	298
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	2401	745	112	2401	1312	381	852	264	541	398	338
Arrive On Green	0.06	0.47	0.47	0.06	0.47	0.47	0.11	0.17	0.17	0.16	0.21	0.21
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	198	1571	148	98	1828	497	324	261	114	539	286	298
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	8.0	33.0	7.6	7.6	41.4	16.1	12.9	6.3	9.0	21.8	19.9	25.5
Cycle Q Clear(g_c), s	8.0	33.0	7.6	7.6	41.4	16.1	12.9	6.3	9.0	21.8	19.9	25.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	2401	745	112	2401	1312	381	852	264	541	398	338
V/C Ratio(X)	0.91	0.65	0.20	0.88	0.76	0.38	0.85	0.31	0.43	1.00	0.72	0.88
Avail Cap(c_a), veh/h	217	2401	745	112	2401	1312	499	1422	442	541	540	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	0.77	0.77	0.77	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.2	28.4	21.7	65.1	30.6	23.9	61.1	51.2	52.4	59.0	51.2	53.4
Incr Delay (d2), s/veh	35.9	1.3	0.6	40.6	1.8	0.6	10.5	0.2	1.1	37.9	3.0	14.3
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	4.5	13.0	3.0	4.6	16.3	5.5	6.2	2.7	3.7	12.4	9.7	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	101.2	29.7	22.2	105.6	32.4	24.5	71.6	51.4	53.5	96.9	54.1	67.7
LnGrp LOS	F	C	C	F	C	C	E	D	D	F	D	E
Approach Vol, veh/h	1917				2423				699			
Approach Delay, s/veh	36.5				33.7				61.1			
Approach LOS	D				C				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	71.8	19.6	35.5	13.0	71.8	26.1	29.1				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.8	50.5	* 20	40.4	* 8.8	50.5	* 22	* 39				
Max Q Clear Time (g_c+I1), s	9.6	35.0	14.9	27.5	10.0	43.4	23.8	11.0				
Green Ext Time (p_c), s	0.0	9.4	0.5	2.3	0.0	6.0	0.0	2.2				

Intersection Summary

HCM 6th Ctrl Delay 45.8

HCM 6th LOS D

Notes

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

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↙	↑↑↑	↖	↗
Traffic Volume (veh/h)	1519	428	123	1821	397	102
Future Volume (veh/h)	1519	428	123	1821	397	102
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1651	465	134	1979	432	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2155	596	168	3554	562	258
Arrive On Green	0.54	0.54	0.09	0.70	0.16	0.16
Sat Flow, veh/h	4145	1100	1781	5274	3456	1585
Grp Volume(v), veh/h	1409	707	134	1979	432	111
Grp Sat Flow(s),veh/h/ln	1702	1672	1781	1702	1728	1585
Q Serve(g_s), s	24.3	25.2	5.5	14.4	9.0	4.7
Cycle Q Clear(g_c), s	24.3	25.2	5.5	14.4	9.0	4.7
Prop In Lane		0.66	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1845	906	168	3554	562	258
V/C Ratio(X)	0.76	0.78	0.80	0.56	0.77	0.43
Avail Cap(c_a), veh/h	1845	906	178	3554	829	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.54	0.49	0.49	1.00	1.00
Uniform Delay (d), s/veh	13.4	13.6	33.3	5.7	30.1	28.3
Incr Delay (d2), s/veh	1.7	3.7	11.3	0.3	2.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	8.0	2.7	2.8	3.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.1	17.3	44.6	6.0	32.6	29.4
LnGrp LOS	B	B	D	A	C	C
Approach Vol, veh/h	2116			2113	543	
Approach Delay, s/veh	15.8			8.4	32.0	
Approach LOS	B			A	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.6	46.6			58.2	16.8
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	7.5	34.4			46.4	18.0
Max Q Clear Time (g_c+I1), s	7.5	27.2			16.4	11.0
Green Ext Time (p_c), s	0.0	6.0			17.4	1.2
Intersection Summary						
HCM 6th Ctrl Delay			14.4			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

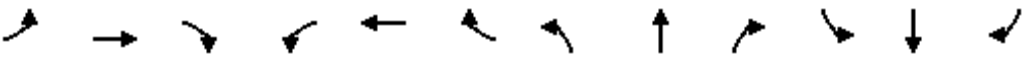
03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	704	464	145	1059	93	667	597	146	115	561	203
Future Volume (veh/h)	310	704	464	145	1059	93	667	597	146	115	561	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	333	757	499	156	1139	100	717	642	157	124	603	218
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	1752	957	200	1488	462	772	2171	674	167	1277	697
Arrive On Green	0.11	0.34	0.34	0.06	0.29	0.29	0.22	0.43	0.43	0.05	0.25	0.25
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	333	757	499	156	1139	100	717	642	157	124	603	218
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	15.2	18.3	22.9	7.1	32.5	7.6	32.5	13.2	10.1	5.7	16.1	10.2
Cycle Q Clear(g_c), s	15.2	18.3	22.9	7.1	32.5	7.6	32.5	13.2	10.1	5.7	16.1	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	378	1752	957	200	1488	462	772	2171	674	167	1277	697
V/C Ratio(X)	0.88	0.43	0.52	0.78	0.77	0.22	0.93	0.30	0.23	0.74	0.47	0.31
Avail Cap(c_a), veh/h	428	1752	957	274	1488	462	838	2171	674	233	1277	697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.2	40.5	42.0	74.4	51.7	42.9	60.9	30.2	29.3	75.2	51.0	48.8
Incr Delay (d2), s/veh	8.7	0.3	0.9	9.5	3.8	1.1	15.7	0.3	0.8	7.8	1.3	1.2
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	7.0	7.6	8.1	3.4	14.1	3.2	16.0	5.6	4.1	2.7	7.1	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.9	40.9	42.9	83.8	55.5	43.9	76.6	30.6	30.1	82.9	52.3	50.0
LnGrp LOS	E	D	D	F	E	D	E	C	C	F	D	D
Approach Vol, veh/h	1589			1395			1516			945		
Approach Delay, s/veh	49.5			57.8			52.3			55.8		
Approach LOS	D			E			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.5	60.9	40.0	45.7	21.7	52.6	11.9	73.7				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 13	48.4	* 39	40.0	* 20	41.3	* 11	68.0				
Max Q Clear Time (g_c+I1), s	9.1	24.9	34.5	18.1	17.2	34.5	7.7	15.2				
Green Ext Time (p_c), s	0.1	7.1	1.2	5.2	0.3	3.9	0.1	5.8				
Intersection Summary												
HCM 6th Ctrl Delay			53.5									
HCM 6th LOS			D									
Notes												

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↘↗	↑↑					↘	↗	↗
Traffic Volume (veh/h)	0	819	383	655	769	0	0	0	0	1257	2	799
Future Volume (veh/h)	0	819	383	655	769	0	0	0	0	1257	2	799
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	836	391	668	785	0				1284	0	815
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	778	347	514	1418	0				1882	0	837
Arrive On Green	0.00	0.22	0.22	0.05	0.13	0.00				0.53	0.00	0.53
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	836	391	668	785	0				1284	0	815
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	32.9	32.9	22.3	31.0	0.0				39.9	0.0	74.9
Cycle Q Clear(g_c), s	0.0	32.9	32.9	22.3	31.0	0.0				39.9	0.0	74.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	778	347	514	1418	0				1882	0	837
V/C Ratio(X)	0.00	1.07	1.13	1.30	0.55	0.00				0.68	0.00	0.97
Avail Cap(c_a), veh/h	0	778	347	514	1418	0				1898	0	844
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.41	0.41	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	58.6	58.6	71.3	52.6	0.0				26.1	0.0	34.3
Incr Delay (d2), s/veh	0.0	54.0	87.0	141.1	0.6	0.0				1.0	0.0	24.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.3	21.3	20.4	15.0	0.0				17.1	0.0	33.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	112.6	145.6	212.4	53.3	0.0				27.1	0.0	58.8
LnGrp LOS	A	F	F	F	D	A				C	A	E
Approach Vol, veh/h		1227			1453						2099	
Approach Delay, s/veh		123.1			126.4						39.4	
Approach LOS		F			F						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.0	38.7		84.3		65.7						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 22	* 33		79.9		59.2						
Max Q Clear Time (g_c+I1), s	24.3	34.9		76.9		33.0						
Green Ext Time (p_c), s	0.0	0.0		2.4		5.3						
Intersection Summary												
HCM 6th Ctrl Delay				87.3								
HCM 6th LOS				F								
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	389	1732	0	0	1096	686	350	3	882	0	0	0
Future Volume (veh/h)	389	1732	0	0	1096	686	350	3	882	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	401	1786	0	0	1272	612	242	0	1039			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	467	2125	0	0	1614	684	587	0	1044			
Arrive On Green	0.14	0.60	0.00	0.00	0.43	0.43	0.33	0.00	0.33			
Sat Flow, veh/h	3456	3647	0	0	3741	1585	1781	0	3170			
Grp Volume(v), veh/h	401	1786	0	0	1272	612	242	0	1039			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	17.0	60.9	0.0	0.0	43.9	53.6	15.8	0.0	49.0			
Cycle Q Clear(g_c), s	17.0	60.9	0.0	0.0	43.9	53.6	15.8	0.0	49.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	467	2125	0	0	1614	684	587	0	1044			
V/C Ratio(X)	0.86	0.84	0.00	0.00	0.79	0.90	0.41	0.00	1.00			
Avail Cap(c_a), veh/h	848	2125	0	0	1614	684	587	0	1044			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.25	0.25	0.00	0.00	0.77	0.77	1.00	0.00	1.00			
Uniform Delay (d), s/veh	63.4	24.4	0.0	0.0	36.7	39.5	39.0	0.0	50.2			
Incr Delay (d2), s/veh	1.2	1.1	0.0	0.0	3.1	13.5	0.5	0.0	26.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.4	24.0	0.0	0.0	20.1	22.6	7.1	0.0	23.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.7	25.5	0.0	0.0	39.8	53.0	39.5	0.0	76.8			
LnGrp LOS	E	C	A	A	D	D	D	A	E			
Approach Vol, veh/h	2187			1884			1281					
Approach Delay, s/veh	32.7			44.1			69.8					
Approach LOS	C			D			E					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	95.5			25.0			70.5			54.5		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	62.9			19.0			55.6			51.0		
Green Ext Time (p_c), s	15.7			1.3			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	45.6											
HCM 6th LOS	D											
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	179	2326	113	9	1595	12	52	14	14	20	28	132
Future Volume (veh/h)	179	2326	113	9	1595	12	52	14	14	20	28	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	2474	120	10	1697	13	55	15	15	21	30	140
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	3565	171	16	3164	24	81	39	39	69	99	333
Arrive On Green	0.24	1.00	1.00	0.02	1.00	1.00	0.05	0.05	0.05	0.09	0.09	0.09
Sat Flow, veh/h	1781	4991	240	1781	5227	40	1781	858	858	755	1078	1585
Grp Volume(v), veh/h	190	1680	914	10	1105	605	55	0	30	51	0	140
Grp Sat Flow(s),veh/h/ln	1781	1702	1827	1781	1702	1863	1781	0	1716	1833	0	1585
Q Serve(g_s), s	15.5	0.0	0.0	0.8	0.0	0.0	4.6	0.0	2.5	3.9	0.0	11.5
Cycle Q Clear(g_c), s	15.5	0.0	0.0	0.8	0.0	0.0	4.6	0.0	2.5	3.9	0.0	11.5
Prop In Lane	1.00		0.13	1.00		0.02	1.00		0.50	0.41		1.00
Lane Grp Cap(c), veh/h	210	2431	1305	16	2061	1128	81	0	78	169	0	333
V/C Ratio(X)	0.90	0.69	0.70	0.62	0.54	0.54	0.68	0.00	0.39	0.30	0.00	0.42
Avail Cap(c_a), veh/h	252	2431	1305	64	2061	1128	368	0	355	238	0	393
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.5	0.0	0.0	73.4	0.0	0.0	70.5	0.0	69.6	63.6	0.0	51.3
Incr Delay (d2), s/veh	15.1	0.7	1.3	25.4	0.2	0.4	9.7	0.0	3.1	1.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.2	0.5	0.5	0.1	0.1	2.3	0.0	1.2	1.9	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.6	0.7	1.3	98.8	0.2	0.4	80.2	0.0	72.7	64.6	0.0	52.2
LnGrp LOS	E	A	A	F	A	A	F	A	E	E	A	D
Approach Vol, veh/h		2784			1720			85			191	
Approach Delay, s/veh		5.7			0.8			77.5			55.5	
Approach LOS		A			A			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	113.1		18.5	21.9	96.8		12.8				
Change Period (Y+Rc), s	* 4.2	6.0		* 4.7	* 4.2	* 6		6.0				
Max Green Setting (Gmax), s	* 5.4	73.2		* 20	* 21	* 58		31.0				
Max Q Clear Time (g_c+I1), s	2.8	2.0		13.5	17.5	2.0		6.6				
Green Ext Time (p_c), s	0.0	41.8		0.3	0.2	17.1		0.3				

Intersection Summary

HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A

Notes

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

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	258	1920	73	193	1389	141	44	156	247	166	180	199
Future Volume (veh/h)	258	1920	73	193	1389	141	44	156	247	166	180	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	269	2000	76	201	1447	147	46	162	257	173	188	207
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	288	2397	91	222	2236	694	59	300	452	190	437	371
Arrive On Green	0.32	0.95	0.95	0.12	0.44	0.44	0.03	0.16	0.16	0.11	0.23	0.23
Sat Flow, veh/h	1781	5049	191	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	269	1347	729	201	1447	147	46	162	257	173	188	207
Grp Sat Flow(s),veh/h/ln	1781	1702	1836	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	22.0	14.4	14.6	16.7	33.3	8.6	3.8	11.9	20.7	14.4	12.8	17.3
Cycle Q Clear(g_c), s	22.0	14.4	14.6	16.7	33.3	8.6	3.8	11.9	20.7	14.4	12.8	17.3
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1616	872	222	2236	694	59	300	452	190	437	371
V/C Ratio(X)	0.93	0.83	0.84	0.91	0.65	0.21	0.77	0.54	0.57	0.91	0.43	0.56
Avail Cap(c_a), veh/h	333	1616	872	223	2236	694	113	411	546	190	488	413
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.53	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	2.3	2.4	64.8	33.1	26.1	71.9	57.9	45.7	66.3	48.9	50.6
Incr Delay (d2), s/veh	19.8	2.8	5.2	34.1	1.4	0.7	19.0	1.5	1.1	41.0	0.7	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	1.9	2.6	9.5	13.5	3.5	2.1	5.8	8.4	8.7	6.1	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.7	5.2	7.6	98.9	34.5	26.8	90.9	59.4	46.9	107.3	49.6	52.0
LnGrp LOS	E	A	A	F	C	C	F	E	D	F	D	D
Approach Vol, veh/h		2345			1795			465			568	
Approach Delay, s/veh		13.3			41.0			55.6			68.0	
Approach LOS		B			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.9	77.4	9.2	40.5	28.4	71.9	20.2	29.5				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 19	* 64	* 9.5	39.1	* 28	53.4	* 16	* 33				
Max Q Clear Time (g_c+I1), s	18.7	16.6	5.8	19.3	24.0	35.3	16.4	22.7				
Green Ext Time (p_c), s	0.0	22.0	0.0	1.7	0.3	9.5	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			32.8									
HCM 6th LOS			C									
Notes												

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

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	1811	238	98	1219	304	152	186	114	423	172	174
Future Volume (veh/h)	225	1811	238	98	1219	304	152	186	114	423	172	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	234	1886	248	102	1270	317	158	194	119	441	179	181
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	285	2817	875	111	2714	1483	211	517	161	449	318	270
Arrive On Green	0.08	0.55	0.55	0.06	0.53	0.53	0.06	0.10	0.10	0.13	0.17	0.17
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	234	1886	248	102	1270	317	158	194	119	441	179	181
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	8.7	34.1	10.8	7.4	20.2	7.8	5.8	4.6	9.5	16.5	11.4	13.9
Cycle Q Clear(g_c), s	8.7	34.1	10.8	7.4	20.2	7.8	5.8	4.6	9.5	16.5	11.4	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	2817	875	111	2714	1483	211	517	161	449	318	270
V/C Ratio(X)	0.82	0.67	0.28	0.92	0.47	0.21	0.75	0.37	0.74	0.98	0.56	0.67
Avail Cap(c_a), veh/h	308	2817	875	111	2714	1483	292	1532	476	449	642	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.7	20.7	15.5	60.6	19.0	16.1	60.0	54.6	56.8	56.4	49.5	50.5
Incr Delay (d2), s/veh	13.2	1.1	0.7	57.4	0.5	0.3	6.6	0.5	6.6	37.5	1.6	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	4.2	12.7	4.1	5.0	7.5	2.6	2.8	2.0	4.1	9.6	5.5	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.9	21.8	16.2	118.0	19.5	16.4	66.7	55.0	63.3	93.9	51.1	53.4
LnGrp LOS	E	C	B	F	B	B	E	E	E	F	D	D
Approach Vol, veh/h	2368		1689				471		801			
Approach Delay, s/veh	26.2		24.9				61.0		75.2			
Approach LOS	C		C				E		E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	77.7	12.2	27.8	14.9	75.1	21.1	18.9				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.1	46.2	* 11	44.6	* 12	42.7	* 17	* 39				
Max Q Clear Time (g_c+I1), s	9.4	36.1	7.8	15.9	10.7	22.2	18.5	11.5				
Green Ext Time (p_c), s	0.0	7.9	0.1	1.7	0.1	9.7	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay	36.2											
HCM 6th LOS	D											
Notes												

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑↑	↘	↗
Traffic Volume (veh/h)	2098	381	24	1475	157	48
Future Volume (veh/h)	2098	381	24	1475	157	48
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2280	414	26	1603	171	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3186	555	47	4109	268	123
Arrive On Green	0.73	0.73	0.03	0.80	0.08	0.08
Sat Flow, veh/h	4544	762	1781	5274	3456	1585
Grp Volume(v), veh/h	1752	942	26	1603	171	52
Grp Sat Flow(s),veh/h/ln	1702	1733	1781	1702	1728	1585
Q Serve(g_s), s	26.0	29.1	1.3	8.0	4.3	2.8
Cycle Q Clear(g_c), s	26.0	29.1	1.3	8.0	4.3	2.8
Prop In Lane		0.44	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2479	1262	47	4109	268	123
V/C Ratio(X)	0.71	0.75	0.55	0.39	0.64	0.42
Avail Cap(c_a), veh/h	2479	1262	105	4109	691	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.43	0.43	0.82	0.82	1.00	1.00
Uniform Delay (d), s/veh	6.9	7.3	43.3	2.5	40.3	39.6
Incr Delay (d2), s/veh	0.7	1.8	7.9	0.2	2.5	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	6.8	0.6	0.9	1.9	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.6	9.1	51.2	2.7	42.8	41.9
LnGrp LOS	A	A	D	A	D	D
Approach Vol, veh/h	2694			1629	223	
Approach Delay, s/veh	8.1			3.5	42.6	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	71.5			78.4	11.6
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	5.3	51.6			61.4	18.0
Max Q Clear Time (g_c+I1), s	3.3	31.1			10.0	6.3
Green Ext Time (p_c), s	0.0	17.3			15.6	0.5
Intersection Summary						
HCM 6th Ctrl Delay			8.2			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	254	1324	490	62	993	120	437	329	48	165	264	175
Future Volume (veh/h)	254	1324	490	62	993	120	437	329	48	165	264	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	1424	527	67	1068	129	470	354	52	177	284	188
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	3041	1661	104	2719	844	531	941	292	222	486	265
Arrive On Green	0.09	0.60	0.60	0.03	0.53	0.53	0.15	0.18	0.18	0.06	0.10	0.10
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	273	1424	527	67	1068	129	470	354	52	177	284	188
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	12.4	25.0	15.1	3.1	19.8	6.6	21.3	9.7	4.4	8.1	8.5	10.5
Cycle Q Clear(g_c), s	12.4	25.0	15.1	3.1	19.8	6.6	21.3	9.7	4.4	8.1	8.5	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	322	3041	1661	104	2719	844	531	941	292	222	486	265
V/C Ratio(X)	0.85	0.47	0.32	0.64	0.39	0.15	0.89	0.38	0.18	0.80	0.58	0.71
Avail Cap(c_a), veh/h	449	3041	1661	151	2719	844	708	1861	578	320	1286	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.59	0.59	0.59	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.4	18.2	16.1	76.7	22.1	19.0	66.3	57.2	55.0	73.8	69.4	70.2
Incr Delay (d2), s/veh	6.5	0.3	0.3	6.4	0.4	0.4	10.3	0.2	0.3	8.7	1.1	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	9.4	5.0	1.4	7.8	2.6	10.2	4.3	1.8	3.9	3.8	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.9	18.5	16.4	83.2	22.5	19.4	76.7	57.4	55.3	82.5	70.5	73.7
LnGrp LOS	E	B	B	F	C	B	E	E	E	F	E	E
Approach Vol, veh/h	2224		1264				876		649			
Approach Delay, s/veh	25.3		25.4				67.6		74.7			
Approach LOS	C		C				E		E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	101.3	28.8	20.9	19.1	91.2	14.5	35.2				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 7	59.8	* 33	40.3	* 21	46.0	* 15	58.3				
Max Q Clear Time (g_c+I1), s	5.1	27.0	23.3	12.5	14.4	21.8	10.1	11.7				
Green Ext Time (p_c), s	0.0	15.1	1.3	2.8	0.5	7.7	0.2	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			39.1									
HCM 6th LOS			D									
Notes												

APPENDIX C

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING + PROJECT

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	845	394	851	787	0	0	0	0	701	8	397
Future Volume (veh/h)	0	845	394	851	787	0	0	0	0	701	8	397
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	929	433	935	865	0				776	0	436
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1183	528	981	2303	0				995	0	443
Arrive On Green	0.00	0.33	0.33	0.47	1.00	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	929	433	935	865	0				776	0	436
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	35.4	37.6	39.0	0.0	0.0				30.1	0.0	41.0
Cycle Q Clear(g_c), s	0.0	35.4	37.6	39.0	0.0	0.0				30.1	0.0	41.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1183	528	981	2303	0				995	0	443
V/C Ratio(X)	0.00	0.79	0.82	0.95	0.38	0.00				0.78	0.00	0.98
Avail Cap(c_a), veh/h	0	1183	528	1044	2303	0				995	0	443
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	45.2	45.9	38.5	0.0	0.0				49.8	0.0	53.7
Incr Delay (d2), s/veh	0.0	5.3	13.4	2.5	0.0	0.0				4.0	0.0	38.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.1	16.4	14.0	0.0	0.0				14.0	0.0	21.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	50.5	59.3	41.0	0.0	0.0				53.8	0.0	92.4
LnGrp LOS	A	D	E	D	A	A				D	A	F
Approach Vol, veh/h		1362			1800						1212	
Approach Delay, s/veh		53.3			21.3						67.7	
Approach LOS		D			C						E	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	47.3	55.7		47.0		103.0						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 45	* 48		41.9		97.2						
Max Q Clear Time (g_c+I1), s	41.0	39.6		43.0		2.0						
Green Ext Time (p_c), s	1.6	4.5		0.0		6.6						

Intersection Summary

HCM 6th Ctrl Delay 44.1

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	496	1091	0	0	1471	1346	208	2	823	0	0	0
Future Volume (veh/h)	496	1091	0	0	1471	1346	208	2	823	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	528	1161	0	0	2214	999	148	0	956			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	585	2164	0	0	1527	647	567	0	1009			
Arrive On Green	0.34	1.00	0.00	0.00	0.41	0.41	0.32	0.00	0.32			
Sat Flow, veh/h	3456	3647	0	0	3741	1585	1781	0	3170			
Grp Volume(v), veh/h	528	1161	0	0	2214	999	148	0	956			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	21.8	0.0	0.0	0.0	61.2	61.2	9.3	0.0	44.1			
Cycle Q Clear(g_c), s	21.8	0.0	0.0	0.0	61.2	61.2	9.3	0.0	44.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	585	2164	0	0	1527	647	567	0	1009			
V/C Ratio(X)	0.90	0.54	0.00	0.00	1.45	1.54	0.26	0.00	0.95			
Avail Cap(c_a), veh/h	848	2164	0	0	1527	647	587	0	1044			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.50	0.50	0.00	0.00	0.19	0.19	1.00	0.00	1.00			
Uniform Delay (d), s/veh	48.4	0.0	0.0	0.0	44.4	44.4	38.0	0.0	49.9			
Incr Delay (d2), s/veh	5.2	0.5	0.0	0.0	203.1	246.2	0.2	0.0	16.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.2	0.1	0.0	0.0	70.3	67.3	4.2	0.0	19.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.6	0.5	0.0	0.0	247.5	290.6	38.2	0.0	66.3			
LnGrp LOS	D	A	A	A	F	F	D	A	E			
Approach Vol, veh/h	1689			3213			1104					
Approach Delay, s/veh	17.1			260.9			62.5					
Approach LOS	B			F			E					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	97.1			30.1			67.0			52.9		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	2.0			23.8			63.2			46.1		
Green Ext Time (p_c), s	10.4			1.6			0.0			1.6		
Intersection Summary												
HCM 6th Ctrl Delay	155.9											
HCM 6th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	70	1608	120	54	2309	30	185	17	59	26	29	136
Future Volume (veh/h)	70	1608	120	54	2309	30	185	17	59	26	29	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	1675	125	56	2405	31	193	18	61	27	30	142
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	88	2761	206	72	2913	37	228	48	162	88	97	239
Arrive On Green	0.05	0.57	0.57	0.04	0.56	0.56	0.13	0.13	0.13	0.10	0.10	0.10
Sat Flow, veh/h	1781	4848	361	1781	5196	67	1781	374	1268	865	962	1585
Grp Volume(v), veh/h	73	1175	625	56	1574	862	193	0	79	57	0	142
Grp Sat Flow(s),veh/h/ln	1781	1702	1805	1781	1702	1858	1781	0	1642	1827	0	1585
Q Serve(g_s), s	5.3	29.5	29.6	4.0	49.1	49.4	13.8	0.0	5.7	3.8	0.0	10.9
Cycle Q Clear(g_c), s	5.3	29.5	29.6	4.0	49.1	49.4	13.8	0.0	5.7	3.8	0.0	10.9
Prop In Lane	1.00		0.20	1.00		0.04	1.00		0.77	0.47		1.00
Lane Grp Cap(c), veh/h	88	1939	1028	72	1909	1042	228	0	210	185	0	239
V/C Ratio(X)	0.83	0.61	0.61	0.78	0.82	0.83	0.85	0.00	0.38	0.31	0.00	0.60
Avail Cap(c_a), veh/h	88	1939	1028	74	1909	1042	425	0	392	254	0	299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.31	0.31	0.31	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.3	18.4	18.4	61.8	23.3	23.4	55.4	0.0	51.9	54.2	0.0	51.5
Incr Delay (d2), s/veh	37.6	1.1	2.0	14.7	1.4	2.5	8.4	0.0	1.1	0.9	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	11.0	12.0	2.1	18.4	20.5	6.7	0.0	2.4	1.8	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.9	19.5	20.4	76.5	24.7	25.9	63.8	0.0	53.0	55.1	0.0	53.9
LnGrp LOS	F	B	C	E	C	C	E	A	D	E	A	D
Approach Vol, veh/h		1873			2492			272			199	
Approach Delay, s/veh		22.9			26.3			60.7			54.2	
Approach LOS		C			C			E			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	80.0		17.9	10.6	78.9		22.6				
Change Period (Y+Rc), s	* 4.2	6.0		* 4.7	* 4.2	* 6		6.0				
Max Green Setting (Gmax), s	* 5.4	54.6		* 18	* 6.4	* 54		31.0				
Max Q Clear Time (g_c+I1), s	6.0	31.6		12.9	7.3	51.4		15.8				
Green Ext Time (p_c), s	0.0	13.0		0.3	0.0	2.7		0.9				
Intersection Summary												
HCM 6th Ctrl Delay			28.0									
HCM 6th LOS			C									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	197	1526	33	301	2226	314	49	132	195	162	160	221
Future Volume (veh/h)	197	1526	33	301	2226	314	49	132	195	162	160	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	1606	35	317	2343	331	52	139	205	171	168	233
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	2381	52	331	2742	851	67	233	492	166	337	285
Arrive On Green	0.11	0.46	0.46	0.37	1.00	1.00	0.04	0.12	0.12	0.09	0.18	0.18
Sat Flow, veh/h	1781	5142	112	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	207	1063	578	317	2343	331	52	139	205	171	168	233
Grp Sat Flow(s),veh/h/ln	1781	1702	1850	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	16.8	36.6	36.6	26.0	0.0	0.0	4.3	10.5	15.4	14.0	12.1	21.2
Cycle Q Clear(g_c), s	16.8	36.6	36.6	26.0	0.0	0.0	4.3	10.5	15.4	14.0	12.1	21.2
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	1576	857	331	2742	851	67	233	492	166	337	285
V/C Ratio(X)	1.04	0.67	0.67	0.96	0.85	0.39	0.78	0.60	0.42	1.03	0.50	0.82
Avail Cap(c_a), veh/h	200	1576	857	331	2742	851	119	411	644	166	456	387
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.6	31.5	31.5	46.5	0.0	0.0	71.6	62.1	41.0	68.0	55.4	59.1
Incr Delay (d2), s/veh	60.3	1.5	2.7	29.7	2.5	0.9	17.3	2.5	0.6	77.5	1.1	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	14.7	16.3	11.9	0.6	0.2	2.3	5.2	6.2	10.0	5.9	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	126.9	32.9	34.1	76.2	2.5	0.9	88.8	64.6	41.5	145.5	56.5	68.6
LnGrp LOS	F	C	C	E	A	A	F	E	D	F	E	E
Approach Vol, veh/h		1848			2991			396			572	
Approach Delay, s/veh		43.8			10.1			55.8			88.0	
Approach LOS		D			B			E			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.1	75.6	9.8	32.4	21.0	86.7	18.2	24.1				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 28	* 56	* 10	36.6	* 17	66.6	* 14	* 33				
Max Q Clear Time (g_c+I1), s	28.0	38.6	6.3	23.2	18.8	2.0	16.0	17.4				
Green Ext Time (p_c), s	0.0	9.7	0.0	1.5	0.0	37.8	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			31.6									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

5: Project Dwy (W) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↙	↑↑↑	↘↙	↗
Traffic Volume (veh/h)	1837	46	9	2656	185	37
Future Volume (veh/h)	1837	46	9	2656	185	37
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1997	50	10	2887	201	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3403	1056	20	3614	802	368
Arrive On Green	1.00	1.00	0.01	0.71	0.23	0.23
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	1997	50	10	2887	201	40
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	0.0	0.0	0.8	57.0	7.1	3.0
Cycle Q Clear(g_c), s	0.0	0.0	0.8	57.0	7.1	3.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3403	1056	20	3614	802	368
V/C Ratio(X)	0.59	0.05	0.49	0.80	0.25	0.11
Avail Cap(c_a), veh/h	3813	1184	59	4136	802	368
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.68	0.68	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	73.7	14.7	47.0	45.4
Incr Delay (d2), s/veh	0.1	0.0	12.1	0.7	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	18.8	3.2	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.1	0.0	85.8	15.4	47.7	46.0
LnGrp LOS	A	A	F	B	D	D
Approach Vol, veh/h	2047			2897	241	
Approach Delay, s/veh	0.1			15.7	47.4	
Approach LOS	A			B	D	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		39.3	6.2	104.5		110.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		19.5	5.0	112.0		121.5
Max Q Clear Time (g_c+I1), s		9.1	2.8	2.0		59.0
Green Ext Time (p_c), s		0.6	0.0	28.3		47.2
Intersection Summary						
HCM 6th Ctrl Delay			11.0			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

6: Project Dwy (E) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↙	↑↑↑	↖	↗
Traffic Volume (veh/h)	1851	23	14	2573	92	55
Future Volume (veh/h)	1851	23	14	2573	92	55
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2012	25	15	2797	100	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3275	1017	28	3507	875	401
Arrive On Green	0.64	0.64	0.02	0.69	0.25	0.25
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	2012	25	15	2797	100	60
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	35.0	0.9	1.3	56.9	3.3	4.4
Cycle Q Clear(g_c), s	35.0	0.9	1.3	56.9	3.3	4.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3275	1017	28	3507	875	401
V/C Ratio(X)	0.61	0.02	0.54	0.80	0.11	0.15
Avail Cap(c_a), veh/h	3659	1136	89	4068	875	401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.42	0.42	1.00	1.00
Uniform Delay (d), s/veh	15.9	9.8	73.3	16.3	43.1	43.5
Incr Delay (d2), s/veh	0.2	0.0	6.8	0.4	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	0.3	0.6	19.2	1.5	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.1	9.8	80.1	16.7	43.3	44.3
LnGrp LOS	B	A	F	B	D	D
Approach Vol, veh/h	2037			2812	160	
Approach Delay, s/veh	16.1			17.0	43.7	
Approach LOS	B			B	D	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		42.5	6.8	100.7		107.5
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		21.5	7.5	107.5		119.5
Max Q Clear Time (g_c+I1), s		6.4	3.3	37.0		58.9
Green Ext Time (p_c), s		0.4	0.0	26.1		44.1
Intersection Summary						
HCM 6th Ctrl Delay			17.5			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	1504	147	90	1697	457	301	240	105	496	263	279
Future Volume (veh/h)	204	1504	147	90	1697	457	301	240	105	496	263	279
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	222	1635	160	98	1845	497	327	261	114	539	286	303
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	2382	739	112	2382	1301	384	871	270	541	404	342
Arrive On Green	0.06	0.47	0.47	0.06	0.47	0.47	0.11	0.17	0.17	0.16	0.22	0.22
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	222	1635	160	98	1845	497	327	261	114	539	286	303
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	8.8	35.2	8.4	7.6	42.3	16.2	13.0	6.3	9.0	21.8	19.8	25.9
Cycle Q Clear(g_c), s	8.8	35.2	8.4	7.6	42.3	16.2	13.0	6.3	9.0	21.8	19.8	25.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	2382	739	112	2382	1301	384	871	270	541	404	342
V/C Ratio(X)	1.02	0.69	0.22	0.88	0.77	0.38	0.85	0.30	0.42	1.00	0.71	0.89
Avail Cap(c_a), veh/h	217	2382	739	112	2382	1301	499	1422	442	541	540	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	0.77	0.77	0.77	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.6	29.3	22.2	65.1	31.2	24.2	61.1	50.7	51.9	59.0	50.8	53.2
Incr Delay (d2), s/veh	62.1	1.4	0.6	40.6	2.0	0.7	10.7	0.2	1.0	37.9	2.8	14.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	13.9	3.3	4.6	16.8	5.5	6.3	2.7	3.7	12.4	9.6	11.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	127.7	30.7	22.7	105.6	33.2	24.9	71.8	50.9	52.9	96.9	53.6	68.0
LnGrp LOS	F	C	C	F	C	C	E	D	D	F	D	E
Approach Vol, veh/h	2017			2440			702			1128		
Approach Delay, s/veh	40.7			34.4			61.0			78.2		
Approach LOS	D			C			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	71.3	19.8	35.9	13.0	71.3	26.1	29.6				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.8	50.5	* 20	40.4	* 8.8	50.5	* 22	* 39				
Max Q Clear Time (g_c+I1), s	9.6	37.2	15.0	27.9	10.8	44.3	23.8	11.0				
Green Ext Time (p_c), s	0.0	8.7	0.5	2.3	0.0	5.4	0.0	2.2				

Intersection Summary

HCM 6th Ctrl Delay	47.2
HCM 6th LOS	D

Notes

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

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑↑	↘	↗
Traffic Volume (veh/h)	1578	428	123	1836	397	102
Future Volume (veh/h)	1578	428	123	1836	397	102
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1715	465	134	1996	432	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2176	578	168	3554	562	258
Arrive On Green	0.54	0.54	0.09	0.70	0.16	0.16
Sat Flow, veh/h	4185	1066	1781	5274	3456	1585
Grp Volume(v), veh/h	1448	732	134	1996	432	111
Grp Sat Flow(s),veh/h/ln	1702	1678	1781	1702	1728	1585
Q Serve(g_s), s	25.4	26.6	5.5	14.6	9.0	4.7
Cycle Q Clear(g_c), s	25.4	26.6	5.5	14.6	9.0	4.7
Prop In Lane		0.64	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1845	909	168	3554	562	258
V/C Ratio(X)	0.78	0.81	0.80	0.56	0.77	0.43
Avail Cap(c_a), veh/h	1845	909	178	3554	829	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	0.48	0.48	1.00	1.00
Uniform Delay (d), s/veh	13.7	14.0	33.3	5.7	30.1	28.3
Incr Delay (d2), s/veh	1.7	3.9	11.1	0.3	2.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	8.5	2.7	2.9	3.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.4	17.9	44.4	6.0	32.6	29.4
LnGrp LOS	B	B	D	A	C	C
Approach Vol, veh/h	2180			2130	543	
Approach Delay, s/veh	16.3			8.4	32.0	
Approach LOS	B			A	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.6	46.6			58.2	16.8
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	7.5	34.4			46.4	18.0
Max Q Clear Time (g_c+I1), s	7.5	28.6			16.6	11.0
Green Ext Time (p_c), s	0.0	5.0			17.5	1.2
Intersection Summary						
HCM 6th Ctrl Delay			14.6			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

03/09/2020

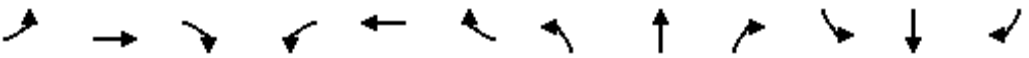
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	745	468	145	1069	93	668	597	146	115	561	207
Future Volume (veh/h)	324	745	468	145	1069	93	668	597	146	115	561	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	348	801	503	156	1149	100	718	642	157	124	603	223
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	1750	956	200	1467	455	773	2172	674	167	1277	697
Arrive On Green	0.11	0.34	0.34	0.06	0.29	0.29	0.22	0.43	0.43	0.05	0.25	0.25
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	348	801	503	156	1149	100	718	642	157	124	603	223
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	15.9	19.6	23.1	7.1	33.1	7.7	32.6	13.2	10.1	5.7	16.1	10.4
Cycle Q Clear(g_c), s	15.9	19.6	23.1	7.1	33.1	7.7	32.6	13.2	10.1	5.7	16.1	10.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1750	956	200	1467	455	773	2172	674	167	1277	697
V/C Ratio(X)	0.89	0.46	0.53	0.78	0.78	0.22	0.93	0.30	0.23	0.74	0.47	0.32
Avail Cap(c_a), veh/h	428	1750	956	274	1467	455	838	2172	674	233	1277	697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.39	0.39	0.39	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.9	41.0	42.2	74.4	52.4	43.4	60.8	30.2	29.3	75.2	51.0	48.9
Incr Delay (d2), s/veh	8.6	0.3	0.8	9.5	4.2	1.1	15.8	0.3	0.8	7.8	1.3	1.2
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	7.4	8.1	8.2	3.4	14.4	3.2	16.0	5.6	4.1	2.7	7.1	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.6	41.3	43.0	83.8	56.7	44.5	76.6	30.6	30.1	82.9	52.3	50.1
LnGrp LOS	E	D	D	F	E	D	E	C	C	F	D	D
Approach Vol, veh/h	1652			1405			1517			950		
Approach Delay, s/veh	49.7			58.8			52.3			55.8		
Approach LOS	D			E			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.5	60.8	40.0	45.7	22.3	52.0	11.9	73.8				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 13	48.4	* 39	40.0	* 20	41.3	* 11	68.0				
Max Q Clear Time (g_c+I1), s	9.1	25.1	34.6	18.1	17.9	35.1	7.7	15.2				
Green Ext Time (p_c), s	0.1	7.5	1.2	5.2	0.2	3.6	0.1	5.8				
Intersection Summary												
HCM 6th Ctrl Delay	53.8											
HCM 6th LOS	D											
Notes												

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

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↘	↑↑					↖	↗	↘
Traffic Volume (veh/h)	0	859	383	672	786	0	0	0	0	1378	2	799
Future Volume (veh/h)	0	859	383	672	786	0	0	0	0	1378	2	799
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	877	391	686	802	0				1407	0	815
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	777	347	514	1417	0				1884	0	838
Arrive On Green	0.00	0.22	0.22	0.05	0.13	0.00				0.53	0.00	0.53
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	877	391	686	802	0				1407	0	815
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	32.8	32.8	22.3	31.8	0.0				46.1	0.0	74.8
Cycle Q Clear(g_c), s	0.0	32.8	32.8	22.3	31.8	0.0				46.1	0.0	74.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	777	347	514	1417	0				1884	0	838
V/C Ratio(X)	0.00	1.13	1.13	1.34	0.57	0.00				0.75	0.00	0.97
Avail Cap(c_a), veh/h	0	777	347	514	1417	0				1898	0	844
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.32	0.32	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	58.6	58.6	71.3	53.0	0.0				27.5	0.0	34.3
Incr Delay (d2), s/veh	0.0	73.9	87.8	155.2	0.5	0.0				1.7	0.0	24.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.4	21.3	21.5	15.3	0.0				19.9	0.0	33.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	132.5	146.4	226.5	53.5	0.0				29.2	0.0	58.6
LnGrp LOS	A	F	F	F	D	A				C	A	E
Approach Vol, veh/h		1268			1488						2222	
Approach Delay, s/veh		136.8			133.3						40.0	
Approach LOS		F			F						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.0	38.6		84.4		65.6						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 22	* 33		79.9		59.2						
Max Q Clear Time (g_c+I1), s	24.3	34.8		76.8		33.8						
Green Ext Time (p_c), s	0.0	0.0		2.5		5.4						
Intersection Summary												
HCM 6th Ctrl Delay			92.5									
HCM 6th LOS			F									
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	389	1893	0	0	1130	738	350	3	923	0	0	0
Future Volume (veh/h)	389	1893	0	0	1130	738	350	3	923	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	401	1952	0	0	1344	642	242	0	1082			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	467	2125	0	0	1614	684	587	0	1044			
Arrive On Green	0.14	0.60	0.00	0.00	0.43	0.43	0.33	0.00	0.33			
Sat Flow, veh/h	3456	3647	0	0	3741	1585	1781	0	3170			
Grp Volume(v), veh/h	401	1952	0	0	1344	642	242	0	1082			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	17.0	73.5	0.0	0.0	47.8	58.1	15.8	0.0	49.4			
Cycle Q Clear(g_c), s	17.0	73.5	0.0	0.0	47.8	58.1	15.8	0.0	49.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	467	2125	0	0	1614	684	587	0	1044			
V/C Ratio(X)	0.86	0.92	0.00	0.00	0.83	0.94	0.41	0.00	1.04			
Avail Cap(c_a), veh/h	848	2125	0	0	1614	684	587	0	1044			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.13	0.13	0.00	0.00	0.73	0.73	1.00	0.00	1.00			
Uniform Delay (d), s/veh	63.4	26.9	0.0	0.0	37.8	40.8	39.0	0.0	50.3			
Incr Delay (d2), s/veh	0.6	1.2	0.0	0.0	3.9	17.9	0.5	0.0	37.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.4	29.0	0.0	0.0	22.0	25.1	7.1	0.0	25.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.1	28.1	0.0	0.0	41.7	58.6	39.5	0.0	88.0			
LnGrp LOS	E	C	A	A	D	E	D	A	F			
Approach Vol, veh/h	2353			1986			1324					
Approach Delay, s/veh	34.2			47.2			79.1					
Approach LOS	C			D			E					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	95.5			25.0			70.5			54.5		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	75.5			19.0			60.1			51.4		
Green Ext Time (p_c), s	10.9			1.3			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	49.3											
HCM 6th LOS	D											
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	2528	113	18	1681	21	52	14	34	40	28	132
Future Volume (veh/h)	179	2528	113	18	1681	21	52	14	34	40	28	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	2689	120	19	1788	22	55	15	36	43	30	140
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	3547	156	26	3141	39	82	23	54	99	69	334
Arrive On Green	0.24	1.00	1.00	0.03	1.00	1.00	0.05	0.05	0.05	0.09	0.09	0.09
Sat Flow, veh/h	1781	5014	221	1781	5199	64	1781	488	1171	1070	747	1585
Grp Volume(v), veh/h	190	1815	994	19	1171	639	55	0	51	73	0	140
Grp Sat Flow(s),veh/h/ln	1781	1702	1831	1781	1702	1859	1781	0	1660	1817	0	1585
Q Serve(g_s), s	15.5	0.0	0.0	1.6	0.0	0.0	4.6	0.0	4.5	5.7	0.0	11.5
Cycle Q Clear(g_c), s	15.5	0.0	0.0	1.6	0.0	0.0	4.6	0.0	4.5	5.7	0.0	11.5
Prop In Lane	1.00		0.12	1.00		0.03	1.00		0.71	0.59		1.00
Lane Grp Cap(c), veh/h	210	2408	1295	26	2057	1123	82	0	77	168	0	334
V/C Ratio(X)	0.90	0.75	0.77	0.73	0.57	0.57	0.67	0.00	0.67	0.43	0.00	0.42
Avail Cap(c_a), veh/h	252	2408	1295	64	2057	1123	368	0	343	236	0	393
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.26	0.26	0.26	0.69	0.69	0.69	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.5	0.0	0.0	72.5	0.0	0.0	70.4	0.0	70.4	64.4	0.0	51.3
Incr Delay (d2), s/veh	10.4	0.6	1.2	23.5	0.3	0.5	9.1	0.0	9.6	1.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.2	0.4	0.9	0.1	0.1	2.3	0.0	2.1	2.7	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.9	0.6	1.2	96.1	0.3	0.5	79.5	0.0	80.0	66.1	0.0	52.1
LnGrp LOS	E	A	A	F	A	A	E	A	E	E	A	D
Approach Vol, veh/h	2999			1829			106			213		
Approach Delay, s/veh	5.0			1.3			79.7			56.9		
Approach LOS	A			A			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	112.1		18.6	21.9	96.6		12.9				
Change Period (Y+Rc), s	* 4.2	6.0		* 4.7	* 4.2	* 6		6.0				
Max Green Setting (Gmax), s	* 5.4	73.2		* 20	* 21	* 58		31.0				
Max Q Clear Time (g_c+I1), s	3.6	2.0		13.5	17.5	2.0		6.6				
Green Ext Time (p_c), s	0.0	48.1		0.4	0.2	19.0		0.4				
Intersection Summary												
HCM 6th Ctrl Delay	7.4											
HCM 6th LOS	A											
Notes												

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

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	258	2162	73	202	1493	158	44	156	268	206	180	199
Future Volume (veh/h)	258	2162	73	202	1493	158	44	156	268	206	180	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	269	2252	76	210	1555	165	46	162	279	215	188	207
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	288	2325	78	210	2117	657	59	324	461	209	481	407
Arrive On Green	0.32	0.92	0.92	0.16	0.55	0.55	0.03	0.17	0.17	0.12	0.26	0.26
Sat Flow, veh/h	1781	5073	171	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	269	1508	820	210	1555	165	46	162	279	215	188	207
Grp Sat Flow(s),veh/h/ln	1781	1702	1840	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	22.0	48.7	51.3	17.7	34.4	8.1	3.8	11.8	22.7	17.6	12.5	16.7
Cycle Q Clear(g_c), s	22.0	48.7	51.3	17.7	34.4	8.1	3.8	11.8	22.7	17.6	12.5	16.7
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1560	843	210	2117	657	59	324	461	209	481	407
V/C Ratio(X)	0.93	0.97	0.97	1.00	0.73	0.25	0.77	0.50	0.60	1.03	0.39	0.51
Avail Cap(c_a), veh/h	330	1560	843	210	2117	657	113	411	536	209	507	430
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.38	0.38	0.38	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	5.4	5.5	63.2	27.4	21.5	71.9	56.1	45.7	66.2	46.0	47.6
Incr Delay (d2), s/veh	15.7	8.2	13.6	58.3	2.1	0.8	19.0	1.2	1.5	69.9	0.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	4.1	5.7	10.9	12.3	3.1	2.1	5.7	9.2	12.1	5.9	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.7	13.7	19.2	121.5	29.5	22.3	90.9	57.3	47.2	136.1	46.5	48.6
LnGrp LOS	E	B	B	F	C	C	F	E	D	F	D	D
Approach Vol, veh/h		2597			1930			487			610	
Approach Delay, s/veh		20.8			38.9			54.7			78.8	
Approach LOS		C			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.9	74.9	9.2	44.0	28.4	68.4	21.8	31.4				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 18	* 63	* 9.5	40.7	* 28	52.0	* 18	* 33				
Max Q Clear Time (g_c+I1), s	19.7	53.3	5.8	18.7	24.0	36.4	19.6	24.7				
Green Ext Time (p_c), s	0.0	8.2	0.0	1.7	0.3	9.3	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			36.2									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary 5: Project Dwy (W) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↙	↑↑↑	↖	↗
Traffic Volume (veh/h)	2434	202	40	1766	87	17
Future Volume (veh/h)	2434	202	40	1766	87	17
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2646	220	43	1920	95	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3475	1079	55	3787	686	314
Arrive On Green	0.46	0.46	0.03	0.74	0.20	0.20
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	2646	220	43	1920	95	18
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	64.8	12.5	3.6	23.4	3.4	1.4
Cycle Q Clear(g_c), s	64.8	12.5	3.6	23.4	3.4	1.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3475	1079	55	3787	686	314
V/C Ratio(X)	0.76	0.20	0.78	0.51	0.14	0.06
Avail Cap(c_a), veh/h	3864	1199	59	4187	686	314
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.21	0.21	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	30.7	16.4	72.2	8.0	49.6	48.7
Incr Delay (d2), s/veh	0.2	0.0	40.3	0.1	0.4	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	27.3	4.7	2.2	7.2	1.5	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.8	16.5	112.4	8.1	50.0	49.1
LnGrp LOS	C	B	F	A	D	D
Approach Vol, veh/h	2866			1963	113	
Approach Delay, s/veh	29.7			10.4	49.8	
Approach LOS	C			B	D	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		34.3	9.2	106.6		115.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		18.0	5.0	113.5		123.0
Max Q Clear Time (g_c+l1), s		5.4	5.6	66.8		25.4
Green Ext Time (p_c), s		0.2	0.0	35.3		24.8
Intersection Summary						
HCM 6th Ctrl Delay			22.5			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary

6: Project Dwy (E) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘	↑↑↑	↘	↑
Traffic Volume (veh/h)	2350	101	60	1763	43	26
Future Volume (veh/h)	2350	101	60	1763	43	26
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2554	110	65	1916	47	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3227	1002	59	3550	846	388
Arrive On Green	0.63	0.63	0.03	0.70	0.24	0.24
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	2554	110	65	1916	47	28
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	55.3	4.1	5.0	27.5	1.6	2.0
Cycle Q Clear(g_c), s	55.3	4.1	5.0	27.5	1.6	2.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3227	1002	59	3550	846	388
V/C Ratio(X)	0.79	0.11	1.09	0.54	0.06	0.07
Avail Cap(c_a), veh/h	3864	1199	59	4187	846	388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	0.78	0.78	1.00	1.00
Uniform Delay (d), s/veh	20.3	10.9	72.5	11.1	43.4	43.5
Incr Delay (d2), s/veh	0.7	0.0	131.3	0.1	0.1	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	19.9	1.4	4.4	9.2	0.7	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.0	11.0	203.8	11.2	43.5	43.9
LnGrp LOS	C	B	F	B	D	D
Approach Vol, veh/h	2664			1981	75	
Approach Delay, s/veh	20.6			17.6	43.6	
Approach LOS	C			B	D	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		41.2	9.5	99.3		108.8
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		18.0	5.0	113.5		123.0
Max Q Clear Time (g_c+I1), s		4.0	7.0	57.3		29.5
Green Ext Time (p_c), s		0.1	0.0	37.5		24.5
Intersection Summary						
HCM 6th Ctrl Delay			19.7			
HCM 6th LOS			B			
Notes						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	1839	243	98	1283	304	164	186	114	423	172	198
Future Volume (veh/h)	235	1839	243	98	1283	304	164	186	114	423	172	198
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	1916	253	102	1336	317	171	194	119	441	179	206
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	295	2817	875	111	2699	1475	224	517	161	449	311	264
Arrive On Green	0.09	0.55	0.55	0.06	0.53	0.53	0.06	0.10	0.10	0.13	0.17	0.17
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	245	1916	253	102	1336	317	171	194	119	441	179	206
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	9.1	35.0	11.1	7.4	21.7	7.9	6.3	4.6	9.5	16.5	11.5	16.2
Cycle Q Clear(g_c), s	9.1	35.0	11.1	7.4	21.7	7.9	6.3	4.6	9.5	16.5	11.5	16.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	295	2817	875	111	2699	1475	224	517	161	449	311	264
V/C Ratio(X)	0.83	0.68	0.29	0.92	0.50	0.21	0.76	0.37	0.74	0.98	0.58	0.78
Avail Cap(c_a), veh/h	308	2817	875	111	2699	1475	292	1532	476	449	642	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.68	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.5	20.9	15.5	60.6	19.6	16.3	59.8	54.6	56.8	56.4	49.9	51.9
Incr Delay (d2), s/veh	11.8	0.9	0.6	57.0	0.6	0.3	8.3	0.5	6.6	37.5	1.7	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	4.3	12.9	4.1	5.0	8.1	2.6	3.0	2.0	4.1	9.6	5.5	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.3	21.8	16.1	117.6	20.2	16.6	68.1	55.0	63.3	93.9	51.6	56.9
LnGrp LOS	E	C	B	F	C	B	E	E	E	F	D	E
Approach Vol, veh/h	2414				1755				484			
Approach Delay, s/veh	26.1				25.2				61.7			
Approach LOS	C				C				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	77.7	12.6	27.3	15.3	74.7	21.1	18.9				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.1	46.2	* 11	44.6	* 12	42.7	* 17	* 39				
Max Q Clear Time (g_c+I1), s	9.4	37.0	8.3	18.2	11.1	23.7	18.5	11.5				
Green Ext Time (p_c), s	0.0	7.4	0.1	1.7	0.0	9.8	0.0	1.7				

Intersection Summary

HCM 6th Ctrl Delay	36.4
HCM 6th LOS	D

Notes

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

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑↑	↘	↗
Traffic Volume (veh/h)	2126	381	24	1539	157	48
Future Volume (veh/h)	2126	381	24	1539	157	48
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2311	414	26	1673	171	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3194	548	47	4109	268	123
Arrive On Green	0.73	0.73	0.03	0.80	0.08	0.08
Sat Flow, veh/h	4555	753	1781	5274	3456	1585
Grp Volume(v), veh/h	1771	954	26	1673	171	52
Grp Sat Flow(s),veh/h/ln	1702	1735	1781	1702	1728	1585
Q Serve(g_s), s	26.5	29.9	1.3	8.6	4.3	2.8
Cycle Q Clear(g_c), s	26.5	29.9	1.3	8.6	4.3	2.8
Prop In Lane		0.43	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2479	1263	47	4109	268	123
V/C Ratio(X)	0.71	0.76	0.55	0.41	0.64	0.42
Avail Cap(c_a), veh/h	2479	1263	105	4109	691	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	6.9	7.4	43.3	2.6	40.3	39.6
Incr Delay (d2), s/veh	0.7	1.8	7.8	0.2	2.5	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	7.0	0.6	1.0	1.9	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.7	9.2	51.1	2.8	42.8	41.9
LnGrp LOS	A	A	D	A	D	D
Approach Vol, veh/h	2725			1699	223	
Approach Delay, s/veh	8.2			3.5	42.6	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	71.5			78.4	11.6
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	5.3	51.6			61.4	18.0
Max Q Clear Time (g_c+I1), s	3.3	31.9			10.6	6.3
Green Ext Time (p_c), s	0.0	16.9			16.8	0.5
Intersection Summary						
HCM 6th Ctrl Delay			8.1			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	1343	492	62	1037	120	441	329	48	165	264	191
Future Volume (veh/h)	261	1343	492	62	1037	120	441	329	48	165	264	191
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	281	1444	529	67	1115	129	474	354	52	177	284	205
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	330	3003	1641	104	2669	829	535	979	304	222	518	283
Arrive On Green	0.10	0.59	0.59	0.03	0.52	0.52	0.15	0.19	0.19	0.06	0.10	0.10
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	281	1444	529	67	1115	129	474	354	52	177	284	205
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	12.8	26.0	15.4	3.1	21.3	6.8	21.5	9.6	4.4	8.1	8.5	11.4
Cycle Q Clear(g_c), s	12.8	26.0	15.4	3.1	21.3	6.8	21.5	9.6	4.4	8.1	8.5	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	330	3003	1641	104	2669	829	535	979	304	222	518	283
V/C Ratio(X)	0.85	0.48	0.32	0.64	0.42	0.16	0.89	0.36	0.17	0.80	0.55	0.72
Avail Cap(c_a), veh/h	449	3003	1641	151	2669	829	708	1861	578	320	1286	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.58	0.58	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.2	18.9	16.7	76.7	23.3	19.8	66.2	56.2	54.0	73.8	68.4	69.7
Incr Delay (d2), s/veh	6.8	0.3	0.3	6.4	0.5	0.4	10.5	0.2	0.3	8.7	0.9	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	9.8	5.1	1.4	8.4	2.7	10.3	4.2	1.8	3.9	3.8	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.1	19.2	17.1	83.2	23.8	20.2	76.8	56.4	54.3	82.5	69.3	73.2
LnGrp LOS	E	B	B	F	C	C	E	E	D	F	E	E
Approach Vol, veh/h	2254			1311			880			666		
Approach Delay, s/veh	26.1			26.5			67.2			74.0		
Approach LOS	C			C			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	100.1	29.0	21.9	19.5	89.6	14.5	36.4				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 7	59.8	* 33	40.3	* 21	46.0	* 15	58.3				
Max Q Clear Time (g_c+I1), s	5.1	28.0	23.5	13.4	14.8	23.3	10.1	11.6				
Green Ext Time (p_c), s	0.0	15.2	1.3	2.8	0.5	7.9	0.2	2.8				

Intersection Summary

HCM 6th Ctrl Delay 39.5

HCM 6th LOS D

Notes

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

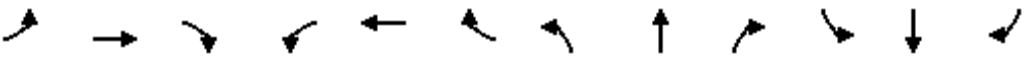
APPENDIX D

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – NEAR-TERM

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	884	394	862	842	0	0	0	0	831	8	404
Future Volume (veh/h)	0	884	394	862	842	0	0	0	0	831	8	404
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	971	433	947	925	0				919	0	444
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1173	523	990	2303	0				995	0	443
Arrive On Green	0.00	0.33	0.33	0.48	1.00	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	971	433	947	925	0				919	0	444
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	37.8	37.8	39.5	0.0	0.0				37.6	0.0	41.9
Cycle Q Clear(g_c), s	0.0	37.8	37.8	39.5	0.0	0.0				37.6	0.0	41.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1173	523	990	2303	0				995	0	443
V/C Ratio(X)	0.00	0.83	0.83	0.96	0.40	0.00				0.92	0.00	1.00
Avail Cap(c_a), veh/h	0	1173	523	1044	2303	0				995	0	443
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	46.3	46.3	38.2	0.0	0.0				52.5	0.0	54.0
Incr Delay (d2), s/veh	0.0	6.8	14.0	2.7	0.0	0.0				13.7	0.0	43.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.4	16.5	14.1	0.0	0.0				18.7	0.0	22.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	53.1	60.3	40.9	0.0	0.0				66.2	0.0	97.5
LnGrp LOS	A	D	E	D	A	A				E	A	F
Approach Vol, veh/h		1404			1872						1363	
Approach Delay, s/veh		55.3			20.7						76.4	
Approach LOS		E			C						E	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	47.7	55.3		47.0		103.0						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 45	* 48		41.9		97.2						
Max Q Clear Time (g_c+I1), s	41.5	39.8		43.9		2.0						
Green Ext Time (p_c), s	1.5	4.5		0.0		7.3						

Intersection Summary

HCM 6th Ctrl Delay 47.6

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	496	1263	0	0	1538	1551	208	2	829	0	0	0
Future Volume (veh/h)	496	1263	0	0	1538	1551	208	2	829	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	528	1344	0	0	1373	1826	148	0	962			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	585	2159	0	0	761	1290	569	0	1013			
Arrive On Green	0.34	1.00	0.00	0.00	0.41	0.41	0.32	0.00	0.32			
Sat Flow, veh/h	3456	3647	0	0	1870	3170	1781	0	3170			
Grp Volume(v), veh/h	528	1344	0	0	1373	1826	148	0	962			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	21.8	0.0	0.0	0.0	61.0	61.0	9.2	0.0	44.5			
Cycle Q Clear(g_c), s	21.8	0.0	0.0	0.0	61.0	61.0	9.2	0.0	44.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	585	2159	0	0	761	1290	569	0	1013			
V/C Ratio(X)	0.90	0.62	0.00	0.00	1.80	1.42	0.26	0.00	0.95			
Avail Cap(c_a), veh/h	848	2159	0	0	761	1290	587	0	1044			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.34	0.34	0.00	0.00	0.09	0.09	1.00	0.00	1.00			
Uniform Delay (d), s/veh	48.4	0.0	0.0	0.0	44.5	44.5	37.9	0.0	49.8			
Incr Delay (d2), s/veh	3.6	0.5	0.0	0.0	362.1	187.3	0.2	0.0	16.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.1	0.1	0.0	0.0	103.7	56.6	4.1	0.0	19.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.1	0.5	0.0	0.0	406.6	231.8	38.1	0.0	66.6			
LnGrp LOS	D	A	A	A	F	F	D	A	E			
Approach Vol, veh/h	1872			3199			1110					
Approach Delay, s/veh	15.0			306.8			62.8					
Approach LOS	B			F			E					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	96.9			30.1			66.8			53.1		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	2.0			23.8			63.0			46.5		
Green Ext Time (p_c), s	13.5			1.6			0.0			1.5		

Intersection Summary

HCM 6th Ctrl Delay 174.6

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	70	1790	120	50	2582	134	185	17	59	93	29	136
Future Volume (veh/h)	70	1790	120	50	2582	134	185	17	59	93	29	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	1865	125	52	2690	140	193	18	61	97	30	142
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	88	2791	187	67	2781	143	228	48	162	141	44	241
Arrive On Green	0.05	0.57	0.57	0.04	0.56	0.56	0.13	0.13	0.13	0.10	0.10	0.10
Sat Flow, veh/h	1781	4889	327	1781	4974	255	1781	374	1268	1376	426	1585
Grp Volume(v), veh/h	73	1297	693	52	1828	1002	193	0	79	127	0	142
Grp Sat Flow(s),veh/h/ln	1781	1702	1812	1781	1702	1824	1781	0	1642	1802	0	1585
Q Serve(g_s), s	5.3	34.3	34.6	3.8	66.5	69.8	13.8	0.0	5.7	8.8	0.0	10.8
Cycle Q Clear(g_c), s	5.3	34.3	34.6	3.8	66.5	69.8	13.8	0.0	5.7	8.8	0.0	10.8
Prop In Lane	1.00		0.18	1.00		0.14	1.00		0.77	0.76		1.00
Lane Grp Cap(c), veh/h	88	1943	1034	67	1903	1020	228	0	210	185	0	241
V/C Ratio(X)	0.83	0.67	0.67	0.78	0.96	0.98	0.85	0.00	0.38	0.69	0.00	0.59
Avail Cap(c_a), veh/h	88	1943	1034	74	1903	1020	425	0	392	251	0	299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.67	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.3	19.3	19.4	62.0	27.3	28.0	55.4	0.0	51.9	56.3	0.0	51.3
Incr Delay (d2), s/veh	34.5	1.2	2.3	4.3	1.9	5.2	8.4	0.0	1.1	4.6	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	12.8	14.1	1.8	24.9	28.9	6.7	0.0	2.4	4.3	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.8	20.6	21.7	66.4	29.2	33.2	63.8	0.0	53.0	60.9	0.0	53.6
LnGrp LOS	F	C	C	E	C	C	E	A	D	E	A	D
Approach Vol, veh/h		2063			2882			272			269	
Approach Delay, s/veh		23.6			31.2			60.7			57.1	
Approach LOS		C			C			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	80.2		18.1	10.6	78.7		22.6				
Change Period (Y+Rc), s	* 4.2	6.0		* 4.7	* 4.2	* 6		6.0				
Max Green Setting (Gmax), s	* 5.4	54.6		* 18	* 6.4	* 54		31.0				
Max Q Clear Time (g_c+I1), s	5.8	36.6		12.8	7.3	71.8		15.8				
Green Ext Time (p_c), s	0.0	12.3		0.5	0.0	0.0		0.9				
Intersection Summary												
HCM 6th Ctrl Delay				31.1								
HCM 6th LOS				C								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	197	1651	150	308	2409	314	234	132	198	165	160	221
Future Volume (veh/h)	197	1651	150	308	2409	314	234	132	198	165	160	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	1738	158	324	2536	331	246	139	208	174	168	233
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	1602	145	292	2050	637	271	478	665	198	401	339
Arrive On Green	0.10	0.34	0.34	0.16	0.40	0.40	0.15	0.26	0.26	0.11	0.21	0.21
Sat Flow, veh/h	1781	4765	432	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	207	1240	656	324	2536	331	246	139	208	174	168	233
Grp Sat Flow(s),veh/h/ln	1781	1702	1793	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	14.8	50.4	50.4	24.6	60.2	23.7	20.4	9.0	13.2	14.4	11.6	20.3
Cycle Q Clear(g_c), s	14.8	50.4	50.4	24.6	60.2	23.7	20.4	9.0	13.2	14.4	11.6	20.3
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	176	1145	603	292	2050	637	271	478	665	198	401	339
V/C Ratio(X)	1.18	1.08	1.09	1.11	1.24	0.52	0.91	0.29	0.31	0.88	0.42	0.69
Avail Cap(c_a), veh/h	176	1145	603	292	2050	637	368	478	665	274	401	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.51	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.6	49.8	49.8	62.7	44.9	33.9	62.5	44.9	29.1	65.7	50.9	54.3
Incr Delay (d2), s/veh	106.1	46.1	53.4	77.6	109.8	2.2	20.8	1.5	1.2	20.5	3.2	10.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	27.9	30.6	17.1	45.0	9.6	10.8	4.4	5.3	7.7	5.9	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	173.7	95.9	103.2	140.3	154.6	36.1	83.3	46.5	30.3	86.2	54.1	65.1
LnGrp LOS	F	F	F	F	F	D	F	D	C	F	D	E
Approach Vol, veh/h	2103				3191				593			
Approach Delay, s/veh	105.8				140.9				56.1			
Approach LOS	F				F				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.8	56.6	27.0	37.5	19.0	66.4	20.9	43.7				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 25	* 45	* 31	30.0	* 15	54.2	* 23	* 38				
Max Q Clear Time (g_c+I1), s	26.6	52.4	22.4	22.3	16.8	62.2	16.4	15.2				
Green Ext Time (p_c), s	0.0	0.0	0.5	1.1	0.0	0.0	0.2	1.5				

Intersection Summary

HCM 6th Ctrl Delay 115.2

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary 5: Project Dwy (W) & Olympic Pkwy

03/09/2020

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		
Traffic Volume (veh/h)	2014	0	0	3032	0	0
Future Volume (veh/h)	2014	0	0	3032	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	0	0	1870		
Adj Flow Rate, veh/h	2189	0	0	3296		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2		
Cap, veh/h	4085	0	0	4085		
Arrive On Green	0.80	0.00	0.00	0.80		
Sat Flow, veh/h	5443	0	0	5443		
Grp Volume(v), veh/h	2189	0	0	3296		
Grp Sat Flow(s),veh/h/ln	1702	0	0	1702		
Q Serve(g_s), s	3.4	0.0	0.0	8.2		
Cycle Q Clear(g_c), s	3.4	0.0	0.0	8.2		
Prop In Lane		0.00	0.00			
Lane Grp Cap(c), veh/h	4085	0	0	4085		
V/C Ratio(X)	0.54	0.00	0.00	0.81		
Avail Cap(c_a), veh/h	4085	0	0	4085		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	0.8	0.0	0.0	1.3		
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	1.3	0.0	0.0	3.1		
LnGrp LOS	A	A	A	A		
Approach Vol, veh/h	2189			3296		
Approach Delay, s/veh	1.3			3.1		
Approach LOS	A			A		
Timer - Assigned Phs				4		8
Phs Duration (G+Y+Rc), s				22.5		22.5
Change Period (Y+Rc), s				4.5		4.5
Max Green Setting (Gmax), s				18.0		18.0
Max Q Clear Time (g_c+I1), s				5.4		10.2
Green Ext Time (p_c), s				10.1		7.6
Intersection Summary						
HCM 6th Ctrl Delay			2.4			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

6: Project Dwy (E) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		
Traffic Volume (veh/h)	2014	0	0	3032	0	0
Future Volume (veh/h)	2014	0	0	3032	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	0	0	1870		
Adj Flow Rate, veh/h	2189	0	0	3296		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2		
Cap, veh/h	4085	0	0	4085		
Arrive On Green	0.80	0.00	0.00	0.80		
Sat Flow, veh/h	5443	0	0	5443		
Grp Volume(v), veh/h	2189	0	0	3296		
Grp Sat Flow(s),veh/h/ln	1702	0	0	1702		
Q Serve(g_s), s	3.4	0.0	0.0	8.2		
Cycle Q Clear(g_c), s	3.4	0.0	0.0	8.2		
Prop In Lane		0.00	0.00			
Lane Grp Cap(c), veh/h	4085	0	0	4085		
V/C Ratio(X)	0.54	0.00	0.00	0.81		
Avail Cap(c_a), veh/h	4085	0	0	4085		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	0.8	0.0	0.0	1.3		
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	1.3	0.0	0.0	3.1		
LnGrp LOS	A	A	A	A		
Approach Vol, veh/h	2189			3296		
Approach Delay, s/veh	1.3			3.1		
Approach LOS	A			A		
Timer - Assigned Phs				4		8
Phs Duration (G+Y+Rc), s				22.5		22.5
Change Period (Y+Rc), s				4.5		4.5
Max Green Setting (Gmax), s				18.0		18.0
Max Q Clear Time (g_c+I1), s				5.4		10.2
Green Ext Time (p_c), s				10.1		7.6
Intersection Summary						
HCM 6th Ctrl Delay			2.4			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	1683	143	91	1972	757	298	398	108	683	367	274
Future Volume (veh/h)	196	1683	143	91	1972	757	298	398	108	683	367	274
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	213	1829	155	99	2143	823	324	433	117	742	399	298
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	2270	705	112	2270	1240	381	984	305	541	447	379
Arrive On Green	0.06	0.44	0.44	0.06	0.44	0.44	0.11	0.19	0.19	0.16	0.24	0.24
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	213	1829	155	99	2143	823	324	433	117	742	399	298
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	8.6	43.4	8.4	7.7	56.2	32.5	12.9	10.5	9.0	21.9	28.9	24.7
Cycle Q Clear(g_c), s	8.6	43.4	8.4	7.7	56.2	32.5	12.9	10.5	9.0	21.9	28.9	24.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	2270	705	112	2270	1240	381	984	305	541	447	379
V/C Ratio(X)	0.98	0.81	0.22	0.88	0.94	0.66	0.85	0.44	0.38	1.37	0.89	0.79
Avail Cap(c_a), veh/h	217	2270	705	112	2270	1240	499	1422	442	541	540	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	0.49	0.49	0.49	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.5	33.7	23.9	65.1	37.2	30.6	61.1	49.9	49.3	59.1	51.6	50.0
Incr Delay (d2), s/veh	52.3	2.9	0.6	30.9	5.4	1.4	10.5	0.3	0.8	179.2	15.2	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	17.5	3.3	4.4	23.1	11.2	6.2	4.5	3.7	23.0	15.4	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	117.8	36.5	24.6	96.0	42.6	32.0	71.6	50.2	50.1	238.2	66.7	57.4
LnGrp LOS	F	D	C	F	D	C	E	D	D	F	E	E
Approach Vol, veh/h	2197				3065				874			
Approach Delay, s/veh	43.6				41.5				58.1			
Approach LOS	D				D				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	68.2	19.6	39.1	13.0	68.2	26.1	32.7				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.8	50.5	* 20	40.4	* 8.8	50.5	* 22	* 39				
Max Q Clear Time (g_c+I1), s	9.7	45.4	14.9	30.9	10.6	58.2	23.9	12.5				
Green Ext Time (p_c), s	0.0	4.2	0.5	2.5	0.0	0.0	0.0	3.5				

Intersection Summary

HCM 6th Ctrl Delay	65.2
HCM 6th LOS	E

Notes

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

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑↑	↘	↗
Traffic Volume (veh/h)	1901	428	123	2577	397	102
Future Volume (veh/h)	1901	428	123	2577	397	102
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2066	465	134	2801	432	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2276	493	168	3554	562	258
Arrive On Green	0.54	0.54	0.09	0.70	0.16	0.16
Sat Flow, veh/h	4370	909	1781	5274	3456	1585
Grp Volume(v), veh/h	1658	873	134	2801	432	111
Grp Sat Flow(s),veh/h/ln	1702	1707	1781	1702	1728	1585
Q Serve(g_s), s	32.6	35.9	5.5	27.7	9.0	4.7
Cycle Q Clear(g_c), s	32.6	35.9	5.5	27.7	9.0	4.7
Prop In Lane		0.53	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1845	925	168	3554	562	258
V/C Ratio(X)	0.90	0.94	0.80	0.79	0.77	0.43
Avail Cap(c_a), veh/h	1845	925	178	3554	829	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	15.3	16.1	33.3	7.7	30.1	28.3
Incr Delay (d2), s/veh	0.8	2.7	2.3	0.2	2.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	11.0	2.3	5.3	3.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.1	18.8	35.6	7.8	32.6	29.4
LnGrp LOS	B	B	D	A	C	C
Approach Vol, veh/h	2531			2935	543	
Approach Delay, s/veh	17.0			9.1	32.0	
Approach LOS	B			A	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.6	46.6			58.2	16.8
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	7.5	34.4			46.4	18.0
Max Q Clear Time (g_c+I1), s	7.5	37.9			29.7	11.0
Green Ext Time (p_c), s	0.0	0.0			15.0	1.2
Intersection Summary						
HCM 6th Ctrl Delay			14.5			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	863	685	169	1366	102	1115	1303	210	117	1008	204
Future Volume (veh/h)	312	863	685	169	1366	102	1115	1303	210	117	1008	204
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	335	928	737	182	1469	110	1199	1401	226	126	1084	219
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	380	1617	883	225	1389	431	838	2265	703	169	1277	697
Arrive On Green	0.11	0.32	0.32	0.07	0.27	0.27	0.24	0.44	0.44	0.05	0.25	0.25
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	335	928	737	182	1469	110	1199	1401	226	126	1084	219
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	15.3	24.3	39.3	8.3	43.5	8.7	38.8	33.7	14.8	5.8	32.3	10.2
Cycle Q Clear(g_c), s	15.3	24.3	39.3	8.3	43.5	8.7	38.8	33.7	14.8	5.8	32.3	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	1617	883	225	1389	431	838	2265	703	169	1277	697
V/C Ratio(X)	0.88	0.57	0.83	0.81	1.06	0.26	1.43	0.62	0.32	0.75	0.85	0.31
Avail Cap(c_a), veh/h	428	1617	883	274	1389	431	838	2265	703	233	1277	697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.2	45.7	50.8	73.8	58.2	45.6	60.6	34.1	28.9	75.1	57.1	48.8
Incr Delay (d2), s/veh	2.0	0.1	0.9	13.7	41.1	1.4	200.7	1.3	1.2	8.1	7.2	1.2
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	6.7	10.1	13.9	4.1	23.4	3.7	40.4	14.3	6.0	2.8	14.8	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.2	45.8	51.7	87.5	99.3	47.0	261.3	35.4	30.1	83.3	64.3	50.0
LnGrp LOS	E	D	D	F	F	D	F	D	C	F	E	D
Approach Vol, veh/h	2000			1761			2826			1429		
Approach Delay, s/veh	52.4			94.8			130.8			63.8		
Approach LOS	D			F			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	56.7	43.0	45.7	21.8	49.5	12.0	76.7				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 13	48.4	* 39	40.0	* 20	41.3	* 11	68.0				
Max Q Clear Time (g_c+I1), s	10.3	41.3	40.8	34.3	17.3	45.5	7.8	35.7				
Green Ext Time (p_c), s	0.1	4.7	0.0	3.7	0.3	0.0	0.1	14.5				
Intersection Summary												
HCM 6th Ctrl Delay	91.4											
HCM 6th LOS	F											
Notes												

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	930	383	679	828	0	0	0	0	1610	2	824
Future Volume (veh/h)	0	930	383	679	828	0	0	0	0	1610	2	824
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	949	391	693	845	0				1644	0	841
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1085	484	514	1725	0				1898	0	844
Arrive On Green	0.00	0.31	0.31	0.05	0.16	0.00				0.53	0.00	0.53
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	949	391	693	845	0				1644	0	841
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	38.0	34.1	22.3	32.5	0.0				60.1	0.0	79.2
Cycle Q Clear(g_c), s	0.0	38.0	34.1	22.3	32.5	0.0				60.1	0.0	79.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1085	484	514	1725	0				1898	0	844
V/C Ratio(X)	0.00	0.87	0.81	1.35	0.49	0.00				0.87	0.00	1.00
Avail Cap(c_a), veh/h	0	1085	484	514	1725	0				1898	0	844
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.11	0.11	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	49.4	48.0	71.3	46.1	0.0				30.4	0.0	34.9
Incr Delay (d2), s/veh	0.0	9.9	13.5	158.5	0.1	0.0				4.5	0.0	30.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.9	15.0	21.7	15.6	0.0				26.5	0.0	36.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	59.2	61.6	229.8	46.2	0.0				34.9	0.0	64.8
LnGrp LOS	A	E	E	F	D	A				C	A	E
Approach Vol, veh/h		1340			1538						2485	
Approach Delay, s/veh		59.9			128.9						45.1	
Approach LOS		E			F						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.0	52.0		85.0		79.0						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 22	* 33		79.9		59.2						
Max Q Clear Time (g_c+I1), s	24.3	40.0		81.2		34.5						
Green Ext Time (p_c), s	0.0	0.0		0.0		5.7						

Intersection Summary

HCM 6th Ctrl Delay 72.8

HCM 6th LOS E

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	389	2220	0	0	1179	895	350	3	938	0	0	0
Future Volume (veh/h)	389	2220	0	0	1179	895	350	3	938	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	401	2289	0	0	1531	713	242	0	1097			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	467	2125	0	0	1614	684	587	0	1044			
Arrive On Green	0.14	0.60	0.00	0.00	0.43	0.43	0.33	0.00	0.33			
Sat Flow, veh/h	3456	3647	0	0	3741	1585	1781	0	3170			
Grp Volume(v), veh/h	401	2289	0	0	1531	713	242	0	1097			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	17.0	89.7	0.0	0.0	59.1	64.7	15.8	0.0	49.4			
Cycle Q Clear(g_c), s	17.0	89.7	0.0	0.0	59.1	64.7	15.8	0.0	49.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	467	2125	0	0	1614	684	587	0	1044			
V/C Ratio(X)	0.86	1.08	0.00	0.00	0.95	1.04	0.41	0.00	1.05			
Avail Cap(c_a), veh/h	848	2125	0	0	1614	684	587	0	1044			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	0.58	0.58	1.00	0.00	1.00			
Uniform Delay (d), s/veh	63.4	30.2	0.0	0.0	41.0	42.6	39.0	0.0	50.3			
Incr Delay (d2), s/veh	0.4	35.7	0.0	0.0	8.7	38.1	0.5	0.0	42.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.4	45.5	0.0	0.0	28.0	31.4	7.1	0.0	25.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	65.9	0.0	0.0	49.7	80.7	39.5	0.0	92.5			
LnGrp LOS	E	F	A	A	D	F	D	A	F			
Approach Vol, veh/h	2690			2244			1339					
Approach Delay, s/veh	65.6			59.6			82.9					
Approach LOS	E			E			F					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	95.5			25.0			70.5			54.5		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	91.7			19.0			66.7			51.4		
Green Ext Time (p_c), s	0.0			1.3			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	67.1											
HCM 6th LOS	E											
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	2870	113	16	1886	100	52	14	30	167	28	132
Future Volume (veh/h)	179	2870	113	16	1886	100	52	14	30	167	28	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	3053	120	17	2006	106	55	15	32	178	30	140
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	3394	132	24	2823	149	82	24	52	197	33	390
Arrive On Green	0.24	1.00	1.00	0.03	1.00	1.00	0.05	0.05	0.05	0.13	0.13	0.13
Sat Flow, veh/h	1781	5043	196	1781	4966	261	1781	532	1134	1535	259	1585
Grp Volume(v), veh/h	190	2048	1125	17	1373	739	55	0	47	208	0	140
Grp Sat Flow(s),veh/h/ln	1781	1702	1835	1781	1702	1823	1781	0	1666	1794	0	1585
Q Serve(g_s), s	15.5	0.0	0.0	1.4	0.0	0.0	4.6	0.0	4.2	17.2	0.0	11.0
Cycle Q Clear(g_c), s	15.5	0.0	0.0	1.4	0.0	0.0	4.6	0.0	4.2	17.2	0.0	11.0
Prop In Lane	1.00		0.11	1.00		0.14	1.00		0.68	0.86		1.00
Lane Grp Cap(c), veh/h	210	2291	1235	24	1935	1037	82	0	77	230	0	390
V/C Ratio(X)	0.90	0.89	0.91	0.71	0.71	0.71	0.67	0.00	0.61	0.91	0.00	0.36
Avail Cap(c_a), veh/h	252	2291	1235	64	1935	1037	368	0	344	233	0	393
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.12	0.12	0.12	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.5	0.0	0.0	72.7	0.0	0.0	70.4	0.0	70.2	64.5	0.0	46.8
Incr Delay (d2), s/veh	4.1	0.6	1.3	4.5	0.1	0.3	9.1	0.0	7.7	34.4	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.2	0.4	0.7	0.0	0.1	2.3	0.0	1.9	10.1	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	0.6	1.3	77.2	0.1	0.3	79.6	0.0	77.9	98.9	0.0	47.3
LnGrp LOS	E	A	A	E	A	A	E	A	E	F	A	D
Approach Vol, veh/h	3363		2129				102			348		
Approach Delay, s/veh	4.2		0.8				78.8			78.1		
Approach LOS	A		A				E			E		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	6.2	106.9	23.9		21.9	91.3	12.9					
Change Period (Y+Rc), s	* 4.2	6.0	* 4.7		* 4.2	* 6	6.0					
Max Green Setting (Gmax), s	* 5.4	73.2	* 20		* 21	* 58	31.0					
Max Q Clear Time (g_c+I1), s	3.4	2.0	19.2		17.5	2.0	6.6					
Green Ext Time (p_c), s	0.0	57.3	0.1		0.2	25.5	0.4					
Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									
Notes												

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

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	258	2396	303	205	1635	159	184	156	275	209	180	199
Future Volume (veh/h)	258	2396	303	205	1635	159	184	156	275	209	180	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	269	2496	316	214	1703	166	192	162	286	218	188	207
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	272	1770	216	176	1685	523	218	465	551	241	490	415
Arrive On Green	0.20	0.51	0.51	0.10	0.33	0.33	0.12	0.25	0.25	0.14	0.26	0.26
Sat Flow, veh/h	1781	4609	564	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	269	1820	992	214	1703	166	192	162	286	218	188	207
Grp Sat Flow(s),veh/h/ln	1781	1702	1769	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	22.6	57.6	57.6	14.8	49.5	11.8	15.9	10.7	21.6	18.1	12.4	16.6
Cycle Q Clear(g_c), s	22.6	57.6	57.6	14.8	49.5	11.8	15.9	10.7	21.6	18.1	12.4	16.6
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	1307	679	176	1685	523	218	465	551	241	490	415
V/C Ratio(X)	0.99	1.39	1.46	1.22	1.01	0.32	0.88	0.35	0.52	0.90	0.38	0.50
Avail Cap(c_a), veh/h	272	1307	679	176	1685	523	368	465	551	286	490	415
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.19	0.19	0.19	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.6	36.7	36.7	67.6	50.3	37.6	64.8	46.4	39.0	63.9	45.4	47.0
Incr Delay (d2), s/veh	21.1	177.6	208.8	135.6	23.6	1.4	12.6	2.1	3.5	27.1	2.3	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.1	52.8	60.7	13.2	23.9	4.8	8.0	5.3	9.0	10.0	6.1	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.8	214.3	245.5	203.2	73.9	39.1	77.3	48.4	42.5	90.9	47.7	51.2
LnGrp LOS	F	F	F	F	F	D	E	D	D	F	D	D
Approach Vol, veh/h		3081			2083			640			613	
Approach Delay, s/veh		212.7			84.4			54.4			64.3	
Approach LOS		F			F			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	63.8	22.5	44.7	27.1	55.7	24.5	42.7				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 15	* 55	* 31	30.0	* 23	46.1	* 24	* 37				
Max Q Clear Time (g_c+I1), s	16.8	59.6	17.9	18.6	24.6	51.5	20.1	23.6				
Green Ext Time (p_c), s	0.0	0.0	0.4	1.4	0.0	0.0	0.2	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			141.1									
HCM 6th LOS			F									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary 5: Project Dwy (W) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		
Traffic Volume (veh/h)	2879	0	0	2000	0	0
Future Volume (veh/h)	2879	0	0	2000	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	0	0	1870		
Adj Flow Rate, veh/h	3129	0	0	2174		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2		
Cap, veh/h	4085	0	0	4085		
Arrive On Green	0.80	0.00	0.00	0.80		
Sat Flow, veh/h	5443	0	0	5443		
Grp Volume(v), veh/h	3129	0	0	2174		
Grp Sat Flow(s),veh/h/ln	1702	0	0	1702		
Q Serve(g_s), s	7.1	0.0	0.0	3.3		
Cycle Q Clear(g_c), s	7.1	0.0	0.0	3.3		
Prop In Lane		0.00	0.00			
Lane Grp Cap(c), veh/h	4085	0	0	4085		
V/C Ratio(X)	0.77	0.00	0.00	0.53		
Avail Cap(c_a), veh/h	4085	0	0	4085		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	1.2	0.0	0.0	0.8		
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.2		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	2.6	0.0	0.0	1.3		
LnGrp LOS	A	A	A	A		
Approach Vol, veh/h	3129			2174		
Approach Delay, s/veh	2.6			1.3		
Approach LOS	A			A		
Timer - Assigned Phs				4		8
Phs Duration (G+Y+Rc), s				22.5		22.5
Change Period (Y+Rc), s				4.5		4.5
Max Green Setting (Gmax), s				18.0		18.0
Max Q Clear Time (g_c+I1), s				9.1		5.3
Green Ext Time (p_c), s				8.6		10.1
Intersection Summary						
HCM 6th Ctrl Delay			2.1			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary 6: Project Dwy (E) & Olympic Pkwy

03/09/2020

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		
Traffic Volume (veh/h)	2879	0	0	2000	0	0
Future Volume (veh/h)	2879	0	0	2000	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	0	0	1870		
Adj Flow Rate, veh/h	3129	0	0	2174		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2		
Cap, veh/h	4085	0	0	4085		
Arrive On Green	0.80	0.00	0.00	0.80		
Sat Flow, veh/h	5443	0	0	5443		
Grp Volume(v), veh/h	3129	0	0	2174		
Grp Sat Flow(s),veh/h/ln	1702	0	0	1702		
Q Serve(g_s), s	7.1	0.0	0.0	3.3		
Cycle Q Clear(g_c), s	7.1	0.0	0.0	3.3		
Prop In Lane		0.00	0.00			
Lane Grp Cap(c), veh/h	4085	0	0	4085		
V/C Ratio(X)	0.77	0.00	0.00	0.53		
Avail Cap(c_a), veh/h	4085	0	0	4085		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	1.2	0.0	0.0	0.8		
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.2		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	2.6	0.0	0.0	1.3		
LnGrp LOS	A	A	A	A		
Approach Vol, veh/h	3129			2174		
Approach Delay, s/veh	2.6			1.3		
Approach LOS	A			A		
Timer - Assigned Phs				4		8
Phs Duration (G+Y+Rc), s				22.5		22.5
Change Period (Y+Rc), s				4.5		4.5
Max Green Setting (Gmax), s				18.0		18.0
Max Q Clear Time (g_c+I1), s				9.1		5.3
Green Ext Time (p_c), s				8.6		10.1
Intersection Summary						
HCM 6th Ctrl Delay			2.1			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	2376	241	99	1413	519	152	303	124	807	370	174
Future Volume (veh/h)	232	2376	241	99	1413	519	152	303	124	807	370	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	242	2475	251	103	1472	541	158	316	129	841	385	181
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	293	2486	772	111	2372	1296	211	848	263	449	439	372
Arrive On Green	0.08	0.49	0.49	0.06	0.46	0.46	0.06	0.17	0.17	0.13	0.23	0.23
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	242	2475	251	103	1472	541	158	316	129	841	385	181
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	9.0	62.7	12.5	7.5	28.2	16.7	5.8	7.2	9.6	16.9	25.8	12.8
Cycle Q Clear(g_c), s	9.0	62.7	12.5	7.5	28.2	16.7	5.8	7.2	9.6	16.9	25.8	12.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	2486	772	111	2372	1296	211	848	263	449	439	372
V/C Ratio(X)	0.83	1.00	0.33	0.93	0.62	0.42	0.75	0.37	0.49	1.87	0.88	0.49
Avail Cap(c_a), veh/h	308	2486	772	111	2372	1296	292	1532	476	449	642	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.83	0.83	0.83	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	33.2	20.3	60.7	26.2	23.1	60.0	48.2	49.2	56.6	47.9	42.9
Incr Delay (d2), s/veh	12.6	14.6	0.8	56.3	1.0	0.8	6.6	0.3	1.4	400.8	9.3	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	27.0	4.8	5.0	11.0	5.7	2.8	3.1	3.9	32.4	13.1	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.1	47.8	21.2	116.9	27.2	23.9	66.7	48.5	50.6	457.4	57.2	43.9
LnGrp LOS	E	D	C	F	C	C	E	D	D	F	E	D
Approach Vol, veh/h	2968				2116				603			
Approach Delay, s/veh	47.5				30.7				53.7			
Approach LOS	D				C				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	69.3	12.2	36.2	15.2	66.4	21.1	27.3				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.1	46.2	* 11	44.6	* 12	42.7	* 17	* 39				
Max Q Clear Time (g_c+I1), s	9.5	64.7	7.8	27.8	11.0	30.2	18.9	11.6				
Green Ext Time (p_c), s	0.0	0.0	0.1	2.8	0.1	8.7	0.0	2.6				

Intersection Summary

HCM 6th Ctrl Delay	92.0
HCM 6th LOS	F

Notes

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

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑↑	↘	↗
Traffic Volume (veh/h)	2999	381	24	1966	157	48
Future Volume (veh/h)	2999	381	24	1966	157	48
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3260	414	26	2137	171	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3358	409	47	4109	268	123
Arrive On Green	0.73	0.73	0.03	0.80	0.08	0.08
Sat Flow, veh/h	4779	562	1781	5274	3456	1585
Grp Volume(v), veh/h	2371	1303	26	2137	171	52
Grp Sat Flow(s),veh/h/ln	1702	1769	1781	1702	1728	1585
Q Serve(g_s), s	56.2	65.5	1.3	12.6	4.3	2.8
Cycle Q Clear(g_c), s	56.2	65.5	1.3	12.6	4.3	2.8
Prop In Lane		0.32	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2479	1288	47	4109	268	123
V/C Ratio(X)	0.96	1.01	0.55	0.52	0.64	0.42
Avail Cap(c_a), veh/h	2479	1288	105	4109	691	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.36	0.36	1.00	1.00
Uniform Delay (d), s/veh	11.0	12.2	43.3	3.0	40.3	39.6
Incr Delay (d2), s/veh	1.3	10.5	3.6	0.2	2.5	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	18.1	0.6	1.4	1.9	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.3	22.8	46.8	3.1	42.8	41.9
LnGrp LOS	B	F	D	A	D	D
Approach Vol, veh/h	3674			2163	223	
Approach Delay, s/veh	16.0			3.6	42.6	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	71.5			78.4	11.6
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	5.3	51.6			61.4	18.0
Max Q Clear Time (g_c+I1), s	3.3	67.5			14.6	6.3
Green Ext Time (p_c), s	0.0	0.0			24.7	0.5
Intersection Summary						
HCM 6th Ctrl Delay			12.6			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	1796	918	137	1172	124	748	850	83	175	1135	177
Future Volume (veh/h)	255	1796	918	137	1172	124	748	850	83	175	1135	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	1931	987	147	1260	133	804	914	89	188	1220	190
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	1913	1045	151	1659	515	708	1984	616	233	1282	700
Arrive On Green	0.09	0.37	0.37	0.04	0.32	0.32	0.20	0.39	0.39	0.07	0.25	0.25
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	274	1931	987	147	1260	133	804	914	89	188	1220	190
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	12.5	59.9	54.8	6.8	35.4	9.9	32.8	21.3	5.8	8.6	37.6	8.8
Cycle Q Clear(g_c), s	12.5	59.9	54.8	6.8	35.4	9.9	32.8	21.3	5.8	8.6	37.6	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	323	1913	1045	151	1659	515	708	1984	616	233	1282	700
V/C Ratio(X)	0.85	1.01	0.94	0.97	0.76	0.26	1.13	0.46	0.14	0.81	0.95	0.27
Avail Cap(c_a), veh/h	449	1913	1045	151	1659	515	708	1984	616	320	1286	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.4	50.0	48.4	76.4	48.4	39.8	63.6	36.4	31.7	73.6	59.0	48.2
Incr Delay (d2), s/veh	1.1	8.7	2.4	64.6	3.3	1.2	77.5	0.2	0.1	10.2	15.1	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	5.5	26.0	19.4	4.3	15.1	4.1	22.1	9.0	0.0	4.2	18.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.5	58.7	50.8	141.0	51.7	41.0	141.1	36.6	31.8	83.7	74.0	48.4
LnGrp LOS	E	F	D	F	D	D	F	D	C	F	E	D
Approach Vol, veh/h	3192				1540				1807			
Approach Delay, s/veh	57.5				59.3				82.8			
Approach LOS	E				E				F			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	65.9	37.0	45.9	19.2	58.0	15.0	67.9				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 7	59.8	* 33	40.3	* 21	46.0	* 15	58.3				
Max Q Clear Time (g_c+I1), s	8.8	61.9	34.8	39.6	14.5	37.4	10.6	23.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.5	5.1	0.2	8.1				
Intersection Summary												
HCM 6th Ctrl Delay	66.3											
HCM 6th LOS	E											
Notes												

APPENDIX E

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – NEAR-TERM + PROJECT

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↘↗	↑↑					↘	↗	↗
Traffic Volume (veh/h)	0	893	394	899	879	0	0	0	0	859	8	404
Future Volume (veh/h)	0	893	394	899	879	0	0	0	0	859	8	404
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	981	433	988	966	0				950	0	444
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1141	509	1022	2303	0				995	0	443
Arrive On Green	0.00	0.32	0.32	0.49	1.00	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	981	433	988	966	0				950	0	444
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	38.8	38.3	41.5	0.0	0.0				39.3	0.0	41.9
Cycle Q Clear(g_c), s	0.0	38.8	38.3	41.5	0.0	0.0				39.3	0.0	41.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1141	509	1022	2303	0				995	0	443
V/C Ratio(X)	0.00	0.86	0.85	0.97	0.42	0.00				0.95	0.00	1.00
Avail Cap(c_a), veh/h	0	1141	509	1044	2303	0				995	0	443
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	47.8	47.6	37.3	0.0	0.0				53.1	0.0	54.0
Incr Delay (d2), s/veh	0.0	8.5	16.3	3.5	0.1	0.0				18.5	0.0	43.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	18.1	17.0	14.8	0.0	0.0				20.1	0.0	22.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	56.3	63.8	40.7	0.1	0.0				71.6	0.0	97.5
LnGrp LOS	A	E	E	D	A	A				E	A	F
Approach Vol, veh/h		1414			1954						1394	
Approach Delay, s/veh		58.6			20.6						79.9	
Approach LOS		E			C						E	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	49.0	54.0		47.0		103.0						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 45	* 48		41.9		97.2						
Max Q Clear Time (g_c+I1), s	43.5	40.8		43.9		2.0						
Green Ext Time (p_c), s	0.8	4.1		0.0		7.8						
Intersection Summary												
HCM 6th Ctrl Delay				49.2								
HCM 6th LOS				D								
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	496	1300	0	0	1612	1662	208	2	838	0	0	0
Future Volume (veh/h)	496	1300	0	0	1612	1662	208	2	838	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	528	1383	0	0	1464	1935	148	0	971			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	585	2153	0	0	758	1284	573	0	1019			
Arrive On Green	0.34	1.00	0.00	0.00	0.41	0.41	0.32	0.00	0.32			
Sat Flow, veh/h	3456	3647	0	0	1870	3170	1781	0	3170			
Grp Volume(v), veh/h	528	1383	0	0	1464	1935	148	0	971			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	21.8	0.0	0.0	0.0	60.8	60.8	9.2	0.0	44.9			
Cycle Q Clear(g_c), s	21.8	0.0	0.0	0.0	60.8	60.8	9.2	0.0	44.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	585	2153	0	0	758	1284	573	0	1019			
V/C Ratio(X)	0.90	0.64	0.00	0.00	1.93	1.51	0.26	0.00	0.95			
Avail Cap(c_a), veh/h	848	2153	0	0	758	1284	587	0	1044			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.29	0.29	0.00	0.00	0.09	0.09	1.00	0.00	1.00			
Uniform Delay (d), s/veh	48.4	0.0	0.0	0.0	44.6	44.6	37.7	0.0	49.8			
Incr Delay (d2), s/veh	3.1	0.4	0.0	0.0	419.8	228.3	0.2	0.0	17.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.0	0.1	0.0	0.0	115.4	63.7	4.1	0.0	20.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.6	0.4	0.0	0.0	464.4	272.9	37.9	0.0	67.2			
LnGrp LOS	D	A	A	A	F	F	D	A	E			
Approach Vol, veh/h	1911			3399			1119					
Approach Delay, s/veh	14.6			355.4			63.3					
Approach LOS	B			F			E					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	96.7			30.1			66.6			53.3		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	2.0			23.8			62.8			46.9		
Green Ext Time (p_c), s	14.2			1.6			0.0			1.3		

Intersection Summary

HCM 6th Ctrl Delay 203.3

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1836	120	68	2767	152	185	17	63	98	29	136
Future Volume (veh/h)	70	1836	120	68	2767	152	185	17	63	98	29	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	1912	125	71	2882	158	193	18	66	102	30	142
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	88	2775	181	74	2772	149	228	45	165	143	42	241
Arrive On Green	0.05	0.57	0.57	0.04	0.56	0.56	0.13	0.13	0.13	0.10	0.10	0.10
Sat Flow, veh/h	1781	4898	319	1781	4959	267	1781	351	1287	1392	409	1585
Grp Volume(v), veh/h	73	1327	710	71	1962	1078	193	0	84	132	0	142
Grp Sat Flow(s),veh/h/ln	1781	1702	1813	1781	1702	1822	1781	0	1639	1801	0	1585
Q Serve(g_s), s	5.3	36.0	36.3	5.2	72.7	72.7	13.8	0.0	6.1	9.2	0.0	10.8
Cycle Q Clear(g_c), s	5.3	36.0	36.3	5.2	72.7	72.7	13.8	0.0	6.1	9.2	0.0	10.8
Prop In Lane	1.00		0.18	1.00		0.15	1.00		0.79	0.77		1.00
Lane Grp Cap(c), veh/h	88	1929	1027	74	1902	1018	228	0	210	185	0	241
V/C Ratio(X)	0.83	0.69	0.69	0.96	1.03	1.06	0.85	0.00	0.40	0.71	0.00	0.59
Avail Cap(c_a), veh/h	88	1929	1027	74	1902	1018	425	0	391	251	0	299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.65	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.3	20.0	20.1	62.2	28.7	28.7	55.4	0.0	52.1	56.4	0.0	51.3
Incr Delay (d2), s/veh	33.8	1.3	2.5	22.0	16.5	28.9	8.3	0.0	1.2	5.9	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	13.5	14.8	2.7	31.1	36.8	6.7	0.0	2.6	4.5	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.0	21.3	22.6	84.2	45.2	57.6	63.7	0.0	53.3	62.4	0.0	53.6
LnGrp LOS	F	C	C	F	F	F	E	A	D	E	A	D
Approach Vol, veh/h	2110				3111		277				274	
Approach Delay, s/veh	24.3				50.4		60.6				57.8	
Approach LOS	C				D		E				E	
Timer - Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	9.6	79.7			18.1	10.6	78.7	22.7				
Change Period (Y+Rc), s	* 4.2	6.0			* 4.7	* 4.2	* 6	6.0				
Max Green Setting (Gmax), s	* 5.4	54.6			* 18	* 6.4	* 54	31.0				
Max Q Clear Time (g_c+I1), s	7.2	38.3			12.8	7.3	74.7	15.8				
Green Ext Time (p_c), s	0.0	11.7			0.5	0.0	0.0	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			41.7									
HCM 6th LOS			D									
Notes												

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

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	197	1706	150	326	2630	352	234	132	203	174	160	221
Future Volume (veh/h)	197	1706	150	326	2630	352	234	132	203	174	160	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	1796	158	343	2768	371	246	139	214	183	168	233
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	1583	139	292	2025	629	271	478	665	207	410	347
Arrive On Green	0.10	0.33	0.33	0.22	0.53	0.53	0.15	0.26	0.26	0.12	0.22	0.22
Sat Flow, veh/h	1781	4780	419	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	207	1277	677	343	2768	371	246	139	214	183	168	233
Grp Sat Flow(s),veh/h/ln	1781	1702	1795	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	14.8	49.7	49.7	24.6	59.5	24.1	20.4	9.0	13.6	15.2	11.6	20.2
Cycle Q Clear(g_c), s	14.8	49.7	49.7	24.6	59.5	24.1	20.4	9.0	13.6	15.2	11.6	20.2
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	176	1128	595	292	2025	629	271	478	665	207	410	347
V/C Ratio(X)	1.18	1.13	1.14	1.17	1.37	0.59	0.91	0.29	0.32	0.89	0.41	0.67
Avail Cap(c_a), veh/h	176	1128	595	292	2025	629	368	478	665	274	410	347
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.37	0.37	0.37	0.49	0.49	0.49	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.6	50.2	50.2	58.6	35.4	27.1	62.5	44.9	29.2	65.3	50.2	53.6
Incr Delay (d2), s/veh	100.1	64.4	70.3	95.1	166.7	2.0	20.8	1.5	1.3	22.4	3.0	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	30.4	33.0	18.0	52.2	8.9	10.8	4.4	5.5	8.2	5.8	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	167.7	114.6	120.4	153.8	202.1	29.1	83.3	46.5	30.5	87.7	53.3	63.5
LnGrp LOS	F	F	F	F	F	C	F	D	C	F	D	E
Approach Vol, veh/h	2161			3482			599			584		
Approach Delay, s/veh	121.5			178.9			55.9			68.1		
Approach LOS	F			F			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.8	55.9	27.0	38.3	19.0	65.7	21.6	43.7				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 25	* 45	* 31	30.0	* 15	54.2	* 23	* 38				
Max Q Clear Time (g_c+I1), s	26.6	51.7	22.4	22.2	16.8	61.5	17.2	15.6				
Green Ext Time (p_c), s	0.0	0.0	0.5	1.1	0.0	0.0	0.2	1.5				

Intersection Summary

HCM 6th Ctrl Delay 140.5

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

5: Project Dwy (W) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↙	↑↑↑	↙↗	↗
Traffic Volume (veh/h)	2037	46	9	3124	185	37
Future Volume (veh/h)	2037	46	9	3124	185	37
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2214	50	10	3396	201	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3764	1168	20	3975	558	256
Arrive On Green	1.00	1.00	0.01	0.78	0.16	0.16
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	2214	50	10	3396	201	40
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	0.0	0.0	0.8	66.0	7.8	3.3
Cycle Q Clear(g_c), s	0.0	0.0	0.8	66.0	7.8	3.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3764	1168	20	3975	558	256
V/C Ratio(X)	0.59	0.04	0.49	0.85	0.36	0.16
Avail Cap(c_a), veh/h	3813	1184	59	4136	558	256
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.50	0.50	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	73.7	11.0	56.0	54.1
Incr Delay (d2), s/veh	0.0	0.0	9.0	0.9	1.8	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	18.8	3.6	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	0.0	82.8	11.9	57.8	55.4
LnGrp LOS	A	A	F	B	E	E
Approach Vol, veh/h	2264			3406	241	
Approach Delay, s/veh	0.0			12.1	57.4	
Approach LOS	A			B	E	
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	28.7		6.2	115.1	121.3	
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5	
Max Green Setting (Gmax), s	19.5		5.0	112.0	121.5	
Max Q Clear Time (g_c+I1), s	9.8		2.8	2.0	68.0	
Green Ext Time (p_c), s	0.5		0.0	36.6	48.8	
Intersection Summary						
HCM 6th Ctrl Delay			9.3			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

6: Project Dwy (E) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘	↑↑↑	↘	↑
Traffic Volume (veh/h)	2051	23	14	3041	92	55
Future Volume (veh/h)	2051	23	14	3041	92	55
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2229	25	15	3305	100	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3654	1134	28	3887	618	283
Arrive On Green	0.72	0.72	0.02	0.76	0.18	0.18
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	2229	25	15	3305	100	60
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	33.0	0.7	1.3	65.7	3.7	4.8
Cycle Q Clear(g_c), s	33.0	0.7	1.3	65.7	3.7	4.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3654	1134	28	3887	618	283
V/C Ratio(X)	0.61	0.02	0.54	0.85	0.16	0.21
Avail Cap(c_a), veh/h	3659	1136	89	4068	618	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	10.8	6.2	73.3	12.1	52.1	52.6
Incr Delay (d2), s/veh	0.2	0.0	1.5	0.2	0.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.2	0.6	19.4	1.7	2.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.0	6.2	74.8	12.3	52.6	54.3
LnGrp LOS	B	A	E	B	D	D
Approach Vol, veh/h	2254			3320	160	
Approach Delay, s/veh	11.0			12.6	53.2	
Approach LOS	B			B	D	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		31.3	6.8	111.9		118.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		21.5	7.5	107.5		119.5
Max Q Clear Time (g_c+I1), s		6.8	3.3	35.0		67.7
Green Ext Time (p_c), s		0.4	0.0	32.6		46.4
Intersection Summary						
HCM 6th Ctrl Delay			13.1			
HCM 6th LOS			B			
Notes						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	1742	154	91	1987	757	301	398	108	683	367	279
Future Volume (veh/h)	218	1742	154	91	1987	757	301	398	108	683	367	279
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	237	1893	167	99	2160	823	327	433	117	742	399	303
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	2265	703	112	2265	1237	384	988	307	541	447	379
Arrive On Green	0.06	0.44	0.44	0.06	0.44	0.44	0.11	0.19	0.19	0.16	0.24	0.24
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	237	1893	167	99	2160	823	327	433	117	742	399	303
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	8.8	45.9	9.2	7.7	57.1	32.6	13.0	10.5	9.0	21.9	28.9	25.2
Cycle Q Clear(g_c), s	8.8	45.9	9.2	7.7	57.1	32.6	13.0	10.5	9.0	21.9	28.9	25.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	2265	703	112	2265	1237	384	988	307	541	447	379
V/C Ratio(X)	1.09	0.84	0.24	0.88	0.95	0.67	0.85	0.44	0.38	1.37	0.89	0.80
Avail Cap(c_a), veh/h	217	2265	703	112	2265	1237	499	1422	442	541	540	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.80	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.6	34.4	24.2	65.1	37.6	30.7	61.1	49.7	49.2	59.1	51.5	50.1
Incr Delay (d2), s/veh	81.1	3.1	0.6	30.4	6.1	1.4	10.7	0.3	0.8	179.2	15.1	8.2
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	6.2	18.5	3.6	4.4	23.6	11.2	6.3	4.5	3.7	23.0	15.4	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	146.7	37.5	24.9	95.5	43.6	32.1	71.8	50.0	49.9	238.2	66.7	58.3
LnGrp LOS	F	D	C	F	D	C	E	D	D	F	E	E
Approach Vol, veh/h	2297			3082			877			1444		
Approach Delay, s/veh	47.9			42.2			58.1			153.1		
Approach LOS	D			D			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	68.1	19.8	39.1	13.0	68.1	26.1	32.8				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.8	50.5	* 20	40.4	* 8.8	50.5	* 22	* 39				
Max Q Clear Time (g_c+I1), s	9.7	47.9	15.0	30.9	10.8	59.1	23.9	12.5				
Green Ext Time (p_c), s	0.0	2.3	0.5	2.6	0.0	0.0	0.0	3.5				

Intersection Summary

HCM 6th Ctrl Delay	66.5
HCM 6th LOS	E

Notes

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

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑↑	↘	↗
Traffic Volume (veh/h)	1960	428	123	2592	397	102
Future Volume (veh/h)	1960	428	123	2592	397	102
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2130	465	134	2817	432	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2292	480	168	3554	562	258
Arrive On Green	0.54	0.54	0.09	0.70	0.16	0.16
Sat Flow, veh/h	4398	885	1781	5274	3456	1585
Grp Volume(v), veh/h	1696	899	134	2817	432	111
Grp Sat Flow(s),veh/h/ln	1702	1711	1781	1702	1728	1585
Q Serve(g_s), s	34.1	38.0	5.5	28.1	9.0	4.7
Cycle Q Clear(g_c), s	34.1	38.0	5.5	28.1	9.0	4.7
Prop In Lane		0.52	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1845	927	168	3554	562	258
V/C Ratio(X)	0.92	0.97	0.80	0.79	0.77	0.43
Avail Cap(c_a), veh/h	1845	927	178	3554	829	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	15.7	16.6	33.3	7.7	30.1	28.3
Incr Delay (d2), s/veh	1.0	4.2	2.3	0.2	2.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	12.0	2.3	5.4	3.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.7	20.8	35.6	7.9	32.6	29.4
LnGrp LOS	B	C	D	A	C	C
Approach Vol, veh/h	2595			2951	543	
Approach Delay, s/veh	18.1			9.2	32.0	
Approach LOS	B			A	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.6	46.6			58.2	16.8
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	7.5	34.4			46.4	18.0
Max Q Clear Time (g_c+I1), s	7.5	40.0			30.1	11.0
Green Ext Time (p_c), s	0.0	0.0			14.8	1.2
Intersection Summary						
HCM 6th Ctrl Delay			15.0			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	326	904	689	169	1376	102	1116	1303	210	117	1008	208
Future Volume (veh/h)	326	904	689	169	1376	102	1116	1303	210	117	1008	208
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	351	972	741	182	1480	110	1200	1401	226	126	1084	224
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	394	1617	883	225	1367	424	838	2265	703	169	1277	697
Arrive On Green	0.11	0.32	0.32	0.07	0.27	0.27	0.24	0.44	0.44	0.05	0.25	0.25
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	351	972	741	182	1480	110	1200	1401	226	126	1084	224
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	16.0	25.7	39.5	8.3	42.8	8.7	38.8	33.7	14.8	5.8	32.3	10.5
Cycle Q Clear(g_c), s	16.0	25.7	39.5	8.3	42.8	8.7	38.8	33.7	14.8	5.8	32.3	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	394	1617	883	225	1367	424	838	2265	703	169	1277	697
V/C Ratio(X)	0.89	0.60	0.84	0.81	1.08	0.26	1.43	0.62	0.32	0.75	0.85	0.32
Avail Cap(c_a), veh/h	428	1617	883	274	1367	424	838	2265	703	233	1277	697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.9	46.1	50.9	73.8	58.6	46.1	60.6	34.1	28.9	75.1	57.1	48.9
Incr Delay (d2), s/veh	2.3	0.2	0.9	13.7	50.0	1.5	201.3	1.3	1.2	8.1	7.2	1.2
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	7.1	10.7	14.0	4.1	24.2	3.7	40.4	14.3	6.0	2.8	14.8	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.2	46.3	51.8	87.5	108.5	47.6	261.9	35.4	30.1	83.3	64.3	50.1
LnGrp LOS	E	D	D	F	F	D	F	D	C	F	E	D
Approach Vol, veh/h	2064			1772			2827			1434		
Approach Delay, s/veh	52.7			102.6			131.1			63.8		
Approach LOS	D			F			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	56.7	43.0	45.7	22.5	48.8	12.0	76.7				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 13	48.4	* 39	40.0	* 20	41.3	* 11	68.0				
Max Q Clear Time (g_c+I1), s	10.3	41.5	40.8	34.3	18.0	44.8	7.8	35.7				
Green Ext Time (p_c), s	0.1	4.6	0.0	3.7	0.2	0.0	0.1	14.5				

Intersection Summary

HCM 6th Ctrl Delay 92.9

HCM 6th LOS F

Notes

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

HCM 6th Signalized Intersection Summary

1: I-805 SB On Ramp/I-805 SB Off Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑					↖	↗	↗
Traffic Volume (veh/h)	0	970	383	696	845	0	0	0	0	1731	2	824
Future Volume (veh/h)	0	970	383	696	845	0	0	0	0	1731	2	824
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	990	391	710	862	0				1767	0	841
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1085	484	514	1725	0				1898	0	844
Arrive On Green	0.00	0.31	0.31	0.05	0.16	0.00				0.53	0.00	0.53
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	1585
Grp Volume(v), veh/h	0	990	391	710	862	0				1767	0	841
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	40.2	34.1	22.3	33.2	0.0				69.0	0.0	79.2
Cycle Q Clear(g_c), s	0.0	40.2	34.1	22.3	33.2	0.0				69.0	0.0	79.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1085	484	514	1725	0				1898	0	844
V/C Ratio(X)	0.00	0.91	0.81	1.38	0.50	0.00				0.93	0.00	1.00
Avail Cap(c_a), veh/h	0	1085	484	514	1725	0				1898	0	844
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	50.2	48.0	71.3	46.4	0.0				32.5	0.0	34.9
Incr Delay (d2), s/veh	0.0	13.0	13.5	173.0	0.1	0.0				8.9	0.0	30.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	19.4	15.0	22.7	15.9	0.0				31.4	0.0	36.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.2	61.6	244.4	46.5	0.0				41.4	0.0	64.8
LnGrp LOS	A	E	E	F	D	A				D	A	E
Approach Vol, veh/h		1381			1572						2608	
Approach Delay, s/veh		62.7			135.8						49.0	
Approach LOS		E			F						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.0	52.0		85.0		79.0						
Change Period (Y+Rc), s	* 4.7	* 5.8		5.1		5.8						
Max Green Setting (Gmax), s	* 22	* 33		79.9		59.2						
Max Q Clear Time (g_c+I1), s	24.3	42.2		81.2		35.2						
Green Ext Time (p_c), s	0.0	0.0		0.0		5.8						

Intersection Summary

HCM 6th Ctrl Delay 76.9

HCM 6th LOS E

Notes

User approved volume balancing among the lanes for turning movement.

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

HCM 6th Signalized Intersection Summary

2: I-805 NB Off Ramp/I-805 NB On Ramp & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	389	2381	0	0	1213	947	350	3	979	0	0	0
Future Volume (veh/h)	389	2381	0	0	1213	947	350	3	979	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	401	2455	0	0	1601	742	242	0	1139			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	467	2125	0	0	1614	684	587	0	1044			
Arrive On Green	0.14	0.60	0.00	0.00	0.43	0.43	0.33	0.00	0.33			
Sat Flow, veh/h	3456	3647	0	0	3741	1585	1781	0	3170			
Grp Volume(v), veh/h	401	2455	0	0	1601	742	242	0	1139			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	17.0	89.7	0.0	0.0	63.8	64.7	15.8	0.0	49.4			
Cycle Q Clear(g_c), s	17.0	89.7	0.0	0.0	63.8	64.7	15.8	0.0	49.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	467	2125	0	0	1614	684	587	0	1044			
V/C Ratio(X)	0.86	1.16	0.00	0.00	0.99	1.09	0.41	0.00	1.09			
Avail Cap(c_a), veh/h	848	2125	0	0	1614	684	587	0	1044			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	0.47	0.47	1.00	0.00	1.00			
Uniform Delay (d), s/veh	63.4	30.2	0.0	0.0	42.4	42.6	39.0	0.0	50.3			
Incr Delay (d2), s/veh	0.4	70.4	0.0	0.0	13.6	50.3	0.5	0.0	56.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.4	55.7	0.0	0.0	31.2	33.8	7.1	0.0	27.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	100.6	0.0	0.0	56.0	93.0	39.5	0.0	106.3			
LnGrp LOS	E	F	A	A	E	F	D	A	F			
Approach Vol, veh/h	2856			2343			1381					
Approach Delay, s/veh	95.4			67.7			94.6					
Approach LOS	F			E			F					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	95.5			25.0			70.5			54.5		
Change Period (Y+Rc), s	5.8			* 4.7			5.8			5.1		
Max Green Setting (Gmax), s	89.7			* 37			48.2			49.4		
Max Q Clear Time (g_c+I1), s	91.7			19.0			66.7			51.4		
Green Ext Time (p_c), s	0.0			1.3			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	85.4											
HCM 6th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

3: Oleander Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	179	3072	113	25	1972	109	52	14	50	187	28	132
Future Volume (veh/h)	179	3072	113	25	1972	109	52	14	50	187	28	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	3268	120	27	2098	116	55	15	53	199	30	140
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	3311	120	34	2753	151	101	21	73	202	31	393
Arrive On Green	0.24	1.00	1.00	0.04	1.00	1.00	0.06	0.06	0.06	0.13	0.13	0.13
Sat Flow, veh/h	1781	5058	184	1781	4953	273	1781	362	1278	1558	235	1585
Grp Volume(v), veh/h	190	2187	1201	27	1439	775	55	0	68	229	0	140
Grp Sat Flow(s),veh/h/ln	1781	1702	1837	1781	1702	1821	1781	0	1640	1792	0	1585
Q Serve(g_s), s	15.5	0.0	0.1	2.3	0.0	0.0	4.5	0.0	6.1	19.1	0.0	10.9
Cycle Q Clear(g_c), s	15.5	0.0	0.1	2.3	0.0	0.0	4.5	0.0	6.1	19.1	0.0	10.9
Prop In Lane	1.00		0.10	1.00		0.15	1.00		0.78	0.87		1.00
Lane Grp Cap(c), veh/h	210	2228	1203	34	1892	1012	101	0	93	233	0	393
V/C Ratio(X)	0.90	0.98	1.00	0.79	0.76	0.77	0.54	0.00	0.73	0.98	0.00	0.36
Avail Cap(c_a), veh/h	252	2228	1203	64	1892	1012	368	0	339	233	0	393
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.46	0.46	0.46	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.5	0.0	0.0	71.8	0.0	0.0	68.8	0.0	69.6	65.1	0.0	46.5
Incr Delay (d2), s/veh	4.1	2.9	7.6	16.8	0.9	1.7	4.4	0.0	10.3	53.9	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.9	2.5	1.2	0.2	0.5	2.2	0.0	2.8	12.2	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	2.9	7.6	88.6	0.9	1.7	73.3	0.0	79.9	119.0	0.0	47.1
LnGrp LOS	E	A	A	F	A	A	E	A	E	F	A	D
Approach Vol, veh/h		3578			2241			123			369	
Approach Delay, s/veh		7.5			2.2			76.9			91.7	
Approach LOS		A			A			E			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	104.2		24.2	21.9	89.4		14.5				
Change Period (Y+Rc), s	* 4.2	6.0		* 4.7	* 4.2	* 6		6.0				
Max Green Setting (Gmax), s	* 5.4	73.2		* 20	* 21	* 58		31.0				
Max Q Clear Time (g_c+l1), s	4.3	2.1		21.1	17.5	2.0		8.1				
Green Ext Time (p_c), s	0.0	61.4		0.0	0.2	27.8		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				11.9								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

4: Brandywine Ave & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	258	2638	303	214	1739	176	184	156	296	249	180	199
Future Volume (veh/h)	258	2638	303	214	1739	176	184	156	296	249	180	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	269	2748	316	223	1811	183	192	162	308	259	188	207
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	276	2225	247	164	2115	657	209	360	451	188	337	286
Arrive On Green	0.21	0.63	0.63	0.18	0.83	0.83	0.12	0.19	0.19	0.11	0.18	0.18
Sat Flow, veh/h	1781	4664	517	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	269	1977	1087	223	1811	183	192	162	308	259	188	207
Grp Sat Flow(s),veh/h/ln	1781	1702	1777	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	22.5	71.5	71.5	13.8	31.4	3.9	16.0	11.5	25.9	15.8	13.7	18.5
Cycle Q Clear(g_c), s	22.5	71.5	71.5	13.8	31.4	3.9	16.0	11.5	25.9	15.8	13.7	18.5
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	1624	848	164	2115	657	209	360	451	188	337	286
V/C Ratio(X)	0.98	1.22	1.28	1.36	0.86	0.28	0.92	0.45	0.68	1.38	0.56	0.72
Avail Cap(c_a), veh/h	276	1624	848	164	2115	657	209	411	495	188	384	325
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	27.4	27.4	61.2	10.2	7.9	65.5	53.6	47.7	67.1	56.0	58.0
Incr Delay (d2), s/veh	11.3	98.6	127.6	191.8	4.0	0.9	40.4	0.9	3.4	200.8	1.4	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	44.9	53.7	14.2	4.8	1.4	9.6	5.5	10.7	17.7	6.7	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.6	126.1	155.1	253.0	14.2	8.7	105.8	54.4	51.1	267.9	57.5	64.7
LnGrp LOS	E	F	F	F	B	A	F	D	D	F	E	E
Approach Vol, veh/h		3333			2217			662			654	
Approach Delay, s/veh		131.0			37.8			67.8			143.1	
Approach LOS		F			D			E			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	77.7	21.8	32.5	27.4	68.3	20.0	34.3				
Change Period (Y+Rc), s	* 4.2	* 6.2	* 4.2	5.4	* 4.2	6.2	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 14	* 69	* 18	30.8	* 23	58.4	* 16	* 33				
Max Q Clear Time (g_c+I1), s	15.8	73.5	18.0	20.5	24.5	33.4	17.8	27.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.3	0.0	14.8	0.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay			96.0									
HCM 6th LOS			F									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

5: Project Dwy (W) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑↑	↓	↑
Traffic Volume (veh/h)	2980	202	40	2043	87	17
Future Volume (veh/h)	2980	202	40	2043	87	17
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3239	220	43	2221	95	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3804	1181	55	4116	462	212
Arrive On Green	0.50	0.50	0.03	0.81	0.13	0.13
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	3239	220	43	2221	95	18
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	82.9	11.5	3.6	22.4	3.7	1.5
Cycle Q Clear(g_c), s	82.9	11.5	3.6	22.4	3.7	1.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3804	1181	55	4116	462	212
V/C Ratio(X)	0.85	0.19	0.78	0.54	0.21	0.08
Avail Cap(c_a), veh/h	3864	1199	59	4187	462	212
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.84	0.84	1.00	1.00
Uniform Delay (d), s/veh	30.3	12.5	72.2	5.0	57.9	56.9
Incr Delay (d2), s/veh	0.2	0.0	38.9	0.1	1.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	34.5	4.1	2.2	5.7	1.7	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.5	12.5	111.0	5.1	58.9	57.7
LnGrp LOS	C	B	F	A	E	E
Approach Vol, veh/h	3459			2264	113	
Approach Delay, s/veh	29.4			7.1	58.7	
Approach LOS	C			A	E	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.6	9.2	116.3		125.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		18.0	5.0	113.5		123.0
Max Q Clear Time (g_c+I1), s		5.7	5.6	84.9		24.4
Green Ext Time (p_c), s		0.2	0.0	26.9		35.2
Intersection Summary						
HCM 6th Ctrl Delay			21.3			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary

6: Project Dwy (E) & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘	↑↑↑	↘	↑
Traffic Volume (veh/h)	2896	101	60	2040	43	26
Future Volume (veh/h)	2896	101	60	2040	43	26
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3148	110	65	2217	47	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3690	1146	59	4014	532	244
Arrive On Green	0.72	0.72	0.03	0.79	0.15	0.15
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	3148	110	65	2217	47	28
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	66.9	3.1	5.0	24.6	1.7	2.3
Cycle Q Clear(g_c), s	66.9	3.1	5.0	24.6	1.7	2.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3690	1146	59	4014	532	244
V/C Ratio(X)	0.85	0.10	1.09	0.55	0.09	0.11
Avail Cap(c_a), veh/h	3864	1199	59	4187	532	244
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.43	0.43	0.63	0.63	1.00	1.00
Uniform Delay (d), s/veh	15.0	6.2	72.5	6.1	54.4	54.7
Incr Delay (d2), s/veh	0.9	0.0	120.6	0.1	0.3	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.5	0.9	4.2	6.7	0.8	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.9	6.2	193.1	6.2	54.8	55.6
LnGrp LOS	B	A	F	A	D	E
Approach Vol, veh/h	3258			2282	75	
Approach Delay, s/veh	15.6			11.5	55.1	
Approach LOS	B			B	E	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		27.6	9.5	112.9		122.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		18.0	5.0	113.5		123.0
Max Q Clear Time (g_c+I1), s		4.3	7.0	68.9		26.6
Green Ext Time (p_c), s		0.1	0.0	39.6		34.9
Intersection Summary						
HCM 6th Ctrl Delay			14.4			
HCM 6th LOS			B			
Notes						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary

7: Heritage Rd & Olympic Pkwy

01/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	2404	246	99	1477	519	164	303	124	807	370	198
Future Volume (veh/h)	242	2404	246	99	1477	519	164	303	124	807	370	198
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	252	2504	256	103	1539	541	171	316	129	841	385	206
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	302	2464	765	111	2337	1277	224	870	270	449	441	373
Arrive On Green	0.09	0.48	0.48	0.06	0.46	0.46	0.06	0.17	0.17	0.13	0.24	0.24
Sat Flow, veh/h	3456	5106	1585	1781	5106	2790	3456	5106	1585	3456	1870	1585
Grp Volume(v), veh/h	252	2504	256	103	1539	541	171	316	129	841	385	206
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1395	1728	1702	1585	1728	1870	1585
Q Serve(g_s), s	9.3	62.7	13.0	7.5	30.4	17.0	6.3	7.1	9.6	16.9	25.8	14.8
Cycle Q Clear(g_c), s	9.3	62.7	13.0	7.5	30.4	17.0	6.3	7.1	9.6	16.9	25.8	14.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	2464	765	111	2337	1277	224	870	270	449	441	373
V/C Ratio(X)	0.83	1.02	0.33	0.93	0.66	0.42	0.76	0.36	0.48	1.87	0.87	0.55
Avail Cap(c_a), veh/h	308	2464	765	111	2337	1277	292	1532	476	449	642	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.4	33.6	20.7	60.7	27.4	23.7	59.8	47.7	48.7	56.6	47.8	43.7
Incr Delay (d2), s/veh	9.2	16.8	0.6	55.4	1.2	0.8	8.3	0.3	1.3	400.8	9.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	27.5	4.9	5.0	11.9	5.7	3.0	3.1	3.9	32.4	13.1	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.6	50.4	21.3	116.1	28.6	24.6	68.1	47.9	50.0	457.4	56.9	44.9
LnGrp LOS	E	F	C	F	C	C	E	D	D	F	E	D
Approach Vol, veh/h	3012				2183				616			
Approach Delay, s/veh	49.4				31.7				54.0			
Approach LOS	D				C				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	68.7	12.6	36.3	15.6	65.5	21.1	27.9				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	* 5.7				
Max Green Setting (Gmax), s	* 8.1	46.2	* 11	44.6	* 12	42.7	* 17	* 39				
Max Q Clear Time (g_c+I1), s	9.5	64.7	8.3	27.8	11.3	32.4	18.9	11.6				
Green Ext Time (p_c), s	0.0	0.0	0.1	2.9	0.0	7.6	0.0	2.6				

Intersection Summary

HCM 6th Ctrl Delay 92.1

HCM 6th LOS F

Notes

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

HCM 6th Signalized Intersection Summary

8: Santa Venetia St & Olympic Pkwy

03/09/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑↑	↘	↗
Traffic Volume (veh/h)	3027	381	24	2030	157	48
Future Volume (veh/h)	3027	381	24	2030	157	48
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3290	414	26	2207	171	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3361	406	47	4109	268	123
Arrive On Green	0.73	0.73	0.03	0.80	0.08	0.08
Sat Flow, veh/h	4784	558	1781	5274	3456	1585
Grp Volume(v), veh/h	2391	1313	26	2207	171	52
Grp Sat Flow(s),veh/h/ln	1702	1770	1781	1702	1728	1585
Q Serve(g_s), s	57.7	65.5	1.3	13.4	4.3	2.8
Cycle Q Clear(g_c), s	57.7	65.5	1.3	13.4	4.3	2.8
Prop In Lane		0.32	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2479	1289	47	4109	268	123
V/C Ratio(X)	0.96	1.02	0.55	0.54	0.64	0.42
Avail Cap(c_a), veh/h	2479	1289	105	4109	691	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.32	0.32	1.00	1.00
Uniform Delay (d), s/veh	11.2	12.2	43.3	3.0	40.3	39.6
Incr Delay (d2), s/veh	1.6	13.0	3.2	0.2	2.5	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	19.0	0.6	1.5	1.9	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.8	25.3	46.4	3.2	42.8	41.9
LnGrp LOS	B	F	D	A	D	D
Approach Vol, veh/h	3704			2233	223	
Approach Delay, s/veh	17.2			3.7	42.6	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	71.5			78.4	11.6
Change Period (Y+Rc), s	4.5	6.0			6.0	4.6
Max Green Setting (Gmax), s	5.3	51.6			61.4	18.0
Max Q Clear Time (g_c+I1), s	3.3	67.5			15.4	6.3
Green Ext Time (p_c), s	0.0	0.0			25.8	0.5
Intersection Summary						
HCM 6th Ctrl Delay			13.2			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

9: La Media Rd & Olympic Pkwy

03/09/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	262	1815	920	137	1216	124	752	850	83	175	1135	193
Future Volume (veh/h)	262	1815	920	137	1216	124	752	850	83	175	1135	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	282	1952	989	147	1308	133	809	914	89	188	1220	208
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	1913	1045	151	1647	511	708	1984	616	233	1282	700
Arrive On Green	0.10	0.37	0.37	0.04	0.32	0.32	0.20	0.39	0.39	0.07	0.25	0.25
Sat Flow, veh/h	3456	5106	2790	3456	5106	1585	3456	5106	1585	3456	5106	2790
Grp Volume(v), veh/h	282	1952	989	147	1308	133	809	914	89	188	1220	208
Grp Sat Flow(s),veh/h/ln	1728	1702	1395	1728	1702	1585	1728	1702	1585	1728	1702	1395
Q Serve(g_s), s	12.9	59.9	55.0	6.8	37.3	9.9	32.8	21.3	5.8	8.6	37.6	9.7
Cycle Q Clear(g_c), s	12.9	59.9	55.0	6.8	37.3	9.9	32.8	21.3	5.8	8.6	37.6	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	1913	1045	151	1647	511	708	1984	616	233	1282	700
V/C Ratio(X)	0.85	1.02	0.95	0.97	0.79	0.26	1.14	0.46	0.14	0.81	0.95	0.30
Avail Cap(c_a), veh/h	449	1913	1045	151	1647	511	708	1984	616	320	1286	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.2	50.0	48.5	76.4	49.4	40.1	63.6	36.4	31.7	73.6	59.0	48.5
Incr Delay (d2), s/veh	1.2	12.4	2.5	64.6	4.0	1.2	80.2	0.2	0.1	10.2	15.1	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	5.6	26.7	19.4	4.3	16.0	4.1	22.3	9.0	0.0	4.2	18.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	62.4	51.0	141.0	53.4	41.3	143.8	36.6	31.8	83.7	74.0	48.7
LnGrp LOS	E	F	D	F	D	D	F	D	C	F	E	D
Approach Vol, veh/h	3223			1588			1812			1616		
Approach Delay, s/veh	59.8			60.5			84.2			71.9		
Approach LOS	E			E			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	65.9	37.0	45.9	19.5	57.6	15.0	67.9				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.7	* 4.2	6.0	* 4.2	5.7				
Max Green Setting (Gmax), s	* 7	59.8	* 33	40.3	* 21	46.0	* 15	58.3				
Max Q Clear Time (g_c+I1), s	8.8	61.9	34.8	39.6	14.9	39.3	10.6	23.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.5	4.3	0.2	8.1				
Intersection Summary												
HCM 6th Ctrl Delay			67.7									
HCM 6th LOS			E									
Notes												

APPENDIX F

SANDAG SELECT ZONE MODEL RUN

SANDAG
SR13
version13_3_2
Scenario ID: 991

2020rc
Regional Model

Select Zone Plot

TAZ 4728

join_taz4728

hwy_load_991

Selected Zone(s)

#

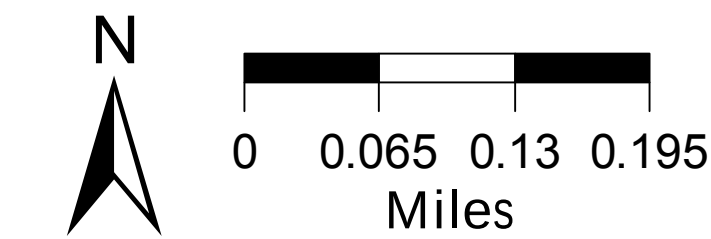
Select Zone Vol and %

#

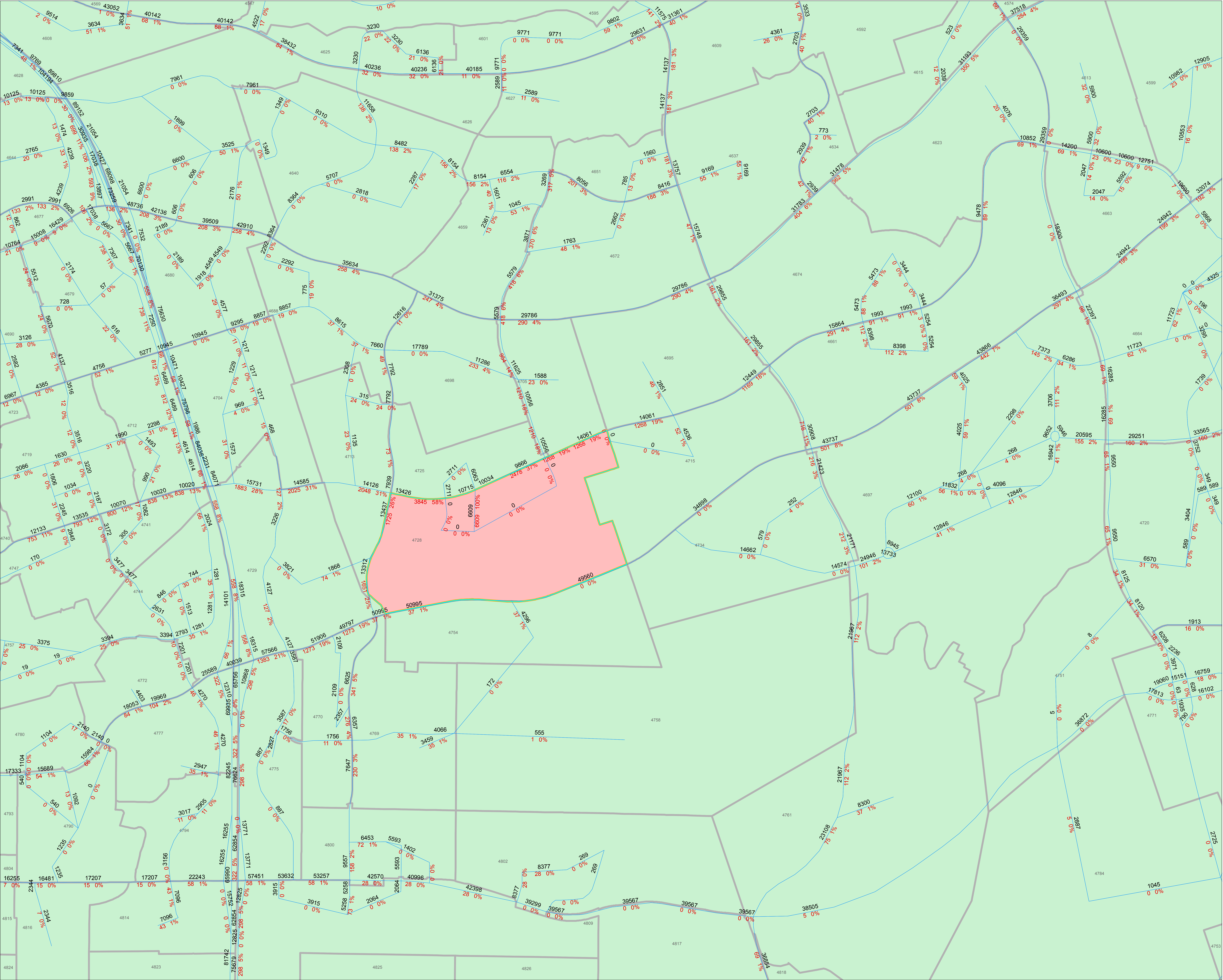
Model Estimated ADT

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Date: February 3, 2020



APPENDIX G

VMT REDUCTION CALCULATION SHEETS

Transportation Measures (five subcategories) Global Maximum Reduction (all VMT)			
	Max	Project	
	15.0%	7.9%	

Global cap for road pricing needs further study

Transportation Measures (four categories) Cross-Category Max Reduction (all VMT)			
	Max	Project	
	10.0%	7.9%	

Max Reduction = 15% Overall; Work VMT = 25% School VMT = 65%	
Max (Work)	Project
25%	0.0%

Max Reduction = 25%	
Max	Project
25%	0.0%

Land Use / Location	Neighborhood / Site Enhancement	Parking Policy / Pricing	Transit System Improvements	Commuter Trip Reduction (Assumes mixed use)	Road Pricing Management	Vehicles
Max 0%	Max 5%	Max 20%	Max 10%	Max (Work) 25%	Max 25%	
Project 7.9%	Project 0.0%	Project 0.0%	Project 0.0%	Project 0.0%	Project 0.0%	
Increase Density (LUT-1)	Pedestrian Network (SDT-1)	Parking Supply Limits (PDT-1)	Rapid Bus Transit System (TST-1)	CTR Program Voluntary (TRT-1)	Area/Cordon Pricing (RPT-1)	Electrify Loading Docks/Idling-Reduction Systems VT-1
Max 30.0%	Max 2.0%	Max 12.5%	Max 3.2%	Max 6.2%	Max 22.0%	
Project 7.9%	Project 0.0%	Project 0.0%	Project 0.00%	Project 0.0%	Project 0.0%	
Location Efficiency¹ (LUT-2)	Traffic Calming (SDT-2)	Unbundled Parking Costs (PDT-2)	Transit Access Improvements (TST-2)	CTR Program Required (TRT-2)	Traffic Flow Improvement (RPT-2)	Utilize Alternative Fueled Vehicles VT-2
Max 0.0%	Max 1.0%	Max 13.0%		Max 21.0%		
Project 0.0%	Project 0.00%	Project 0.0%		Project 0.0%		
Mixed-Use (LUT-3)	NEV Network (SDT-3)	Price On-Street Parking (PDT-3)	Expand Transit Network (TST-3)	Ride Share Programs (TRT-3)	Contributions to Transportation Infrastructure (RPT-3)	Utilize Electric or Hybrid Vehicles VT-3
Max 30.0%	Max 12.7%	Max 5.5%	Max 8.2%	Max 15.0%		
Project 0.0%	Project 0.0%	Project 0.0%	Project 0.0%	Project 0.0%		
Destination Accessibility (LUT-4)	Non-Motorized Zones (SDT-4)	Residential Area Parking Permits (PDT-4)	Transit Frequency/Speed (TST-4)	Transit Fare Subsidy (TRT-4)	Park and Ride Lots (RPT-4)	
Max 20.0%			Max 2.5%	Max 20.0%		
Project 0.0%			Project 0.00%	Project 0.0%		
Transit Accessibility (LUT-5)	Bike Lane Street Design (On-Site) (SDT-5)		Bike Parking Near Transit (TST-5)	End of Trip facilities (TRT-5)		
Max 24.6%						
Project 0.0%						
Affordable Housing (LUT-6)	Non-Residential Bike Parking (SDT-6)		Local Shuttles (TST-6)	Alt. Work Schedule & Telecommute (TRT-6)		
Max 1.2%				Max 5.5%		
Project 0.00%				Project 0.0%		
Non-Auto Corridor (LUT-7)	Multi-Unit Residential Bike Parking (SDT-7)			CTR Marketing (TRT-7)		
				Max 4.0%		
				Project 0.0%		
Proximity to Bike Path/Bike Lane (LUT-8)	Electric Vehicle Parking (SDT-8)			Preferential Parking Permit (TRT-8)		
Design (LUT-9)	Dedicate Land for Bike Trails (SDT-9)			Car Share Program (TRT-9)		
Max 21.3%				Max 0.7%		
Project 0.0%				Project 0.0%		

General Notes:
A. Strategies in bold text are primary strategies with reported VMT reductions. Non-bolded strategies are support or grouped strategies.

Footnotes:
1. This measure is not intended as a separate strategy but rather a cap for all land use/locations strategies.



Transportation Strategies Organization Chart

Date: 4/23/2020
LLG Ref: 3-19-3199
Project Name: Sun Bow
Project Settings: Suburban without Neighborhood Electric Vehicle Network

Notes:

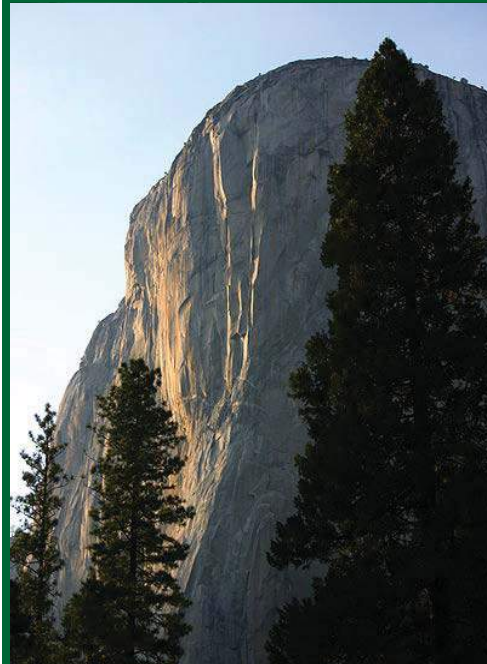
Section: 3.1.1		Increase Density	
Measure: LUT-1		Min	0.8%
Utilize: ☒		Max	30.0%
		Number of Housing Units or Jobs per Acre	16.3
		Unit	Housing Units per Acre
	A	Percent Increase in Housing Units or Jobs per Acre [not to exceed 500%]	114%
	B	Elasticity of VMT with respect to density	0.07
		VMT Reduction = A x B [not to exceed 30%]	8.0%
		VMT Reduction Utilized	8.0%



Quantifying Greenhouse Gas Mitigation Measures

A Resource for Local Government
to Assess Emission Reductions from
Greenhouse Gas Mitigation Measures

August, 2010



Transportation

CEQA# MM D-1 & D-4
MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Inputs:

The following information needs to be provided by the Project Applicant:

- Number of housing units per acre or jobs per job acre

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B \text{ [not to exceed 30\%]}$$

Where:

A = Percentage increase in housing units per acre or jobs per job acre³³ = (number of housing units per acre or jobs per job acre – number of housing units per acre or jobs per job acre for typical ITE development) / (number of housing units per acre or jobs per job acre for typical ITE development) For small and medium sites (less than ½ mile in radius) the calculation of housing and jobs per acre should be performed for the development site as a whole, so that the analysis does not erroneously attribute trip reduction benefits to measures that simply shift jobs and housing within the site with no overall increase in site density. For larger sites, the analysis should address the development as several ½-mile-radius sites, so that shifts from one area to another would increase the density of the receiving area but reduce the density of the donating area, resulting in trip generation rate decreases and increases, respectively, which cancel one another.

B = Elasticity of VMT with respect to density (from literature)

Detail:

- A: [not to exceed 500% increase]
 - If housing: (Number of housing units per acre – 7.6) / 7.6
(See Appendix C for detail)
 - If jobs: (Number of jobs per acre – 20) / 20
(See Appendix C for detail)
- B: 0.07 (Boarnet and Handy 2010)

Assumptions:

Data based upon the following references:

- Boarnet, Marlon and Handy, Susan. 2010. “DRAFT Policy Brief on the Impacts of Residential Density Based on a Review of the Empirical Literature.”
<http://arb.ca.gov/cc/sb375/policies/policies.htm>; Table 1.

³³ This value should be checked first to see if it exceeds 500% in which case A = 500%.

Transportation

CEQA# MM D-1 & D-4
MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ³⁴
CO ₂ e	1.5-30% of running
PM	1.5-30% of running
CO	1.5-30% of running
NO _x	1.5-30% of running
SO ₂	1.5-30% of running
ROG	0.9-18% of total

Discussion:

The VMT reductions for this strategy are based on changes in density versus the typical suburban residential and employment densities in North America (referred to as “ITE densities”). These densities are used as a baseline to mirror those densities reflected in the ITE Trip Generation Manual, which is the baseline method for determining VMT.

There are two separate maxima noted in the fact sheet: a cap of 500% on the allowable percentage increase of housing units or jobs per acre (variable A) and a cap of 30% on % VMT reduction. The rationale for the 500% cap is that there are diminishing returns to any change in environment. For example, it is reasonably doubtful that increasing residential density by a factor of six instead of five would produce any additional change in travel behavior. The purpose for the 30% cap is to limit the influence of any single environmental factor (such as density). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor.

Example:

Sample calculations are provided below for housing:

$$\begin{aligned} \text{Low Range \% VMT Reduction (8.5 housing units per acre)} \\ = (8.5 - 7.6) / 7.6 * 0.07 = 0.8\% \end{aligned}$$

$$\begin{aligned} \text{High Range \% VMT Reduction (60 housing units per acre)} \\ = \frac{60 - 7.6}{7.6} = 6.9 \text{ or } 690\% \text{ Since greater than 500\%, set to 500\%} \end{aligned}$$

$$= 500\% \times 0.07 = 0.35 \text{ or } 35\% \text{ Since greater than 30\%, set to 30\%}$$

³⁴ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

CEQA# MM D-1 & D-4
MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Sample calculations are provided below for jobs:

$$\begin{aligned} \text{Low Range \% VMT Reduction (25 jobs per acre)} \\ = (25 - 20) / 20 * 0.12 = 3\% \end{aligned}$$

$$\begin{aligned} \text{High Range \% VMT Reduction (100 jobs per acre)} \\ = \frac{100 - 20}{20} = 4 \text{ or } 400\% \\ = 400\% \times 0.12 = 0.48 \text{ or } 48\% \text{ Since greater than } 30\%, \text{ set to } 30\% \end{aligned}$$

Preferred Literature:

- -0.07 = elasticity of VMT with respect to density

Boarnet and Handy's detailed review of existing literature highlighted three individual studies that used the best available methods for analyzing data for individual households. These studies provided the following elasticities: -0.12 - Brownstone (2009), -0.07 - Bento (2005), and -0.08 - Fang (2008). To maintain a conservative estimate of the impacts of this strategy, the lower elasticity of -0.07 is used in the calculations.

Alternative Literature:

- -0.05 to -0.25 = elasticity of VMT with respect to density

The *TRB Special Report 298* literature suggests that doubling neighborhood density across a metropolitan area might lower household VMT by about 5 to 12 percent, and perhaps by as much as 25 percent, if coupled with higher employment concentrations, significant public transit improvements, mixed uses, and other supportive demand management measures.

Alternative Literature References:

TRB, 2009. *Driving and the Built Environment*, Transportation Research Board Special Report 298. <http://onlinepubs.trb.org/Onlinepubs/sr/sr298.pdf> . Accessed March 2010. (p. 4)

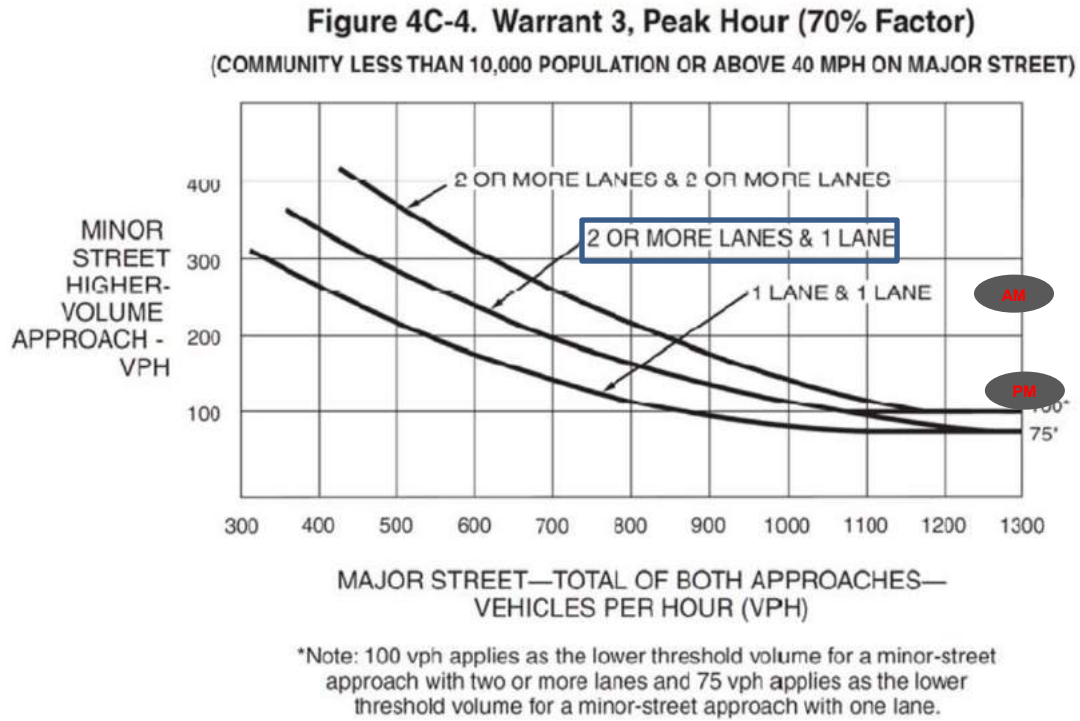
Other Literature Reviewed:

None

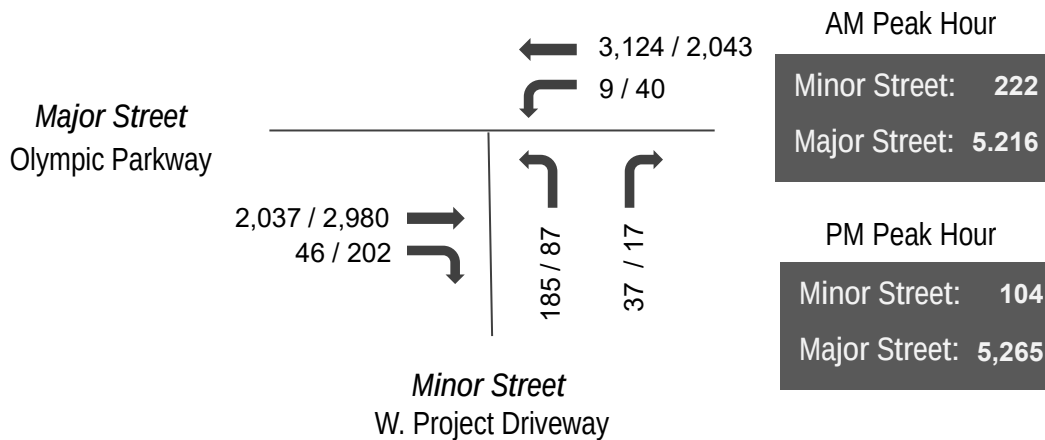
APPENDIX H

PEAK HOUR SIGNAL WARRANT ANALYSIS

Intersection #5
Olympic Parkway/ W. Project Driveway
Warrant 3, Peak Hour
Near-Term + Project

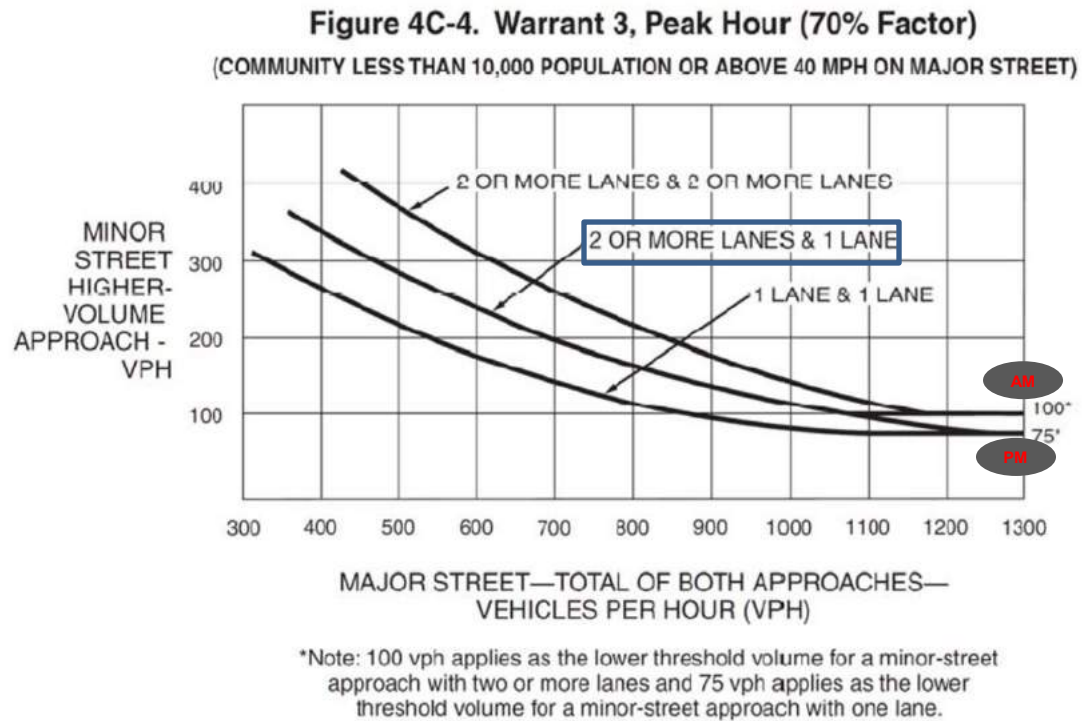


Near-Term + Project Volumes

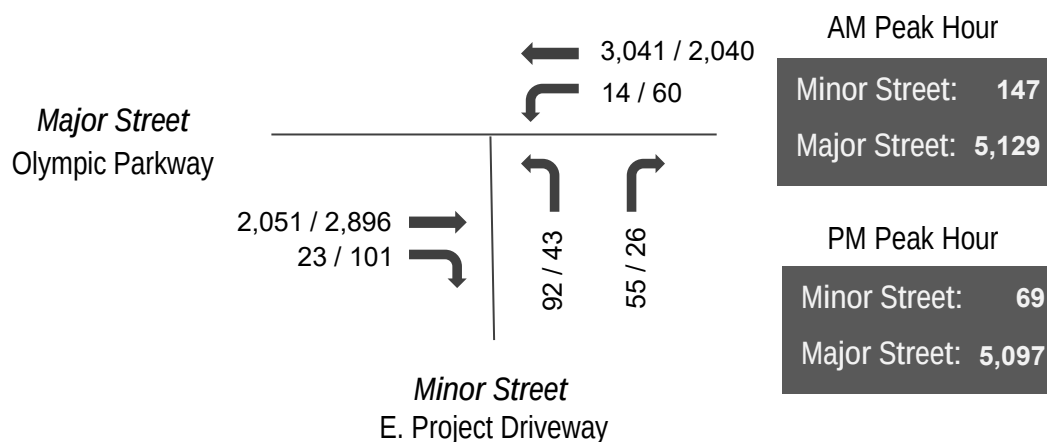


RESULT: SIGNAL WARRANTED

Intersection #6
Olympic Parkway/ E. Project Driveway
Warrant 3, Peak Hour
Near-Term + Project



Near-Term + Project Volumes



RESULT: SIGNAL WARRANTED

APPENDIX I

SANDAG SERIES 13 YEAR 2020 TRAVEL DEMAND MODEL RESULTS

Vehicle Miles of Travel Report

Scenario ID 991

Sunbow Residential Modeling - 2020rc - TAZ 4728

Aggregate VMT

Gross VMT

Geography	VMT
Regionwide	84,682,067
Clip 1	
Clip 2	

Distribution VMT

Query	Type	Description	VMT
1	Zone	TAZ 4728	42,297
2	Link		-
3	0		-
4	0		-

SB-743 VMT

VMT per Resident

Geography		Scenario ID	Residents	Total Trips	Person Miles of Travel	Vehicle Miles of Travel	VMT per Resident
Regionwide	San Diego Region	991	3,435,715	12,302,411	77,559,665	56,353,219	16.4
Jurisdiction	Chula Vista	991	287,177	1,006,178	5,731,704	4,053,988	14.1
TAZ	4728	991	2,053	7,173	41,393	28,870	14.1

